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TIME SPENT IN FOSTER CARE

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The Effects of Alcohol Policies in Reducing Entry Rates and Time Spent in Foster Care
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ABSTRACT

The purpose of this paper is to empirically estimate the propensity for alcohol-related policies to influence rates of entry into foster care and the length of time spent in foster care. Alcohol consumption is believed to be major contributing factor to child maltreatment, associated with an increased likelihood of abuse and longer durations once in foster care. We analyze a panel of state-level foster care entry rates over time, followed by a duration analysis of individual-level cases. The alcohol regulations of interest include beer, wine, and liquor taxes and prices, and a measure of alcohol availability. Overall, these alcohol control policies appear to have limited power to alter foster care entry rates and duration once in care. We find that higher alcohol taxes and prices are not effective in reducing foster care entry rates, however, once in foster care, the duration of stay may be influenced with higher taxes, particularly when the entry was a result of an alcohol abusing parent.

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1. Introduction

Parental substance abuse problems can be extremely detrimental to the health and well being of children. Children of substance abusers are at a much greater risk of physical, mental, and sexual abuse, and suffer more physical and mental health problems than children in the general population [Center on Addiction and Substance Abuse (CASA) 2001; Puttler et al. 1998]. The Substance Abuse and Mental Health Services Administration estimates that approximately 5.156 million children live with parents who abuse or are dependent on alcohol (Office of Applied Studies 2003).

Nearly 1 million children annually are victims of child abuse and neglect. Estimates of alcohol involvement in cases of maltreatment range from 40 to 70 percent of all cases (Famularo, Barnum, and Wharton 1986; Children of Alcoholics Foundation 1996; CASA 2001). Some of the children of substance abusing parents will have encounters with state child protective services, and these children may be temporarily or permanently separated from their parents in order to provide a safe and stable environment. The problems related to parental substance abuse places a tremendous burden on the child welfare system. The U.S. Department of Health and Human Services (USDHHS 1999) states, "...it is clear that throughout the child welfare system, but especially with respect to children in foster care, alcohol and other drug abuse are recognized as major contributing factors to child neglect and abuse and are two of the key barriers to family reunification." The burden of substance abuse problems translates into an estimated annual \$5.3 billion of state spending for child welfare and over \$10 billion in combined federal, state and local government spending (CASA 1999, 2001).

The close association of parental alcohol abuse and the maltreatment of children suggests that alcohol control policies can play a tremendous role in improving the lives of abused children. In this paper, we examine the relationship between alcohol control policies and the most severe cases of child abuse—those resulting in the child’s removal from the home and placement into child protective services. Specifically, we estimate the propensity for alcohol-related policies to influence rates of entry into foster care and the length of time spent in foster care.

This research has implications for not only the current situation of these children, but for their future success as well. Research has linked abuse during childhood to adverse outcomes such as delinquency and poor mental and physical health, which in turn have implications for labor market outcomes later in life (Widom 1989; Felitti et al. 1998; Smith et al. 2005; Tekin and Markowitz 2008).

The link between excessive alcohol consumption or alcohol abuse and child abuse, which has been found in many studies, does not necessarily imply causality from the former behavior to the latter. It is possible that variations in one or more unobserved “third variables” may cause these behaviors to vary in the same direction (see Markowitz 2000 for a discussion of the causality issue as it relates to domestic violence). Nevertheless, the studies showing a high prevalence of alcohol abuse and dependency among parents of abused children provide the motivating context for this study. Estimates of alcoholism among parents of abused children range from 38 percent to 69 percent (Behling 1979; Famularo et al. 1986). Studies find that parents of abused or neglected children have much higher reported substance use than nonabusive parents. For example, Kelleher et al. (1994) control for some possibly confounding variables and find that parents of abused (neglected) children are 2.7 (4.1) times more likely to

have a substance abuse problem than other parents. DeBellis et al. (2001) also show a higher incidence of alcohol and/or substance abuse or dependence disorders among parents of maltreated children as compared to sociodemographically similar parents of non-maltreated children.

In substantiated cases of child abuse and neglect, one-third to two-thirds are believed to involve parental alcohol abuse or abuse of other drugs, although estimates go as high as 97 percent (USDHHS 1999; CASA 1999). Alcohol is the primary culprit in these reports. One report found that alcohol was involved in 77 percent of cases and was more harmful than drugs (cocaine, primarily) in 64 percent of the cases (USDHHS 1999).

The most severely maltreated children may end up removed from the home and placed in foster care. Sixteen percent of families with a substantiated case of child abuse have the child removed to foster care (USDHHS 1998). Among foster care children, research has shown that children coming from families with substance abuse problems remain in foster care longer than other children and are more likely to enter the system multiple times (Frame et al. 2000; Frame 2002). These children are also more likely to be neglected than abused (Walker et al. 1994).

The effectiveness of alcohol control policies in improving the lives of children is an understudied area in the disciplines of economics and public policy. Previous research approaches the study of the alcohol-violence relationship using the large body of economic literature on the demand for alcohol (see Grossman 2005 for a survey of this literature). This literature demonstrates that alcohol consumption and excessive consumption are inversely related to the price of alcohol and to measures of its availability. The latter variables include the minimum legal drinking age, the number and types of outlets that are permitted to sell alcohol,

and statutes pertaining to alcohol advertising and server liability. Based on this literature and on the well documented relationship between alcohol and domestic violence, Markowitz and Grossman (1998, 2000) and Markowitz et al. (2010) show that higher alcohol prices and restricted availability are effective in reducing the incidence of child abuse.

Markowitz and Grossman (1998) uses data from the 1976 National Family Violence Survey to estimate models in which the incidence of child abuse is affected by the state excise tax rate on beer, illegal drug prices, marijuana decriminalization, laws restricting alcohol advertising, the per capita number of outlets licensed to sell alcohol, and demographic and socioeconomic characteristics of parents. Violence measures are collected in the survey by use of the Conflict Tactic Scale (CTS). The CTS gathers information on the number of times in the past year a parent has committed a violent act by first asking questions about verbal solutions to disagreements and building up to questions on the occurrence of violent acts. Results from this study show that increasing the tax on beer can be an effective policy tool in reducing violence. The findings imply that a 10 percent increase in the tax on beer would reduce the probability of severe violence by 2.3 percent and the probability of any degree of violence by 1.2 percent. The estimates suggest that a 10 percent hike in the beer tax would have lowered the number of severely abused children by about 132,000 in 1975. Markowitz and Grossman also find that laws designed to make obtaining beer more difficult also may be effective in reducing violence. These laws include “dry” county laws, laws prohibiting beer sales in grocery stores, and liquor outlet densities. However, restrictions in advertising and increases in illegal drug prices have no effects on child abuse.

In a follow-up study on child abuse, Markowitz and Grossman (2000) pool data from the 1985 and 1976 National Family Violence Surveys to establish two important results. First,

violent acts against children committed by females are much more responsive to beer taxes than similar acts committed by males. One explanation of this finding is that alcohol consumption by females is more sensitive to the price of alcohol than alcohol consumption by males. Second, by pooling the two surveys with a set of state dummies, the authors establish that the negative tax effects for females are not due to unobserved state factors. In particular, the magnitude of these effects are largely unaffected by the inclusion of the state dummies.

In a more recent paper, using data from 1994 to 2004, Markowitz et al. (2010) focus on an objective measure of child maltreatment as opposed to parental reports. These data capture the most severe cases – cases that are serious enough to warrant investigation by child protection services. The results show that higher taxes and prices of beer, liquor, and ethanol are negatively related to maltreatment rates and child fatalities. Restrictions on alcohol in the form of fewer licensed outlets per capita, are also associated with improvements in child welfare.

Freisthler (2004) and Freisthler et al. (2005) examine the relationship between alcohol outlet densities and rates of child abuse. These papers both find that areas in California with higher densities of alcohol outlets also have higher rates of child maltreatment. The results of these studies must be interpreted with caution as it is impossible to know whether the abusers are choosing to locate in areas with high-density outlets or whether the availability of alcohol contributes to the abuse.

Economists have also examined other determinants of child abuse using the state-level panel data used in this paper. For example, Paxson and Waldfogel (2002) examine the ways in which children are affected by the economic circumstances of the parents. Bitler and Zavodny

(2004) and Seiglie (2004) also examine state-level panels of child abuse and neglect, with a focus on the effects of abortion restrictions in reducing child maltreatment.

This current paper expands on the previous literature by examining the effectiveness of policy on the most severe cases of child abuse—those resulting in the child’s removal from the home and placement into child protective services. While previous research has shown children coming from families with substance abuse problems remain in foster care longer than other children and are more likely to enter the system multiple times, it is not clear whether stricter alcohol control policies can alter these outcomes. It is possible the relationship between alcohol and foster care entry may reflect other unobserved factors about the family’s life, rather than be a true causal relationship. As we discuss below, estimating the reduced form equation, which directly links the policies to the outcomes, will help shed light on the nature of the relationship between alcohol consumption and child abuse.

2. Analytical Framework

The framework for this project involves two well-established relationships: the relationship between alcohol consumption and the maltreatment of children, and the negative relationship between alcohol consumption and the full price of alcohol. If a parent’s alcohol consumption leads to an increased risk for child maltreatment, then following the law of demand, an increase in the price of alcohol should reduce consumption and thereby reduce the risk of maltreatment. The “reduced form” equation directly relates alcohol prices and policies to the outcome of interests, entry into foster care and the duration of foster care placement. This strategy has been used extensively in the economics literature to study the role of alcohol

policies in reducing the negative outcomes associated with consumption (Cook and Moore 1993; Markowitz and Grossman 1998, 2000; Dee 2001; Chesson et al. 2000; Markowitz et al. 2003).

We seek to answer two main questions in this paper: 1) are higher alcohol prices and reduced availability effective in reducing entry into the foster care system, and 2) are strict alcohol control policies effective in reducing duration in foster care, once a child is placed in the system.

We begin with an analysis of entry rates into foster care. The empirical equation is as follows:

$$(1) \quad \text{Ln}(F_{jt}) = \alpha_0 + \alpha_1 P_{jt} + \alpha_2 X_{jt} + \alpha_3 \lambda_j + \alpha_4 \tau_t + \varepsilon_{jt}$$

Equation (1) shows the determinants of foster care entry rates (F) for state j in time t (quarters from 1998-2004). The vector P represents the full price of alcohol, which will be measured with alcohol prices and the number of licensed outlets per capita. The model includes variables designed to capture observed characteristics of the state (X) as described below. In addition, state dummies (λ) will capture unobserved time-invariant state-level effects which may influence entry rates. Time dummies (τ) will capture secular trends. Because of skewness in these data, we analyze the log of the entry rates. We estimate the rates with Weighted Least Squares (WLS) with the population of children as the weight, and adjust the standard errors for unknown heteroskedasticity and within-state cluster correlation (Bertrand et al. 2004). A negative binomial regression count model is used where the rates contain a large proportion of zeros. These models are also adjusted for population and within-state cluster correlations.

Second, we use hazard models in order to estimate the effect of the full price of alcohol on the duration of time spent in foster care. To do so, we divide time into three-month intervals

(quarters), indexed by t . We observe foster care spells from 1998 to 2004 giving us a total of 28 quarters of observation. The discrete time hazard rate is the probability that a child leaves foster care in period t , conditional on staying in foster care up to this period. To estimate this model we chose a complementary log-log (extreme value) specification. The complementary log-log model is

$$(2) \quad h_{i,t} = 1 - \exp\{-\exp[\theta(t) + \beta'P_{jt} + \gamma X_{jt} + \lambda_j]\} \Leftrightarrow$$

$$\log[-\log(1-h_{i,t})] = \theta(t) + \beta'X_{i,t}$$

where $P_{i,t}$, $X_{i,t}$ and λ_j are the fixed and time-varying characteristics, β and γ are coefficient vectors and $\theta(t)$ represents the parameterization of the baseline hazard. In the duration models X includes individual characteristics, age at entry into foster care, gender, race, ethnicity and whether or not the child had a disability, along with the state characteristics. We chose a flexible form for the baseline hazard using indicators for each quarter.

3. Data

Data on foster care entrants come from the Adoption and Foster Care Analysis and Reporting System (AFCARS). This is a federal data collection system that collects event level information for all children removed from their parents and placed in foster care, including the date of foster care entry and exit for each child, information on the child's demographics, disabilities, reasons for removal, and foster care case goals.

Entry rates

The AFCARS data is used to create counts of the number of children entering foster care

every quarter. Termed “removals,” this count includes new entrants into the foster care system along with children who previously have been in foster care and are re-entering in the current year/quarter. We focus on entrants rather than the total number in care so that we can more closely match the alcohol variables to the date of the abuse and subsequent removal from the home.

One advantage of the AFCARS data is that the reason for removal is reported for each case. We use this information to create an additional dependent variable of the number of children removed because of an alcohol abusing parent. In this data, alcohol abuse is defined as “the principal caretaker’s compulsive use of alcohol that is not of a temporary nature” (National Data Archive on Child Abuse and Neglect 2002). Since not all cases of abuse are alcohol-related, this second dependent variable will identify the group of parents who are known to regularly consume alcohol. The drinking behaviors of all adults are potentially affected by changes in the full price of alcohol, however, the determinants of the decision to drink may be very different from the determinants of quantity among the heaviest drinkers. This dependent variable therefore will allow us to isolate the effects of alcohol policies on behaviors of alcohol abusers. Note that this variable is not our primary focus because of the potential for alcohol to be a distal or indirect cause of abuse when it is not recorded as the immediate cause.

Next, we employ as a dependent variable the number of children removed because of the child’s alcohol problem. This is a relevant outcome because youth alcohol consumption is influenced by alcohol control policies (Grossman et al. 1998; Nair et al. 2001) and because children of parents who abuse alcohol may be more likely to abuse it themselves (Grant 1998; Otten et al. 2008).

The foster care removal data are available beginning in 1995; however, most states did not begin reporting until 1998, so this is the first year of our panel. In 1998, all but 8 states provided annual foster care data. In 1999, Nevada was the only state not to provide data and by 2000, all states reported. Our data collection ends in 2004.¹ Fewer observations are available for counts of removals due to child or parent alcohol abuse because many states did not begin reporting until later years of the data. The states of Alaska, Illinois, New York, and Wyoming never reported child or parent alcohol abuse as the primary reason for removal. These states are excluded from the analyses when removals due to child or parent alcohol abuse are the dependent variables.

Descriptive statistics for all variables are shown in Table 1. As can be seen from this table, entry into foster care entry is fairly common. Average quarterly counts for the number of foster care entries range from 110 to 15,421 with a mean quarterly rate of 1.4 entries per 1,000 children. Entry rates as a result of alcohol abuse are much less common with mean quarterly rates of 0.14 and 0.02 per 1,000 children for parent and child alcohol abuse, respectively. Entry counts from parental alcohol abuse ranges from 0 to 1,752. Zeros occur twelve times in this data, accounting for 1 percent of the observations.² Zeros are much more common in the entry rates for child alcohol abuse, accounting for 13 percent of the sample. Because of the large number of zeros and the small range of values here, we use a negative binomial count regression model to estimate these counts.

¹ The liquor price series collection by ACCRA ends in 2004. Also, the variation in alcohol taxes (which is a source of variation for price) is very limited after this date as no state changed its beer tax change between 2004 and 2008.

² Zeros are replaced with a value of 0.5 before taking logs. Negative binomial count models were tested with the zeros included. Results for are very similar to WLS models.

Length of stay

For the duration analysis, we include only the first entry observed into foster care. Note that some children are never reunited with a parent, for instance, if the parent died or is in prison. Because the AFCARS data identify the case goal for each child and we are able to select only those children for whom the goal is reunification with parents. For other children, whose goals are emancipation, adoption or similar, administrative and legal proceeding may be more salient in determining length of stay than alcohol policies. These are excluded. When reunification is possible, alcohol control policies may be a relevant determinant of length of stay if the policies have influence on adult drinking behavior. For each child duration is measured in calendar quarters in order to match our alcohol control variables.

As with the entry rates, we use the information on reason for removal to analyze durations among only those children who were removed because of an alcohol abusing parent or because the child was abusing alcohol. Table 1 shows the average duration of a foster care stay is 10.3 quarters for all children, 10.8 quarters for children of alcohol abusing parents, and 9.1 quarters for children who were removed for abusing alcohol.

Alcohol Price and Availability

Average retail prices that are inclusive of state and federal taxes for beer, wine, and liquor are published quarterly by ACCRA in the *Inter-City Cost of Living Index* for between 250 and 300 cities across the United States. The liquor price is for a .75l bottle of J&B Scotch, the wine price is for a 1.5l bottle of Livingston Cellers or Gallo Chablis Blanc, and the beer price

reported is for a six pack of Budweiser or Miller Light (through 1999) and Heineken thereafter. We generate state average annual prices by using a population weighted average of the city prices present in each state. All prices are deflated by the CPI and the ACCRA cost of living index. We have also adjusted the beer price data for the brand change.

The ACCRA price data have some limitations. Young and Bielinska-Kwapisz (2003) discuss the potential measurement error contained in the price series, stemming in part from the data collection process and the focus on urban areas. Ruhm et al. (2011) also cite issues with the lack of representativeness of the beverage prices, which can be particularly erroneous when consumers substitute from higher to lower price alcoholic beverages. To avoid these issues, many researchers use alcohol taxes instead of prices or instrument for prices using taxes. Unfortunately, during our sample time frame, only seven states raised their beer and wine taxes, and six changed the liquor tax. There is simply not enough variation in these taxes to identify the effects of taxes on price or the foster care outcomes. Ruhm et al. (2011) recommend using Uniform Product Code scanner data prices. In their paper, they find that the ACCRA prices are overstated compared to alcoholic beverages sold in grocery stores. In their analysis, however, they necessarily omit states where alcohol is not sold in grocery stores, which limits the number of states analyzed.

At present, the ACCRA prices are the best option available to us. While the price level may be overstated, our estimation relies on changes in the prices, not the level per se, and Young and Bielinska-Kwapisz (2002) find the ACCRA prices track national trends very well. The ACCRA price differences will be driven by primarily by changes in factors such as transportation costs, distribution costs and the competitive environment, with tax changes as a minor portion of the price (Young and Bielinska-Kwapisz, 2002). In addition, the focus on

urban area prices may not be problematic for a study of foster care. For example, Malm et al. (2011) show that 75 percent of children adopted from foster care are from urban or suburban areas.

The beer, wine, and liquor prices are too highly correlated to include in the same regression, so the models presented in the tables below include each price separately. In addition, we use a summary measure representing the price of an ounce of pure ethanol. This price is generated by computing the price on an ounce of ethanol in each beverage and then averaging, using the fractions of total ethanol consumption accounted for by beer, wine, liquor, respectively as weights. These weights are fixed over time and are averages for the U.S. as whole during our sample period.

The availability of alcohol is an important component of the full price, so all models include the number of retail outlets per 100,000 population that are licensed to sell liquor for on-premise or off-premise consumption. These data come from *Jobson's Liquor Handbook*. With larger percentages of populations living in dry counties or with fewer outlets available, travel time to obtain alcohol increases, adding to the full price of alcohol. If alcohol consumption contributes to child maltreatment, then it is expected that policies which make obtaining alcohol more costly will reduce the incidence of maltreatment.³

Equations 1 and 2 also include state characteristics which may help determine child abuse rates. In all models we will include the female labor force participation rate, the unemployment

³ The percent of a state's population living in dry counties is another potential availability measure. This variable was tested in the models but suffers from limited variation during our sample period and is therefore is not included. However, results suggest that areas with larger populations in dry areas have lower foster care entry rates. These are available upon request.

rate, real income per capita, the percentage of the population living in rural areas, and the percentage of the population 25 years and over that has obtained a bachelor's degree. The percentages of each state's population identifying with certain religions (Catholic, Protestant, Southern Baptist, Mormon) are included as well. All models also include state dummies to help to capture any unobserved time-invariant state effects which may influence child maltreatment and may be correlated with the alcohol control policies.

Lastly, we test specifications with total spending per child population on child welfare programs in the state. This spending represents total dollars from federal, state, and local sources. These data are available biennially from 1996-2004. We have interpolated the odd years from 1995-2003 using rates of growth. We include this variable to help account for the resources dedicated to each state's foster care systems since states with more resources may be more likely or able to remove children from their homes. It is possible that this variable is endogenous in that states with more need for child welfare programs may allocate more resources towards this activity. We tested models that exclude this variable and the results of the alcohol price and policy variables remain unchanged.

Entry rates

Table 2 shows the effects of alcohol taxes on the all-cause (columns 1-3) and the alcohol-related foster care entry rates (columns 4-6 for alcohol abusing parent, columns 7-9 for alcohol abusing child). Three models are shown for each outcome, each containing either the beer, wine or liquor price. Models were run using the derived ethanol price are not shown but the results are discussed in the text. All models in the tables also include the number of liquor outlets per

capita, the state characteristics, per capita total spending on child welfare, year indicators, quarter indicators and state fixed effects.

The results in Table 2 show that the coefficients on all the alcohol prices are statistically insignificant with the sign varying depending on the price and outcome under consideration. The same holds for the computed ethanol price. Liquor outlets also are not associated with changes in all-cause foster care entries or with parental alcohol abuse entry. However, more liquor outlets are statistically associated, at a 10 percent significance level, with an increase in foster care entries for the reason of child alcohol abuse. The coefficients here indicate that each additional outlet per capita is associated with an increase in foster care entries by 1.1 percent.

Only a few of the other include state-level variables explain the variation of entry rates into foster care. Higher rates of female labor force participation and a few of the religion variables are the only other control variables that are statistically associated with the all cause entry rate (at the 10 percent level). States with more highly educated populations and less rural populations are associated with fewer foster care entries due to alcohol abusing parents. However, none of these state level variables are associated with entry rates for alcohol abusing children.

Duration analyses

We first examine the nonparametric Kaplan Meier survivor function (Figure 1) examining the curves separately for individuals in states with high and low beer prices. In the first quarter, the empirical survivor function is obtained by calculating one minus the proportion who leave foster care. More generally, the survivor function each quarter is the product of one

minus the exit proportion, i.e., the proportion who leave foster care among those still in foster care in a given quarter, over the number of quarters to date. In Figure 1, states with high prices are those with prices at the 75th percentile or above, while states with low prices are those below the 25th percentile. As predicted, the higher line reflects the higher survivor rates for individuals in states with lower prices, meaning more individuals stay in foster care each quarter than in high price states. The lower line represents the quarterly survivor estimate in states with higher prices. The figures also illustrate that the exit rates are high initially and fall rapidly during the first few quarters. In the figure, the overall trends appear to be proportional in high and low price states although the differences decline over time.

The effects of the determinants of foster care duration are reported in Table 3 with the set-up similar to that of Table 2. Table 3 shows the hazard ratios and t-statistics associated with the coefficients. Values of hazard ratios greater than one indicate that the covariate increases the exit probability and, therefore, decreases the time to leaving foster care, while values less than one increase the time to exit.

We find higher beer prices are associated with faster exit times for all three causes but the effect is statistically significant only for the all cause model and for alcohol abusing children. Wine prices also have a positive effect, but here the effect is statistically significant only for the alcohol abuse parent models. In other words, our analysis provides some evidence that once children have been removed from the home, individuals become more responsive to alcohol prices and, thus, children are able to exit foster care more quickly. The liquor price has a contradictory negative effect in two of the models. It is not clear why this would occur, but we note that the magnitude of the effect is small. In addition, liquor outlets are associated with lower hazard rates in the all cause models indicating that more licensed outlets are associated

with a slower exit time and a longer time in foster care. The effect of ethanol is not statistically significant in any of the models.

In terms of demographic variables, males have lower hazard rates, except among children who abuse alcohol where results are the reverse. Hispanics and blacks have lower hazard rates (longer lengths of stay) and these results are statistically significant across all specifications at the 10 percent level or better. Having a disability works in a similar direction with lower hazard rates for children with disabilities. In contrast, older children have higher hazard rates, but of course they may age out of the system more quickly.

6. Conclusions

This paper seeks to evaluate whether strict alcohol control policies can be effective in reducing the maltreatment of children as measured by entry into foster care and the duration of stay in care. We consider the prices of beer, wine, and liquor and a composite price for pure ethanol. To represent the availability of alcohol, we include the per capita number of outlets licensed to sell liquor.

We first examine the determinants of entry into foster care, but find that higher prices of beer, wine, liquor, and ethanol are not effective in reducing these entry rates. However, once in foster care, the duration of stay may be shortened with higher prices. That is, increases in alcohol prices, which can be achieved through increased excise taxes, appear to have some ability to alter duration once in care.

We estimate a hazard ratio of 1.16 for beer in the all-cause models, but a one unit increase would be a significant increase over the mean beer price of \$2.62. As an alternative we estimated the predicted survival after one year if the beer tax were increased by 25 cents. The predicted mean survival is 75.6 percent at one year, but drops to 53.6 percent with a 25 cent increase in the beer tax, holding all other variables at their mean values. For wine taxes, in cases with an alcohol abusing parent, the predicted mean survival at one year drops by less than one percentage point from 78.6 percent to 78.1 percent with a 25 cent increase in the wine tax.

We also find limited evidence that the availability of alcohol as measured through outlets will be helpful in improving the lives of children. We do find that fewer outlets are associated with reduced foster care entry rates alcohol abusing children, but not for entry from other reasons. We also find that fewer outlets licensed to sell liquor are associated with reductions in the duration of time in foster care for all causes, but again, this result is challenged by the lack of effectiveness where we would expect to find stronger results, in the alcohol abuse models. The effectiveness of restrictions on alcohol outlets to reduced foster care entry and duration is limited at best.

One conclusion that can be drawn from these results is that the factors that determine the entry into foster care are very different from those that determine the length of time in foster care. In the case of the initial removal, it is possible that those who abuse alcohol are heavy consumers and are relatively price insensitive. This would explain why we do not see any effects of higher prices on entry rates. Research by Manning et al. (1995) confirms very inelastic demand among heavy users. However, once the child is in foster care, adults may have the motive to change behavior and higher alcohol prices may facilitate decreased consumption and promote reunification with the child.

References

- Behling, D. "Alcohol Abuse Encountered in 51 Instances of Reported Child Abuse." *Clinical Pediatrics* 18:1, 1979, 87-91.
- Bertrand, Marianne; Duflo, Esther and Mullainathan, Sendhil. "How Much Should We Trust Differences-in-Differences Estimates?" *Quarterly Journal of Economics*, February 2004, 119(1), pp. 249-75.
- Bitler, MP and M Zavodny. "Child Maltreatment, Abortion Availability, and Economic Conditions." *Review of Economics of the Household* 2:2, 2004, 119-141.
- Bloomberg, CD. "Drinkers Vote Wine Gains Over Beer In U.S.; Beer Still Leads In State" *Pittsburgh Post-Gazette*, September 8, 2005, F-2.
- Center on Addiction and Substance Abuse. *No Safe Haven: Children of Substance-Abusing Parents*. New York: Center on Addiction and Substance Abuse, 1999.
- Center on Addiction and Substance Abuse. *Shoveling Up: The Impact of Substance Abuse on State Budgets*. New York: Center on Addiction and Substance Abuse, 2001.
- Chesson H, P Harrison, and WJ Kessler (2000). "Sex Under the Influence: The Effect of Alcohol Policy on Sexually Transmitted Disease Rates in the U.S." *Journal of Law and Economics* 43:1, 215-238.
- Children of Alcoholics Foundation. *Helping Children Affected by Parental Addiction and Family Violence: Collaboration, Coordination, and Cooperation*. New York: Children of Alcoholics Foundation, 1996.
- Cook, PJ and MJ Moore. "Economic Perspectives on Reducing Alcohol-Related Violence." In *Alcohol and Interpersonal Violence: Fostering Multidisciplinary Perspectives*, edited by SE Martin. National Institute on Alcohol Abuse and Alcoholism Research Monograph 24. NIH Publication No. 93-3469. Washington, DC: U.S. Government Printing Office, 1993, 193-211.
- Cook, PJ and G Tauchen. "The Effect of Liquor Taxes on Heavy Drinking." *Bell Journal of Economics* 13:2, 1982, 379-390.
- Cook, PJ, J Ostermann, and F Sloan. "Are Alcohol Excise Taxes Good for Us? Short and Long-Term Effects on Mortality Rates." National Bureau of Economic Research Working Paper No. 11138, February 2005.

- DeBellis, MD, ER Broussard, DJ Herring, S Wexler, G Moritz, and JG Benitez. "Psychiatric Co-morbidity in Caregivers and Children Involved in Maltreatment: A Pilot Research Study with Policy Implications." *Child Abuse & Neglect* 25:7, 2001, 923-944.
- Dee, TD. "Does Setting Limits Save Lives? The Case of 0.08 BAC Laws." *Journal of Policy Analysis and Management* 20:1, 2001, 111-128.
- Famularo, RKS, R Barnum, and R Wharton. "Alcoholism and Severe Child Maltreatment." *American Journal of Orthopsychiatry* 56:3, 1986, 481-485,
- Felitti, V, R Anda, D Nordenberg, D Williamson, A Spitz, V Edwards M Koss, and J Marks. "Relationship of Childhood Abuse and Household Dysfunction to Many of the Leading Causes of Death in Adults: The Adverse Childhood Experiences (ACE) Study." *American Journal of Preventive Medicine* 14:2, 1998, 245-50.
- Frame, L. "Maltreatment Reports and Placement Outcomes for Infants and Toddlers in Out-Of-Home Care." *Infant Mental Health Journal* 23:5, 2002, 517-540.
- Frame, L, JD Berrick, and ML Brodowski "Understanding Reentry to Out-of-Home Care for Reunified Infants." *Child Welfare* 79:4, 2000, 339-359.
- Freisthler, B. "A Spatial Analysis of Social Disorganization, Alcohol Access, and Rates of Child Maltreatment in Neighborhoods." *Children & Youth Services Review* 26:9, 2004, 803-819.
- Freisthler, B, B Needell, and PJ Gruenwald. "Is the Physical Availability of Alcohol and Illicit Drugs Related to Neighborhood Rates of Child Maltreatment?" *Child Abuse & Neglect* 29:9, 2005, 1049-1060.
- Grant, Bridget F. "The Impact of a Family History of Alcoholism on the Relationship Between Age at Onset of Alcohol Use and DSM-IV Alcohol Dependence: Results From the National Longitudinal Alcohol Epidemiologic Survey." *Alcohol Health & Research World*, 22:2, 1998, 144-148.
- Grossman, M. "Individual Behaviors and Substance Use: The Role of Price." In *Substance Use: Individual Behavior, Social Interaction, Markets and Politics*, edited by B Lindgren and M Grossman. Volume 16 of *Advances in Health Economics and Health Services Research*. Amsterdam: JAI, an imprint of Elsevier Ltd., 2005, 15-39.
- Grossman, M, FJ Chaloupka, and I Sirtalan "An Empirical Analysis of Alcohol Addiction: Results from the Monitoring the Future Panels." *Economic Inquiry* 36:1, 1998, 39-48.
- Kelleher, KM, J Chaffin, J Hollenberg, and E Fisher. "Alcohol and Drug Disorders among Physically Abusive and Neglectful Parents in a Community-Based Sample." *American Journal of Public Health* 84:10, 1994, 1586-1590.

- Manning WG, Blumberg L, Moulton LH. (1995), "The Demand for Alcohol: the Differential Response to Price", *Journal of Health Economics*, 14(2): 123-48.
- Markowitz, S. "The Price of Alcohol, Wife Abuse and Husband Abuse." *Southern Economic Journal* 67:2, 2000, 279-303.
- Markowitz, S and M Grossman. "Alcohol Regulation and Domestic Violence Towards Children." *Contemporary Economic Policy* 16:3, 1998, 309-320.
- Markowitz, S and M Grossman. "The Effects of Beer Taxes on Physical Child Abuse." *Journal of Health Economics* 19:2, 2000, 271-282.
- Markowitz, S, M Grossman, and R Conrad. "Alcohol Policies and Child Maltreatment." in *Contributions to Economic Analysis, Volume 290, Current Issues in Health Economics*, edited by Daniel Slottje and Rusty Tchernis, Emerald Group Publishing Limited, 2010, p 17-35.
- Markowitz, S, P Chatterji, and R Kaestner. "Estimating the Impact of Alcohol Policies on Youth Suicide." *Journal of Mental Health Policy and Economics* 6:1, 2003, 37-46.
- Malm, Karin, Sharon Vandivere, and Amy McKlindon. "Children Adopted from Foster Care: Child and Family Characteristics, Adoption Motivation, and Well-Being." Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services, Washington, DC, May 2011.
- Nair, Rima, Michael Grossman and Henry Saffer. "Gender and Race Differences in Youth Alcohol Demand." In *Economic analysis of substance use and abuse: The experience of developed countries and lessons for developing countries*. Grossman, Michael. Hsieh, Chee-Ruey, eds., Edward Elgar Publishing Limited: Cheltenham, UK and Northampton, MA, 2001, 391-411.
- National Data Archive on Child Abuse and Neglect. *Adoption and Foster Care Analysis and Reporting System (AFCARS) User's Guide and Codebook for Fiscal Year 2000 to Present*. Ithaca, NY: Family Life Development Center, College of Human Ecology, Cornell University, 2002.
- Office of Applied Studies, Substance Abuse and Mental Health Services Administration. *The NHSDA Report, Children Living with Substance-Abusing or Substance-Dependent Parents*. Washington, DC: U.S. Government Printing Office, 2003.
- Otten, Roy; Van Der Zwaluw, Carmen S.; Van Der Vorst, Haske; Engels, Rutger C. M. E. "Partner Effects and Bidirectional Parent-Child Effects in Family Alcohol Use." *European Addiction Research*, 14:2, 2008, 106-112.
- Paxson, C and J Waldfogel. "Work, Welfare, and Child Maltreatment." *Journal of Labor Economics* 20:3, 2002, 435-474.

- Puttler, LI, RA Zucker, HE Fitzgerald, and CR Bingham. "Behavioral Outcomes among COAs during the Early and Middle Childhood Years: Familial Subtype Variations." *Alcoholism: Clinical and Experimental Research* 22:9, 1998, 1962-1972.
- Ruhm, Christopher J., Alison Snow Jones, William C. Kerr, et al. "What U.S. Data Should Be Used To Measure The Price Elasticity Of Demand For Alcohol?" NBER Working Paper No. 17578. November 2011.
- Saffer, H. "Alcohol Advertising Bans and Alcohol Abuse: An International Perspective." *Journal of Health Economics* 10:1 1991, 65-79.
- Seiglie, C. "Understanding Child Outcomes: An Application to Child Abuse and Neglect ." *Review of Economics of the Household* 2:2, 2004, 143-160.
- Smith, CA, TO Ireland, and TP Thornberry. "Adolescent Maltreatment and its Impact on Young Adult Antisocial Behavior." *Child Abuse & Neglect* 29:10, 2005,1099-1119.
- Tekin, E and S Markowitz. "The Relationship Between Suicidal Behavior and Productive Activities of Young Adults." *Southern Economic Journal*, 75:2 (October 2008) 300-331.
- U.S. Department of Health and Human Services, Children's Bureau. *Child Maltreatment 1996: Reports from the States to the National Child Abuse and Neglect Data System*. Washington, DC: U.S. Government Printing Office, 1998.
- U.S. Department of Health and Human Services, Administration for Children and Families, Substance Abuse and Mental Health Services Administration, and Office of the Assistant Secretary for Planning and Evaluation. *Blending Perspectives and Building Common Ground. A Report to Congress on Substance Abuse and Child Protection*. Washington, DC: U.S. Government Printing Office, 1999.
- Walker, C, P Zangrillo, and J Smith. "Parental Abuse and African American Children in Foster Care." In *Child Welfare Research Review*, edited by R. Barth, J Berrick, and N Gilbert. New York: Columbia University Press, 1994, 109-122.
- Widom, CS. "The Cycle of Violence" *Science*. 244:4910, 1989, 160-166.
- Young DJ, Bielinska-Kwapisz A. "Alcohol Taxes and Beverage Prices." *National Tax Journal*, March 2002, 57-73.
- Young DJ, Bielinska-Kwapisz A. "Alcohol Consumption, Beverage Prices and Measurement Error." *Journal of Studies on Alcohol*, 2003, 64(2): 235-8.

Figure 1

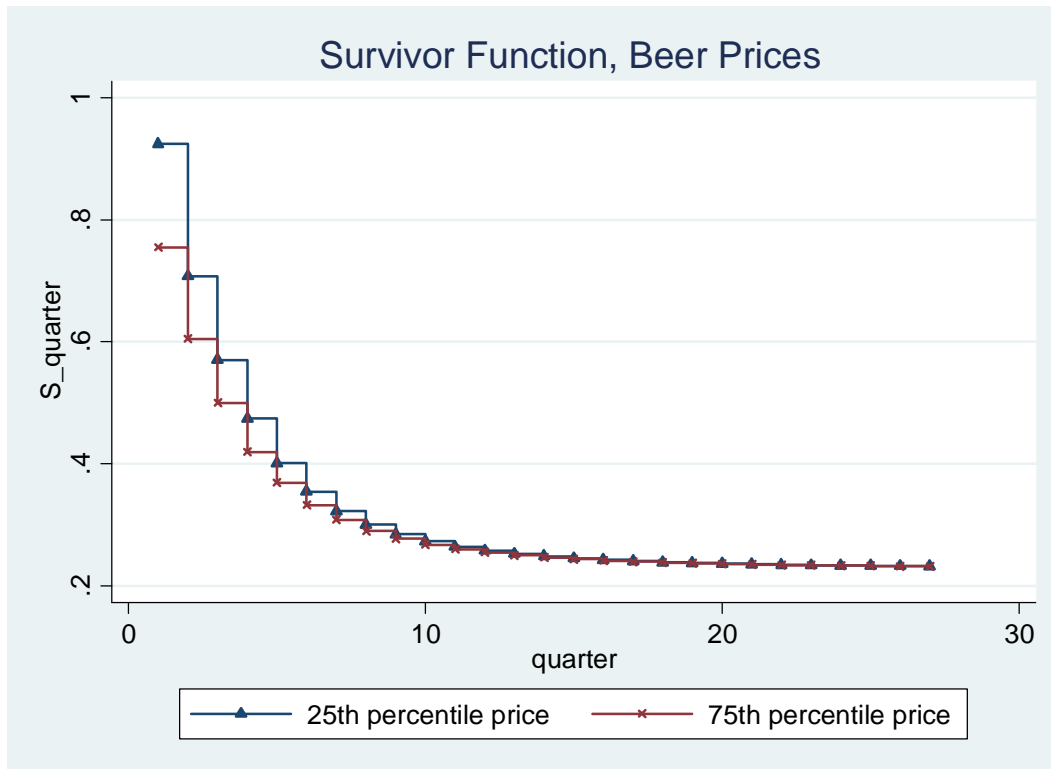


Table 1: Summary Statistics

	Quarterly, 1998-2004 (N=1,341)			
	Mean	Std. Dev	Min	Max
Foster care entries count	1776.13	2177.36	110.00	15412.00
Foster care entries rate per 1,000 children	1.40	0.71	0.35	7.25
FC entry, parent alcohol abuse count	157.79	253.97	0	1752.00
FC entry, parent alcohol abuse per 1,000 children	0.14	0.24	0	2.12
FC entry, child alcohol abuse count	26.06	49.27	0	554.00
FC entry, child alcohol abuse per 1,000 children	0.02	0.04	0	0.41
Length of time (quarters) in foster care, all causes	10.26	8.16	1	27
Beer price	2.62	0.29	1.67	3.42
Wine price	3.30	0.49	1.93	4.52
Liquor price	11.53	1.46	7.11	15.36
Ethanol price	0.82	0.10	0.50	1.06
Liquor outlets per 100,000 state population	124.70	62.41	13.27	398.14
Child welfare spending per child population	288.84	236.09	60.35	2099.27
College education	25.78	5.11	15.30	46.40
Female labor force participation rate	61.20	4.26	47.70	71.20
Real income (in \$1,000s)	16.51	2.66	11.99	27.58
Unemployment	4.78	1.20	2.20	8.80
Percent rural	27.66	15.13	0	62.90
Mormon	2.97	9.69	0.09	67.21
Southern Baptist	6.89	9.47	0.11	32.47
Catholic	19.84	12.21	3.13	53.72

Protestant	18.45	8.67	2.82	44.68
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Person Level (N=462,923)

	Mean	Std. Dev	Min	Max
Number of quarters in foster care	10.26	8.16	1	27
Number of quarters in foster care, alc abusing parent	10.81	8.12	1	27
Number of quarters in foster care, alc abusing child	9.07	8.06	1	27
Male	0.52	0.50	0	1
Hispanic	0.14	0.35	0	1
Ethnicity missing	0.13	0.34	0	1
Black	0.25	0.43	0	1
Race missing	0.18	0.38	0	1
Age at entry	7.75	5.58	0	18
Disability	0.14	0.35	0	1
Disability missing	0.08	0.26	0	1

Note: All monetary variables expressed in real (1982-1984) dollars.

Table 2
Foster Care Entry Rates

	All Cause			Parent Alcohol Abuse			Child Alcohol Abuse		
	Beer	Wine	Liquor	Beer	Wine	Liquor	Beer	Wine	Liquor
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Beer price	0.018			0.058			-0.144		
	(0.19)			(0.25)			(-0.41)		
Wine price		-0.079			0.006			-0.124	
		(-1.64)			(0.05)			(-0.65)	
Liquor price			-0.011			-0.057			-0.095
			(-0.39)			(-1.22)			(-1.24)
Liquor outlets	-0.001	-0.001	-0.001	0.001	0.001	0.002	0.011	0.011	0.011
	(-0.98)	(-0.93)	(-0.97)	(0.63)	(0.64)	(0.70)	(1.92)	(1.94)	(1.94)
Child welfare spending	0.0004	0.0004	0.0004	0.001	0.001	0.001	0.001	0.001	0.001
	(1.17)	(1.42)	(1.23)	(1.34)	(1.39)	(1.45)	(1.02)	(1.07)	(1.03)
College education	0.011	0.010	0.011	-0.043	-0.044	-0.044	-0.012	-0.012	-0.010

	(0.83)	(0.72)	(0.86)	(-2.07)	(-2.04)	(-2.14)	(-0.37)	(-0.36)	(-0.31)
Female LFP	0.024	0.026	0.025	0.006	0.006	0.009	0.053	0.053	0.054
	(1.73)	(1.93)	(1.88)	(0.21)	(0.22)	(0.30)	(1.52)	(1.51)	(1.57)
Real income	0.049	0.047	0.047	-0.113	-0.115	-0.119	-0.142	-0.143	-0.154
	(0.91)	(0.91)	(0.92)	(-0.87)	(-0.88)	(-0.95)	(-1.06)	(-1.00)	(-1.07)
Unemployment	-0.009	-0.008	-0.009	-0.023	-0.020	-0.024	-0.005	-0.007	-0.010
	(-0.37)	(-0.30)	(-0.33)	(-0.40)	(-0.35)	(-0.41)	(-0.05)	(-0.08)	(-0.11)
Percent rural	-0.009	-0.013	-0.011	0.145	0.148	0.136	0.195	0.188	0.176
	(-0.22)	(-0.30)	(-0.25)	(1.91)	(1.85)	(1.65)	(1.04)	(0.98)	(0.91)
Mormon	-0.114	-0.145	-0.117	0.015	0.012	-0.005	0.143	0.097	0.140
	(-1.00)	(-1.27)	(-1.05)	(0.12)	(0.09)	(-0.04)	(0.70)	(0.48)	(0.72)
Southern Baptist	-0.152	-0.161	-0.153	0.330	0.331	0.329	0.250	0.243	0.265
	(-1.76)	(-1.84)	(-1.77)	(1.34)	(1.34)	(1.36)	(0.77)	(0.75)	(0.83)
Catholic	0.014	0.012	0.011	-0.215	-0.217	-0.227	-0.073	-0.070	-0.074
	(0.41)	(0.38)	(0.32)	(-3.74)	(-3.65)	(-3.85)	(-0.64)	(-0.61)	(-0.64)
Protestant	-0.019	-0.020	-0.020	-0.161	-0.163	-0.170	0.138	0.137	0.135
	(-0.50)	(-0.54)	(-0.54)	(-2.00)	(-2.05)	(-2.20)	(1.08)	(1.09)	(1.08)

N	1228	1228	1228	1093	1093	1093	1084	1084	1084
Price elasticity	0.046	-0.261	-0.129	0.153	0.020	-0.660	-0.380	-0.411	-1.098

Note: t-statistics in parentheses and intercept not shown. All models include year, quarter and state fixed effects. Standard errors are clustered by state. Columns 1-6 are log-linear models estimated with weighted least squares. Columns 7-9 are estimated with negative binomial regression.

Table 3
Proportional Hazard Models

	All Cause			Parent Alcohol Abuse			Child Alcohol Abuse		
	Beer	Wine	Liquor	Beer	Wine	Liquor	Beer	Wine	Liquor
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Beer price	1.164			1.090			1.522		
	(6.33)			(1.08)			(2.52)		
Wine price		1.015			1.096			1.160	
		(0.96)			(1.81)			(1.36)	
Liquor price			0.989			1.008			0.919
			(-1.90)			(0.36)			(-1.67)
Liquor outlets	0.999	0.999	0.999	1.000	1.000	1.000	1.003	1.003	1.002
	(-6.00)	(-6.00)	(-6.00)	(-0.56)	(-0.44)	(-0.56)	(0.82)	(0.82)	(0.58)
Male	0.974	0.974	0.974	0.960	0.961	0.961	1.077	1.077	1.076
	(-5.16)	(-5.14)	(-5.16)	(-2.21)	(-2.20)	(-2.20)	(1.71)	(1.72)	(1.70)
Hispanic	0.955	0.954	0.954	0.948	0.948	0.949	0.882	0.877	0.875
	(-5.30)	(-5.39)	(-5.39)	(-1.68)	(-1.69)	(-1.67)	(-1.73)	(-1.81)	(-1.84)

Ethnicity missing	0.883	0.881	0.882	0.944	0.944	0.944	0.871	0.869	0.870
	(-13.55)	(-13.72)	(-13.63)	(-1.65)	(-1.67)	(-1.66)	(-1.55)	(-1.56)	(-1.55)
Black	0.887	0.887	0.887	0.816	0.815	0.816	0.579	0.574	0.571
	(-18.09)	(-18.20)	(-18.21)	(-7.79)	(-7.82)	(-7.80)	(-7.76)	(-7.92)	(-7.98)
Race missing	0.633	0.633	0.632	0.476	0.475	0.476	0.755	0.750	0.747
	(-50.22)	(-50.31)	(-50.35)	(-22.62)	(-22.61)	(-22.54)	(-3.77)	(-3.86)	(-3.91)
Age at entry	1.024	1.024	1.024	1.016	1.016	1.016	1.046	1.046	1.046
	(47.40)	(47.40)	(47.40)	(8.11)	(8.11)	(8.11)	(8.92)	(8.94)	(8.92)
Disability	0.836	0.836	0.836	0.808	0.808	0.808	0.909	0.911	0.910
	(-23.32)	(-23.32)	(-23.31)	(-7.74)	(-7.75)	(-7.74)	(-1.79)	(-1.76)	(-1.77)
Disability missing	0.864	0.868	0.868	0.874	0.871	0.876	0.743	0.757	0.760
	(-4.60)	(-4.45)	(-4.44)	(-1.30)	(-1.33)	(-1.27)	(-0.94)	(-0.89)	(-0.87)
Female LFP	0.943	0.945	0.945	0.949	0.949	0.949	1.018	1.018	1.027
	(-17.73)	(-17.27)	(-16.50)	(-4.40)	(-4.41)	(-4.34)	(0.64)	(0.62)	(0.93)
Unemployment	0.909	0.910	0.909	0.881	0.885	0.882	1.033	1.047	1.043
	(-20.72)	(-20.52)	(-20.67)	(-8.07)	(-7.75)	(-8.02)	(0.83)	(1.17)	(1.06)
Real income	0.803	0.801	0.798	0.695	0.701	0.692	0.931	0.940	0.903
	(-19.92)	(-20.01)	(-20.53)	(-8.64)	(-8.29)	(-8.73)	(-0.65)	(-0.55)	(-0.91)

Percent rural	1.036 (3.78)	1.039 (4.16)	1.036 (3.79)	1.130 (3.74)	1.132 (3.81)	1.129 (3.64)	0.995 (-0.06)	1.014 (0.18)	0.987 (-0.17)
College education	1.026 (10.44)	1.024 (9.48)	1.023 (9.28)	1.023 (2.43)	1.023 (2.43)	1.021 (2.26)	1.001 (0.05)	0.998 (-0.10)	0.998 (-0.11)
Mormon	1.270 (8.12)	1.260 (7.81)	1.256 (7.79)	1.317 (4.01)	1.359 (4.28)	1.309 (3.94)	1.315 (2.49)	1.364 (2.65)	1.276 (2.22)
Baptist	1.107 (5.26)	1.106 (5.19)	1.103 (5.07)	1.675 (6.17)	1.680 (6.21)	1.672 (6.15)	0.812 (-1.02)	0.829 (-0.92)	0.850 (-0.79)
Catholic	0.997 (-0.54)	0.988 (-2.20)	0.986 (-2.58)	0.812 (-8.05)	0.806 (-8.28)	0.810 (-8.18)	0.737 (-2.91)	0.727 (-3.03)	0.742 (-2.87)
Protestant	0.979 (-2.72)	0.975 (-3.31)	0.974 (-3.33)	0.786 (-7.11)	0.783 (-7.20)	0.786 (-7.11)	1.093 (1.18)	1.070 (0.89)	1.069 (0.89)
Child welfare spending	0.999 (-6.00)	0.999 (-7.00)	0.999 (-7.00)	0.998 (-6.00)	0.998 (-6.00)	0.998 (-6.00)	0.999 (-1.00)	0.999 (-1.33)	0.999 (-1.22)
N	4,645,973	4,645,973	4,645,973	413,860	413,860	413,860	47,980	47,980	47,980
L1	-5.90E+05	-5.90E+05	-5.90E+05	-4.80E+04	-4.80E+04	-4.80E+04	-7.60E+03	-7.60E+03	-7.60E+03

Note: Non-parametric baseline hazard; hazard ratios, t-statistics in parentheses. Models also include state and year/quarter fixed effects. There are 462,923 individuals in the cause models, 39,857 in the parent alcohol models and 5,434 in the child alcohol models.