

## **Alcohol Control Policy and Native American Communities**

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## 1. Introduction

An economist's first pathway to approach policy about a commodity such as alcohol might be to view the landscape in terms of supply and demand. The *demand for alcohol* refers to the amount that people want to drink (per unit of time) under any prevailing set of price and availability conditions. The *supply of alcohol* refers to the amount that becomes available for people to consume under a prevailing price and regulatory regime. Individual choices -- people choosing what to do given the incentives around them -- ultimately determine the demand and supply conditions. Markets produce incentives in the form of prices -- whether legal or not -- to bring demand and supply into balance.

Alcohol control policies such as restricting access to youth, taxation, or outright prohibition change the supply conditions for alcohol. That is, they aim to reduce the amount that becomes available for people to consume at whatever price level. Alternatively, they may be seen to raise the cost to consumers for obtaining any given quantity (see Figure 1). The figure shows that control policy such as a tax on alcohol would raise the cost to consumers and therefore reduce consumption.

Although this simple supply-demand model has a certain theoretical appeal, it would be presumptuous to assume that it adequately addresses the complexity of alcohol policy concerns for any group of people. However, the model does illustrate two important propositions that serve as starting points for this paper. First, policy can make alcohol illegal, but true prohibition is an elusive goal. Anyone with the initiative, time, and money can obtain (or brew) alcohol; policy can only add to the cost -- in terms of time and money -- of obtaining it.<sup>1</sup> Second, Figure 1 shows that the degree to which control of supply affects consumption depends on the demand relationship. That is, the effectiveness of alcohol policy depends ultimately upon consumer behavior.

There is a long-standing debate over the degree to which control of alcohol supply is effective or makes sense as a policy direction for prevention of alcohol and drug abuse.<sup>2</sup> The arguments on both sides of the control-of-supply debate are probably familiar to most alcohol researchers. However, it may be useful to review some empirical studies relevant to prevention policy for Native American populations. The remainder of the paper begins with a brief review of studies measuring effects of price and availability on alcohol consumption among North American and European populations. Then the review moves to focus on studies of alcohol control among Native Americans. Much of this research generally challenges the idea that alcohol prohibition is likely to be an effective prevention strategy for most Native American communities.

The paper next proposes a more complete model of drinking behavior that may reconcile the conflicting findings of the prevention literature and help frame questions of alcohol policy. The more complete model motivates a set of testable hypotheses about the effectiveness of alcohol control among American Indians and Alaska Natives. The concluding section discusses the implications for research on alcohol policy for Native Americans.

## 2. Empirical research on effects of price and availability

A large and growing body of research -- undertaken primarily by economists -- has investigated the relationship between individual incentives and alcohol consumption or behavior. Much of this research assumes the basic link between the consumer cost of alcohol and alcohol consumption modeled in Figure 1. Health outcomes follow from an assumed simple relationship between aggregate consumption and alcohol abuse.<sup>3</sup>

Janes and Gruenewald (1991) divide alcohol control mechanisms into two categories: "economic availability" -- market regulation with taxes, price controls, and advertising restrictions -- and "physical availability" -- restrictions on legal access. This section first reviews results of studies that measure the response of drinking behavior to potential market regulation, before turning to studies that also measure effects of policies that restrict physical access to alcohol.

### Effects of market regulation

Much of the empirical research that estimates potential effects of market regulation compares alcohol price variations with either cross-section or time-series data on aggregate consumption rates in North America, Australia, and northern European countries. Many of these studies estimate separate relationships for beer, wine, and spirits. The results differ widely depending on the data source and specification (Osterberg, 1993). Economists generally use the *price elasticity of demand* to measure the sensitivity of consumption to price. The elasticity of demand is defined as the percentage change in the amount consumers want to buy divided by the percentage change in the price. A negative elasticity indicates that consumers want to buy less as price rises. The larger the negative number, the more sensitive is consumption to the price. Most studies find aggregate price elasticities for beer of -0.2 to -0.4, with somewhat larger negative numbers for wine and spirits (see Ornstein and Levy, 1983; Ornstein and Hanssens, 1985; Selvanathan, 1991). Researchers generally find wine consumption the most sensitive to price.

More recent studies have been able to obtain a substantial improvement in statistical precision, as well as allowing better observation of substitution patterns among different alcoholic beverages, by using individual consumption data. Studies of individual consumption also allow researchers to account explicitly for those who do not drink any alcohol. Gao, et al. (1995) estimated price elasticities from survey data ranging from -0.2 for beer, -0.3 for spirits to -0.7 for wine. Yen (1995) found that an alcohol price index had no significant effect on whether or not U.S. Department of Agriculture 1987-88 National Food Consumption Survey respondents consumed any alcohol during the survey week. However, the price elasticity of total alcohol consumption for those who did drink was -0.34. The results of this study suggest that an alcohol tax that increases the consumer price by ten percent would tend to reduce alcohol consumption by 3.4 percent.

Yen's results suggest that the effect of price on consumption is likely to be greater among habitual or heavy drinkers. This presumption is supported by Cook and Tauchen (1982), who found that a one dollar increase in liquor taxes -- which approximates a one dollar increase in the price of alcohol -- reduced state age-adjusted cirrhosis mortality rates by an average of 5.4 percent.<sup>4</sup> Manning et al. (1995), however, analyzed 1983 National Health Interview Survey data and found that moderate drinkers respond more to alcohol prices than either heavy or light drinkers.

Governments may also regulate alcohol advertising as another market-based method of influencing consumer purchases. Studies using data from the United Kingdom and Canada have found mixed results for the influence of advertising and advertising bans on overall alcohol consumption (Saffer, 1995; Smart, 1988). Other studies have shown a relationship between alcohol advertising and motor vehicle crashes. McCarthy and Ziliak (1990) found that cities in California with higher drunk driving crashes were more likely to establish Mothers Against Drunk Driving (MADD) chapters. Once formed, presence of a MADD chapter with its education campaign reduced future crash rates. Saffer (1994) also found that U.S. regions with higher levels of advertising had higher motor vehicle fatality rates.

Finally, Goel and Morey (1995) and Moore (1996) show that cigarettes and alcohol are complementary goods, each responding to price and availability conditions for the other. Their results suggest that higher taxes on alcohol or advertising bans might bring added health benefits from reducing tobacco use.

### **Effects of restrictions on availability and penalties for violations**

A number of studies estimating the demand for alcohol have tested specific access control and legal variables. Ornstein and Hanssens (1985) found that the minimum drinking age and legal Sunday sales were strongly correlated to beer consumption, but uncorrelated with consumption of distilled spirits. Waters and Sloan (1995) found that the minimum drinking age and the fine for first-offense drunk driving significantly reduced alcohol consumption. Osterberg (1992, 1993) reviews Scandinavian studies that found that laws increasing outlets where beer could be sold and changing bar and liquor store hours, and strikes that temporarily closed liquor stores, all had significant effects on alcohol consumption.

Other studies have used county-level data on motor vehicle crashes to link alcohol control to highway safety. Winn and Giacomassi (1993) found that dry counties in the state of Kentucky had significantly lower alcohol-related motor vehicle crash rates than wet counties. Blöse and Holder (1987) found that North Carolina counties that liberalized liquor by the drink laws suffered increased fatalities. Coate and Grossman (1988), and Saffer and Grossman (1987a, 1987b) found that states with higher legal drinking ages and a higher proportion of the population living in dry counties (as well as states with higher liquor taxes) had significantly fewer youth motor vehicle fatalities. Jewell and Brown (1995), and Jewell et al. (1996) found that dry counties in Texas had fewer alcohol-related motor vehicle fatalities, and that counties with a lower density of alcohol licenses had fewer alcohol-related motor vehicle crashes.

Studies have shown that penalties for driving while intoxicated have a deterrent effect. Sloan and Githens (1994) found that insurance surcharges for drunk driving arrests significantly reduced future incidents. Sloan et al. (1995) also found that reduced individual financial liability for drunk driving increased survey-reported binge drinking, but that policy deterrents had little effect on the probability that a binge drinker drove. Saffer and Chaloupka (1989) found that laws allowing police to administer breath tests prior to arrest for drunk driving significantly reduced motor vehicle fatalities. Chaloupka et al. (1993) compared the relative effectiveness of various policies in reducing drunk driving fatalities, concluding that severe drunk driving penalties, as well as taxes on beer, are the most effective alcohol supply policies.

### **Effects of alcohol prohibition**

The large and growing empirical literature demonstrating that limited control of supply is an effective deterrent in North American and some European populations might suggest that

control in its extreme form -- complete prohibition -- would provide even more protection from alcohol-related health and social problems. Many researchers have argued, however, that complete alcohol prohibition is ineffective for combatting alcohol abuse. While not testing hypotheses empirically, they present a number of arguments against prohibition as good public policy, particularly for a minority group such as Native Americans.

Some of the more prominent themes in the literature are listed as follows:

- Alcohol control holds out hope as an easy solution to a complex problem (Heath, 1989; Back, 1981; May and Smith, 1988)<sup>5</sup>
- One cannot prevent people from obtaining alcohol if they really want it (Heath, 1989)<sup>6</sup>
- Bootlegging impoverishes people and supports crime (Waddell, 1990)
- People do not learn how to drink responsibly; prohibition prevents constructive socialization involving responsible alcohol use (Heath, 1987; Peele, 1987)
- Encourages individuals to engage in risky behavior to obtain alcohol (May, 1989)
- Abusers will simply shift to another, perhaps more toxic mind-altering substance such as drugs or inhalants (Peele, 1987; Oetting and Beauvais, 1989; May, 1992).
- Encourages social norms favoring problem drinking (Peele, 1987; Brody, 1971)
- Social availability, not physical availability, is what influences consumption (Smart, 1980)
- Takes focus off what does work -- education and positive programs working on alcohol demand (Heath, 1992).
- Inappropriate transfer of models from Northern European cultures to other cultures (Peele, 1987)

In addition to practical, theoretical, and clinical evidence against the effectiveness of the strictest forms of alcohol control, a growing cross-cultural literature has demonstrated that prohibition does not solve social and health problems stemming from alcohol misuse. Heath (1987) reviewed a large number of studies of alcohol use, noting that although drunkenness is common across cultures, problem drinking is rare. He concluded that drinking in most societies is a method of relieving stress and promoting sociability, and carries its embedded norms and values. Social rules about who can drink under what terms are typically strong, and they serve to regulate the effects of drinking on individuals.

The United States' grand experiment with prohibition provides an empirical test for the effect of strict alcohol control on drinking and health outcomes. Prohibition was in effect throughout the nation for nearly 14 years, from January 1920 -- one year after the 18th Amendment to the Constitution was ratified -- until December 1933, when it was repealed by the 21st Amendment. All indicators of alcohol consumption fell dramatically during the first years of Prohibition. By the mid 1920s, however, estimated consumption had returned to over 70 percent of the previous level. Alcoholism death rates actually exceeded those of pre-Prohibition years, due to consumption of poor quality alcohol (Warburton, 1932; Miron and Zwiebel, 1991). Miron and Zwiebel concluded that the deterrent effect of Prohibition was quite weak, even though it raised the effective price of alcohol at least threefold.

### 3. Studies of alcohol control among Native American groups

One of the problems with prohibition is that while it deters drinking as a whole by raising the cost substantially, it also exacerbates social issues concerning drinking and deviance. While researchers frequently note a constructive role for alcohol in creating culture and establishing behavioral norms in many societies, problem drinking is tied to deviant behavior.<sup>7</sup> Unlike Europeans and many other peoples around the world, Native Americans and some other indigenous groups had little or no history of a constructive cultural role for alcohol. At the same time, the nature of colonial conquest and rule provided -- and still provides -- conditions of frustration and powerlessness that instigate problem drinking as an act of rebellion and escape from both colonial and traditional authority. (Bachman, 1992; Keaulana and Whitney, 1990; Brady, 1990; Klausner and Foulks, 1982; Lurie, 1971). One could argue that this historical environment makes strict alcohol control even less likely to succeed among Native American groups. A number of case studies bear out this argument.

A survey of Indians both on and off reservations from a variety of tribes showed that residents of dry reservations generally drink larger quantities and drink more frequently than urban Indians with easy access to alcohol (Weibel-Orlando, 1990). May (1976) reviewed alcoholism and violence on a number of Indian reservations for the period 1959-1974. He found that both alcoholism death rates and violent death rates were lower on reservations that had repealed prohibition after 1953 compared to the ones remaining dry. When Landen (1996) compared deaths on same reservations for the period 1979-90, he found that unintended injury death rates had declined for both groups, but that suicide rates had increased on wet reservations. On the balance, violent death rates were now slightly higher on the wet reservations, but the difference was not statistically significant.

Other studies have reported adverse effects of alcohol control with particular Native groups. Levy and Kunitz (1971) found higher liver cirrhosis rates among the Hopi, who condemn drinking, than among the Navajo, who are more tolerant about its use. Berman and Leask (1994) compared violent death rates over the period 1980-1990 for Alaska Natives living in urban areas and small communities. Few of the small communities have alcohol outlets and most are inaccessible by road from alcohol sales outlets. Native residents of towns -- where alcohol is legal and easily accessible -- had much lower death rates due to accidents, suicide, and homicide, than residents of small predominantly Native communities.

A major methodological problem with all the cross-sectional studies mentioned above is that they confound the outcomes of alcohol control policies with intercultural variation in attitudes about alcohol that influence policies as well as drinking practices. For example, tribes and communities more tolerant of alcohol use are both less likely to suffer from problem drinking as a form of deviant behavior and less likely to try to control alcohol supply. Communities with more serious alcohol problems may be more likely to try to regulate alcohol.<sup>8</sup> The research question should be not whether communities with controls appear to do better than those without controls, but rather whether imposing controls in a given community reduces problem drinking and its effects.

The few studies attempting to perform such a comparison have produced mixed results. Smart (1979) studied three Native communities in the Canadian Arctic that implemented prohibition on alcohol in 1976, finding no effect when compared to neighboring communities not

instituting controls. However, O'Neill (1985) reported that prohibition in one of these communities was associated with a number of positive social changes, as well as a decrease in abuse of other substances. May (1991) also describes a "natural experiment" in which the FAS rate dropped in a "small Indian community" from 14/1000 to zero for 5 years when royalty checks stopped being distributed to individual families.

Alaska's state local option law, implemented in 1981, provides Alaska Native communities the opportunity to select from a number of alcohol control options by holding a public vote. Landen et al. (1997) found that the total violent death rate between 1990 and 1993 was 1.6 times as high for Alaska Natives living in communities with legal alcohol importation as for residents of dry communities. However, communities with attitudes more strongly discouraging alcohol abuse might also have been more likely to select strict control options, exaggerating the apparent statistical effect of prohibition. Chiu et al. (1997) found that alcohol-related outpatient clinic visits declined sharply in an isolated Alaska Native community when alcohol prohibition was in effect, although residents may have gone elsewhere to drink and be injured. Berman and Hull (1996) compared violent death rates under various local options for the 97 villages that passed restrictions, to death rates in the same communities during periods when there were no controls. The results, summarized in Table 1, show that Alaska Native violent death rates were generally lower during periods when alcohol sales, importation, or possession were restricted than with no controls. For the group of 84 communities that banned sale and importation, annual homicide death rates declined by 71 per 100,000, and accident death rates dropped by 66 per 100,000 when alcohol controls were in effect.

Findings for the Alaska local option law may not apply to other Native American communities for two reasons. First, Alaska communities are much more isolated -- most are not accessible by road -- making prohibition much easier to enforce than in many Indian reservations in the contiguous states. Second, Alaska communities must circulate a petition and hold a referendum to exercise the local option to control alcohol, while reservation communities elsewhere must elect to legalize its use. Holding an election to ban alcohol may be viewed by residents as a step that they may take to establish community norms about sobriety, an issue that will be elaborated below.

It is important to note that the studies of Native American populations reviewed above all evaluate the outcomes of very strict forms of alcohol control. Although the results of research on the effects of prohibition are mixed, one might hypothesize that market regulation and more moderate restrictions on physical availability would work as effectively with Native Americans as they do with other populations. Less draconian measures might be less likely to promote a deviant backlash. Unfortunately, no studies evaluating the outcomes of more moderate price and availability measures have been performed for Native American populations.

May (1996) reviews studies of alcohol use and notes that drinking prevalence varies widely by tribe, although it is generally lower than U.S. general population. His analysis cautions us that findings from studies of one group may not apply to other groups with different historical and cultural influences. Empirical research on alcohol policy would benefit from a more complex approach that goes beyond modeling total alcohol consumption and addresses alcohol use as individual behavior in a social context.

#### 4. A more complete model of alcohol control

Much of the empirical literature on alcohol control treats alcohol consumption as the commodity of interest. Yet the harmful effects of alcohol stem not from alcohol consumption generically but rather with activities involving *problem drinking*. Problem drinking might include, for example, any or all of the following activities:

- frequent intoxication leading to alcohol dependency
- binge drinking -- five or more drinks per occasion
- risky drinking -- drinking while pregnant or drinking and driving

The quantity of alcohol consumed may not measure problem drinking accurately. Alcohol is an *input* to problem drinking, not the outcome of concern. Changing the way that alcohol is used matters as much as whether it is consumed at all for prevention of its harmful effects.<sup>9</sup>

One approach that has been developed by economists to address a particular aspect of problem drinking -- alcohol dependency -- is the *rational addiction hypothesis* (Becker and Murphy, 1988). Under this hypothesis, the "rational addict" maximizes the long-term utility (satisfaction) of consuming an addictive substance, given expected prices and preferences. The main empirical proposition derived from the model is that consumption over time responds to anticipated future as well as current and past consumption and prices. Initial empirical tests of the model for cigarette smoking gave promising results (Chaloupka, 1991, 1992; Becker et al., 1994).

Waters and Sloan (1995), Grossman (1993), and Grossman et al. (1998) applied the rational addiction model to alcohol consumption. Grossman (1993) found that data on cirrhosis mortality rates were consistent with the model, but that aggregate alcohol consumption data did not support it. Waters and Sloan found more support for rational addiction hypothesis using individual consumption data from the 1983 Health Interview Survey. In by far the most complete study to date, Grossman et al. (1998) found statistical support for addictive behavior in panel data on annual drinks per capita, although their results implied implausible parameters for drinkers' preferences.<sup>10</sup>

No studies have yet attempted to apply the rational addiction hypothesis to Native American populations. The main challenge with applying the model comes with study design: tests of the hypothesis require the researcher to observe the degree to which current consumption patterns might respond in advance to expected future changes in alcohol control policies.<sup>11</sup>

A more serious limitation of the rational addiction model for addressing alcohol policy, however, is that it addresses only one type of problem drinking: alcohol dependence.<sup>12</sup> In addition, its focus -- like nearly all the economic literature -- is on individual choice over patterns of alcohol consumption. It places in the background social, cultural, and community forces that contribute to problem drinking behavior. One of the central issues with alcohol policy is how to encourage *responsible drinking* instead of problem drinking. For these reasons, research on alcohol policy for Native Americans could benefit from moving from modeling alcohol consumption to modeling drinking behavior directly.

#### **Problem drinking vs. responsible drinking**

This modeling approach treats responsible drinking (often called “social” drinking) and problem drinking as separate activities that are both produced and consumed by the drinker in order to generate some type of satisfaction. Individuals convert inputs of alcohol, time and (usually) the companionship of drinking partners into a valued experience (see Table 2).<sup>13</sup> An environmental change that makes problem drinking less attractive is likely to encourage responsible drinking, and vice versa. In the language of economics, the two forms of drinking are *substitutes*, especially for youth, who are learning drinking styles. Individuals who are alcohol dependent, however, may not have a choice about how to drink. Consequently, the model is relevant to policy for primary prevention, but not necessarily for treatment of alcohol-related problems.

Table 2 shows that responsible drinking and problem drinking involve the same inputs but produce different outputs. While the release of stress facilitated by responsible alcohol consumption produces generally constructive socialization effects, intoxication from problem drinking is often associated with antisocial or deviant behavior, and involves a high risk to health and safety.

The individual chooses the amounts of problem drinking, responsible drinking, and non-alcohol-related activities that provide the greatest satisfaction, constrained by available time and money (and possibly by the availability drinking partners). The model suggests that the choice of drinking activities depends on four household economic factors:

- price of alcohol -- the money cost of obtaining alcohol
- ease of access to alcohol -- affecting the time cost of obtaining alcohol
- income -- ability to pay for alcohol
- amount of free time -- for obtaining alcohol and engaging in drinking activities

How much one chooses to engage in either type of drinking, as well as the choice of one type over the other, depends on a number of other factors, such as:

- individual psychological (and possibly inherited) factors
- environmental stressors
- social factors -- behavioral norms of family, friends, and community
- cultural and spiritual values

Responsible drinking appears to have a number of advantages compared to problem drinking. These include:

1. lower time cost
2. lower money cost (less alcohol needed)
3. no lingering physiological effects -- hangovers
4. lower risk of injury to self or others
5. greater socialization benefits

6. greater conformity with traditional Native cultural values

Of course, the advantages of responsible drinking for any particular group strongly depend on prevailing social and cultural norms regarding drinking styles and behavior under the influence. Availability of alcohol and a perceived obligation to drink at social gatherings has been shown to have a strong influence on the prevalence of drinking and the amount consumed, while drinking for social motives -- to be sociable or to celebrate with others -- increased the frequency of heavy drinking (Abbey et al., 1993). Indian youths with strong attachments to families that value culture and schooling and discourage alcohol abuse are less likely to abuse alcohol, marijuana, or inhalants, regardless of levels of self-esteem, depression, and anxiety (Oetting and Beauvais, 1989; and Oetting et al., 1988).

## 5. Hypotheses Generated by the Model

By specifying a more complex, but still enormously simplified view of the alcohol consumption environment, the model outlined above supports the views of May (1992) and others that alcohol abuse is a complex problem without a simple solution. The usefulness of a theoretical model, however, depends on whether it generates testable hypotheses to inform public policy -- in this case policy for prevention of alcohol-related health and social problems among Native Americans. This section first discusses hypotheses the model suggests about economic factors -- those related to time and money. Then it addresses hypotheses about environmental, social and cultural factors.

### Hypotheses about time and money

*H1: Taxation (or higher prices) reduces problem drinking more than it reduces responsible drinking.* A tax increase raises the price of alcohol, discouraging both responsible drinking and problem drinking. The model suggests, however, that because problem drinking usually involves consumption of larger amounts of alcohol, it could be more sensitive to alcohol costs than responsible drinking. As noted above, many empirical studies on the general North American population support this hypothesis. Tests for Native American populations would be useful and timely.

*H2: Stiff penalties for drunk driving reduce problem drinking.* This raises the relative cost of problem drinking. Empirical studies of the U.S. population appear to support this hypothesis. Does it apply to Native populations?

### Hypotheses about availability

If restrictions on availability merely increase the time and money cost of obtaining alcohol, then its effects are likely to parallel those of an increase in the price. The model suggests, however, that policies limiting access to alcohol may have more complex effects. One needs to look at the details of the measure, and how it applies to the specific environment. Here are some examples.

*H3: Prohibition of alcohol sale but allowing importation is ineffective in controlling problem drinking and may make problems worse.* This is the status -- legal or *de facto* -- on many reservations in the U.S. and Canada and in many Alaska Native villages. The model predicts likely problems with this policy. Importation requires either personal travel or freight shipment to bring alcohol and consumers together. The total cost of an alcohol purchase varies

with the number of purchases, but little with the quantity purchased at a time, raising the cost of responsible drinking relative to problem drinking.<sup>14</sup>

*H4: Prohibition of sale and importation, where it can be enforced, reduces problem drinking in the community.* This is the local option most favored by Alaska Native villages. It is of course easy to import small quantities of alcohol without detection but more difficult to bring in large quantities. Prohibition of importation encourages individuals wishing to engage in problem drinking to go elsewhere -- to the bordertown or its equivalent or to urban areas. This may improve the situation in the Native community -- by removing a harmful social influence -- at the same time as it places the problem drinker in an environment where more health services may be available. It may also, however, encourage individuals to engage in risky behavior to obtain alcohol elsewhere where it is legal, such as travel in bad weather or drive back home drunk.

*H5: Prohibition of alcohol possession is no more effective, and may be less effective, than an importation ban.* Strict tribal control of alcohol possession makes alcohol control easier to enforce. However, if the penalty for possession of one bottle of beer is as severe as that for four cases of vodka, the only drinking that takes place is likely to be problem drinking.

*H6: Tribally operated or licensed alcohol sales under policies that promote responsible drinking reduce problem drinking* (May, 1992). If strict alcohol control raises the risk of social drinking -- in the form of either legal or moral sanctions -- then it may improve the *relative* value of problem drinking.<sup>15</sup> The model suggests that tribal control schemes that make alcohol available in small quantities at a time encourage people to shift from problem drinking to responsible drinking.

### **Hypotheses about economic and social policy**

*H7: Reducing physical risks to heavy drinkers increases problem drinking.* Beauchamp (1980) and May (1992) recommend policies to reduce risk of physical harm to intoxicated persons. While this may be a sound strategy from an overall public health viewpoint, the model suggests that making problem drinking safer removes a deterrent to intoxication that could in fact change people's drinking activities.

*H8: Large amounts of unearned income increase problem drinking.* Money and time -- time free of responsibility -- limit all drinking activities but especially constrain problem drinking. The model suggests that situations that provide money without responsibility -- such as cash settlements or large transfer payments -- may encourage problem drinking.

*H9: Jobs reduce problem drinking.* Employment takes sobriety, promotes individual responsibility, and uses up free time. Increasing employment should reduce problem drinking, even though the increase in income may lead to greater overall consumption of alcohol. The positive effect of employment in encouraging responsible drinking especially applies to youth.<sup>16</sup>

### **Hypotheses involving social and cultural factors**

Prevailing social and cultural norms, and issues of legitimate power and authority especially complicate the effects of alcohol control efforts. Simple control-of-supply models that work well to explain preventive effects of alcohol control policies on the general North American or European population may not apply to minority populations such as Native American groups with distinct cultural values. However, the model outlined in the previous section suggests

some additional hypotheses about interactions between alcohol control and social and cultural factors affecting drinking behavior.<sup>17</sup> Below are some ideas taken from the vast literature on alcohol use among Native Americans.

*H10: Communities with few responsible drinkers will accomplish little by trying to keep alcohol legal but regulate its use.* This hypothesis will undoubtedly have its critics. However, May (1996, 1994) notes that a larger fraction of Native American adults in some tribes do not drink at all compared to the general North American population, and that rates of problem drinking vary widely among tribes. One could argue that the presence of a large fraction of mature adults choosing not to drink at all suggests that the community lacks social and cultural norms promoting “healthy” drinking patterns.

*H11. Alcohol control perceived as imposed without legitimate authority will not work and may increase problem drinking.* In this instance, problem drinking may increase its status as an act of defiance. The increased satisfaction gained from drinking to “act out” may more than offset the effect of prohibition to raise the cost of alcohol. Alcohol abuse may increase even as responsible drinking declines.

*H12. Any policy adopted with community consensus works better than one adopted with community division.* This hypothesis is a corollary to the last one; social pressure for sobriety is stronger when the community agrees on objectives and strategy. Everyone seems to agree that policy imposed on a divided community works less well than one developed by community consensus (see Beauvais, 1992; May, 1992; Heath, 1992). Perhaps it is too obvious a hypothesis to test. However, rigorous empirical studies that compare measures of the degree of community consensus about whatever alcohol policy is adopted to health outcomes under that policy would send a clear signal for design of prevention efforts.

### **Alcohol control in community cohesion and empowerment**

May (1995) and May et al. (1993) argue that the most effective prevention strategies are community mobilization efforts, designed from within the community. If the ability of communities to mobilize against alcohol abuse depends on consensus, then one might ask how alcohol control may contribute to developing community cohesion and empowerment. One often hears the phrase “caught between two worlds” to describe the difficulty Native Americans have -- especially Native youth -- in meeting the expectations of elders and “traditionalists” in their own communities, as well as adapting to the dominant non-Indian culture. Navarro (1997) reported that most students in a program to prevent substance abuse among Native American youth believed that alcohol abuse and depression in Native American communities resulted from “the difficulty of bridging two worlds” rather than from ignorance or moral weakness.

Oetting and Beauvais (1991) discuss socialization patterns for Indian adolescents. They argue that the issue is not one of choosing which of two (or more) cultures to join, but rather a problem of integration into either or both. Figure 2 illustrates their orthogonal identification model. The horizontal scale represents the degree to which the individual identifies with traditional values, while the vertical scale represents the degree of identification with modern values. Oetting and Beauvais suggest that youth who have the highest risk of substance abuse are those who have difficulty identifying with either traditional or modern value systems. Bicultural individuals -- those who identify with both modern and traditional values -- have the least risk.

One might characterize the role communities play in the orthogonal identification model as providing integration pathways for individuals. Elements of these pathways include

opportunities for youth to succeed in traditional or/and modern roles, leadership role models and mentors, and opportunities that facilitate or discourage identification. While communities and the individuals that comprise them may face a variety of environmental insults, those communities which offer a diversity of pathways for youth -- bicultural or multicultural communities -- are likely to prove more resilient. Individuals in more modern communities are also less likely to respond positively to prohibition, since drinking plays an important role in social integration in mainstream North American culture (Heath, 1987).

While Oetting and Beauvais developed the orthogonal identification model to explain socialization patterns of Indian adolescents, the same principles apply to integration of adults into the community. Several studies have found that a high percentage of adult Native American drinkers in initial surveys had stopped drinking on their own by the time they were resurveyed about two decades later (Leung et al., 1993; Kunitz and Levy, 1994). May (1996) describes this phenomenon as "maturing out". Although most Native American women do not drink at all, a small minority drinks heavily and has a number children with alcohol-related birth defects (May et al., 1983).

How does alcohol policy facilitate or inhibit the process of maturing out, if it has any effect at all? A particularly important research question would be to determine factors that promote earlier maturing out for young women who might otherwise bear alcohol-affected children. Exploring this question would require undertaking longitudinal studies that obtain more information about the timing of drinking and abstention episodes and sort out gender differences in the maturing-out process. Oetting and Beauvais' work suggests that community cohesion and empowerment again could play a strong role. Using their framework as a guide, the model of drinking behavior outlined above suggests the following additional hypotheses about the role of alcohol in developing community cohesion and empowerment:

*H13: Prohibition is more effective in more traditional Native communities.* Social drinking has not been present historically as a constructive social force; alcohol consumption has usually been present only in its deviant form. The growing indigenous sobriety movement argues that drunkenness debases the individual's Native values and heritage. Alcohol control by the traditional community has a double effect: it reinforces community values at the same time as it raises the cost of alcohol.<sup>18</sup>

*H14: Alcohol prohibition is likely to fail in more modern communities.* Success in modern society, such as in college or on a job, requires individual responsibility. Community control of alcohol makes learning to drink responsibly -- one area of individual responsibility in modern society -- more difficult.

*H15: Support of churches for alcohol policies is not a good predictor of their likely success.* Klausner and Foulks (1982) noted that church membership was a good predictor of an individual's stand on alcohol. However, as a typically modern entity, church influence is likely to divide the community unless, as is the case in some Southwestern tribes, it enjoys near universal acceptance as a public authority.

*H16: Alcohol statutes that the community wants enforced but are rarely enforced may be worse than useless.* Mail (1992) has stated, "Prohibition, in those communities that continue struggling to maintain and enforce it, is an artifact of law. It is not a reality within Indian communities." Laws that are not enforced encourage disrespect for authority and probably

contribute to deviant behavior. Empirical studies evaluating varying enforcement policies and effects would be a useful contribution.

It bears repeating that in testing these hypotheses, social and cultural variations among tribes, or even across communities in the same tribal area, limit the usefulness of simple cross-sectional studies. Looking across tribes, researchers may be observing cultural differences rather than effects of differing alcohol control policies. Further complicating research design is the likelihood that communities with higher rates of alcohol-related problems will adopt stronger control measures. Studies should be designed carefully to try to sort out these confounding influences, or else follow individual communities through time.

## **6. Conclusions: Directions for Research**

Despite social science research focusing on social role of alcohol, most research on alcohol misuse remains focused on individuals at risk. This paper has outlined a model of problem drinking and responsible drinking. The model suggests that alcohol policy -- which acts to restrict an input to both types of drinking -- provides different incentives for individual drinking behavior in different social and cultural settings. Research on alcohol policy for Native American populations should move beyond thinking only about individuals or only about communities, and start thinking about the interaction of the two.

The paper has also outlined a series of hypotheses suggested by the model that can in principle be tested. Some of these hypotheses may contradict others. Nevertheless, they may still provide direction for empirical research on alcohol policy. Some of the hypotheses may seem trivial. If they are so self-evident that they do not need verification, then why are they not part of a comprehensive alcohol policy advocated by May (1992) and others?

The above discussion suggests that policy affecting Native Americans about non-alcohol issues may tend to counteract the effects of alcohol control policies. Or unintended consequences of alcohol policy may affect sociocultural factors that influence drinking patterns and backfire. In the final analysis, alcohol control is only one of many opportunities to empower communities. But alcohol control can contribute to community empowerment. How one controls alcohol is likely to be as important, if not more important, than the type of policy implemented.<sup>19</sup> This leads to the final hypothesis.

*H17: Anything that empowers the community reduces problem drinking and its effects; H17a: Anything that disempowers communities increases problem drinking and its effects.*<sup>20</sup> This is in fact a testable hypothesis. If empirical studies support it, then one may not need to worry about alcohol policy. Researchers might focus instead on opportunities to empower communities, leaving matters of alcohol policy to communities themselves.

## Notes

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- <sup>1</sup>. Note as well that the risks of fines and imprisonment represent contingent time and money losses.
  - <sup>2</sup>. Peele (1987) and Room (1987) summarize the arguments for and against control of supply as a policy for prevention of alcohol abuse.
  - <sup>3</sup>. As Saffer (1995) notes (p. 83), "The public health issue is alcohol abuse rather than alcohol consumption. However, many researchers assume that in an alcohol consumption distribution function there is a proportionate relationship between the mean and the upper tail. If this assumption is true, then per capita consumption is a good proxy for alcohol abuse."
  - <sup>4</sup>. The Rational Addiction Hypothesis also predicts that heavy drinkers -- specifically those addicted to alcohol -- will respond more to price changes than casual drinkers. This hypothesis and the evidence for it are discussed in section 4.
  - <sup>5</sup>. May and Smith (1988) found that only 19 percent of Navajos they surveyed supported legalization of alcohol on the reservation. However, they suggest that inaccurate stereotypes -- e.g., a majority believed Indians have a physical weakness for alcohol when compared to other ethnic groups -- contributed to the belief that prohibition was a simple solution to the complex problem of alcohol abuse.
  - <sup>6</sup>. Heath (1987) notes that attempts at prohibition across cultures have never worked "except when couched in terms of sacred or supernatural rules." (p. 46)
  - <sup>7</sup>. Douglas (1987) summarizing cross-cultural literature on alcohol consumption, concluded that problem drinking as a concept differed across cultures. It was not necessarily related to the level of alcohol consumption, but rather to a pattern of drinking outside prevailing social norms.
  - <sup>8</sup>. Levy et al. (1987) found that suicide and homicide rates were higher in acculturated (pro council) Hopi villages than in traditional (anti council) villages. Cirrhosis, but not alcoholism, was also higher among residents of acculturated villages, and higher still in off-reservation communities. They conclude that chronic risky drinkers were more likely to be expelled to off-reservation communities from traditional villages. Traditional communities were also more likely to adopt strict alcohol control.
  - <sup>9</sup>. Arguably what are of most concern are the health outcomes caused by problem drinking. These depend on behavior while intoxicated, health care delivery systems and community responses to problem drinking, not just on the frequency of problem drinking. The approach suggested here is consistent with a "harm-reduction" strategy for drug abuse intervention. Unlike most other drugs, however, alcohol is freely and legally available almost everywhere in North America.
  - <sup>10</sup>. In particular, the coefficients on past and future alcohol consumption in Grossman et al. (1998) imply a large negative discount rate -- e.g., that drinkers value future consumption much more than current consumption.
  - <sup>11</sup>. The Waters and Sloan (1995) study illustrates the difficulties with empirical applications of the rational addiction model. The model requires future consumption levels, but their survey interview data contained only current and past consumption. Lacking a panel design that would allow respondents to provide the "future" data point, the researchers tested the model using a projected value for future consumption based on an estimated relationship between prior and current drinking.
  - <sup>12</sup>. The inability of the rational addiction hypothesis to model other forms of alcohol consumption probably explains why alcohol studies to date have found only weak empirical support.
  - <sup>13</sup>. The model proposed here is an application of the *household production model* first articulated by Becker (1965).
  - <sup>14</sup>. Klausner and Foulks (1982) describe the problems generated by ban on sale with legal importation in one Alaska community.

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- <sup>15</sup>. Of course, if problem drinking arises from the inability of drinkers to learn responsible drinking habits, then the negative effect of alcohol control may increase (see Peele, 1987).
- <sup>16</sup>. Beauvais (1992) notes the critical nature of the transition from adolescence, where Indians drink more heavily than other U.S. youth, to adulthood, where Indian drinking patterns more closely resemble those of other groups. Needless to say, this hypothesis does not apply if employers tolerate drunkenness on the job.
- <sup>17</sup>. Another area of policy ignored here aims to influence drinking styles -- social availability (Smart, 1980). May (1992) enumerates policies that try to shape drinking practices toward responsible drinking.
- <sup>18</sup>. Lee (1993) studied crime rates and patterns of social control for eight dry Yup'ik villages in Alaska. Villages affiliated with the Yupi'it Nation -- a traditional sovereignty movement -- had lower rates of violent crime and alcohol-related arrests than neighboring villages.
- <sup>19</sup>. This is an element in the dialogue between Peele (1987) and Room (1987).
- <sup>20</sup>. May and Moran (1995) suggest that community empowerment should be an important goal for alcohol abuse prevention policies among Native Americans. Community empowerment is used here to mean effective self-government at the local (community) level. Cornell et al. (1998) review the literature that has found a positive correlation between the strength of tribal self-government in the United States and indicators of well-being.

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**Table 1. Comparison of Death Rates Under Different Alcohol Control Regimes, 1980-1993**

Alaska Natives Living in Local Option Communities  
(annual rates per 100,000 persons)

Local Option	Number of Communities	Type of death	Mean death rate without control	Mean death rate with control	t statistic for difference	
Limited package store license	3	Accidents	217.2	46.1	2.41	
		Suicides	36.9	25.1	0.55	
		Homicides	38.4	26.0	0.58	
		Total	292.5	97.1	1.76	
Ban sale	7	Accidents	299.4	212.2	0.88	
		Suicides	168.2	57.2	1.87	
		Homicides	73.7	34.0	0.65	
		Total	541.4	303.5	1.55	
Ban sale and importation	84	Accidents	222.1	156.5	1.86	*
		Suicides	94.5	86.7	0.32	
		Homicides	98.9	27.4	2.93	***
		Total	415.5	270.6	2.50	**
Ban possession	23	Accidents	103.3	94.7	0.29	
		Suicides	49.1	86.5	-1.36	
		Homicides	33.5	17.9	0.94	
		Total	185.9	199.1	-0.26	
Any alcohol control	97	Accidents	226.8	152.2	2.41	**
		Suicides	95.4	85.6	0.45	
		Homicides	91.7	26.0	3.07	***
		Total	413.9	263.8	2.93	***

\* Statistically significant at the 10 percent level.

\*\* Statistically significant at the 5 percent level.

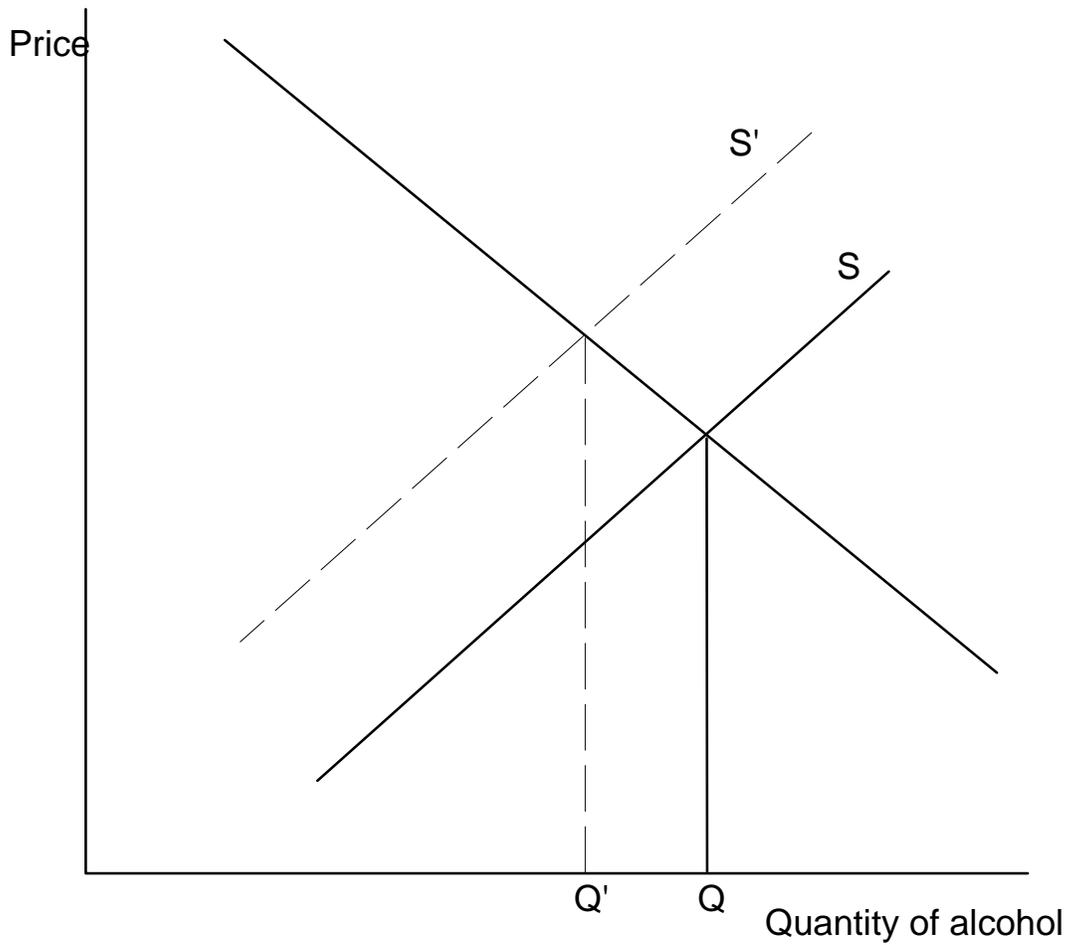
\*\*\* Statistically significant at the 1 percent level.

Source: Berman and Hull (1996)

**Table 2. Inputs and Outputs of Drinking Activities**

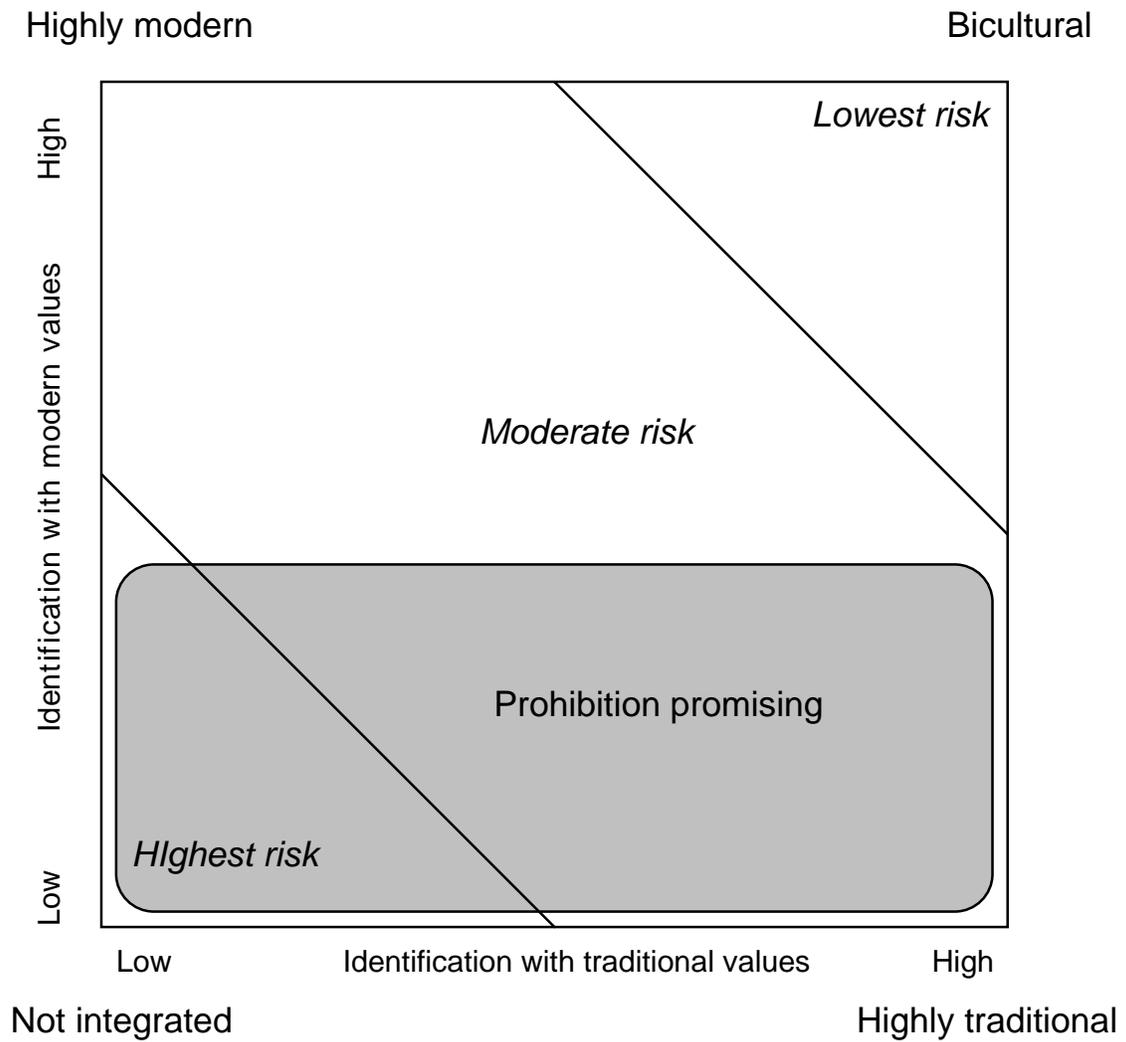
	<b>Responsible drinking</b>	<b>Problem drinking</b>
Inputs	Alcohol	Alcohol
	Free time	Free time
	Other drinkers	Other drinkers
Outputs	“Relaxation”	Intoxication
	Socialization	Rebellion, acting out
	Few health effects	High risk to health and safety

Figure 1. Demand and Supply of Alcohol



A policy change imposing a restriction on alcohol shifts the supply curve upward and to the left -- from curve **S** to Curve **S'**. This makes alcohol more expensive for consumers, thereby reducing consumption, from  $Q$  to  $Q'$ .

Figure 2. Orthogonal Identification Model



adapted from Oetting and Beauvais (1991)