Executive Summary

The Annual Economic Impact of Alcohol and Drug Use in Florida

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I. Summary

Alcohol and drug use (AAD) have pervasive detrimental effects at both individual and societal levels. Though individuals and their immediate families are certainly affected by AAD, entire neighborhoods and communities absorb consequences of AAD as well. Research has demonstrated a causal link between AAD and adverse events such as traffic collisions, illnesses, injuries, and crimes (Centers for Disease Control and Prevention, 2008). While the negative health and social consequences of AAD are documented, discourse on substance abuse continues to revolve around the clinical consequences of AAD. Research examining the economic costs of AAD through a societal framework is sparse and fragmented. Though few studies exist that estimate the costs of alcohol and drug use on a national level, research available on a state-specific level is very limited; to date, such an analysis has only been done for a handful of states (Rosen et al., 2008; Whelan, Josephson, & Holcombe, 2008).

This study analyzed the annual economic costs due to AAD in Florida, examining in detail the burden borne by public sectors, including but not limited to the healthcare system and the criminal justice system. Such an analysis is necessary to determine the extent of the problem and may aid policy-makers, researchers, and practitioners to oppose policies that are ineffective in curbing the societal consequences of AAD and supplant them with cost-effective strategies aimed at reducing both the clinical and societal effects of AAD.

Our analysis yields the following findings for Florida:

- The annual economic cost of AAD in Florida is estimated to be $43,766,641,733. This translates to approximately 6% of Florida's Gross Domestic Product. This means that over $83,000 is lost due to AAD annually in Florida.
- Over 9 billion drinks were consumed in Florida in one year. Among persons who drank, this translates into 88 drinks per person every month.
- 10,744 deaths occur annually due to AAD. This means that 1 person loses their life every hour consequent to alcohol and drug use.
- The annual economic cost of alcohol attributable adverse events is estimated to be $21,085,357,042. This means that over $40,000 is spent every minute consequent to alcohol use.
- The annual economic cost of drug use is estimated to be $22,681,284,691. This means that a little over $43,000 is lost every minute due to drug use.
- The total costs of AAD translate to a little over $2300 per person in Florida.

II. Detailed Findings

This study estimated the costs of alcohol and drug attributable adverse events. To estimate adverse events attributable to alcohol, four categories of harmful events were examined: illness, injury, crime, and traffic collisions. To estimate adverse events attributable to drug use, deaths due to drug toxicity, health conditions due to drug use, and crime costs due to drug use were examined. Methodology to isolate and estimate costs incurred by alcohol and drug use relied on pervious studies (Rosen et al., 2008; Harwood et al., 1998; Miller, Levy, Cohen & Cox, 2006a; Miller, Levy, Spicer, Taylor, 2006b; Miller, Cohen, Wiersema, 1996; Burd, 2008; Blincoe et al., 2002). Though specific methods differed, broadly, the total number of adverse incidents were multiplied by the appropriate attributable fraction and then by cost per case. All costs were updated to 2008 dollars.

Alcohol Attributable Costs

The annual economic cost of alcohol attributable adverse events is $21,085,357,042. The majority of these costs are due to fatal injuries, followed by adverse traffic events including injuries and fatalities. Crime costs account for 16% of total costs while illness accounts for 7% of total costs.

Areas of Adverse Events-Alcohol	Fatalities	Incidents	Costs
Illness	2,757[1]	68,818	$1, 468,009,352
Fatal Injuries	1,904	1,904	$8,905,099,639
Traffic Collisions	1,051	82,303	$7,275,015,532
Crime	564	63,083[2]	$3,437,232,519
Total	**6,276**	**216,108**	**$21,085,357,042**

Health Conditions

The cost of alcohol attributable health conditions were estimated using the Agency for Healthcare Quality Database (2008). Illness costs include direct costs of hospital charges and work loss costs based on length of stay in hospital. The cost of Fetal Alcohol Spectrum Disorders (FASD) were estimated using previous research (Burd, 2009; Harwood et al., 1998; Miller et al., 2006n; Rosen et al., 2008). There were 68,818 hospitalizations consequent to alcohol use. Results indicate that over $1.4 billion is spent due to alcohol attributable health conditions. This translates to:

- Approximately $4 million spent every day consequent to illnesses caused by alcohol.

[1] This is not the actual fatality estimates for Florida; this is taken from CDC's ARDI software.
[2] Only victim incidents are included to avoid double counting

- Approximately 8 hospitalizations occur every day because of alcohol use.

Fatal Injuries

Fatal injury costs were estimated using the willingness to pay approach. Injuries caused by alcohol use comprised the largest portion of costs at $8,905,099,639.

- 5 fatal injuries occur every day consequent to alcohol use.
- $24,397,533 are lost due to injuries caused by alcohol every day; this translates to $1,016,564 per hour.

Traffic Collisions

Alcohol impact on traffic collisions were estimated using the Florida Highway Safety and Motor Vehicles Traffic Crash Statistics Report, 2007. Cost estimates include administration costs, insurance costs, emergency costs, medical costs, lost productivity, etc. for fatal and nonfatal traffic injuries. Quality of life costs are included only for alcohol attributed traffic fatalities. There were 1,051 fatalities and approximately 81,000 injuries consequent to alcohol use. Total costs of adverse traffic events are $7,275,015,532.

This means:

- 3 people die every day due to an adverse traffic event caused by alcohol.
- 9 injuries occur every hour due to an adverse traffic event caused by alcohol.
- $3,444,329 is spent on alcohol attributable fatalities every day.
- $269,342 is spent every hour because of an alcohol caused traffic injury.

Alcohol Attributable Crime

Crimes caused by alcohol use were determined using the Federal Bureau of Investigation's Uniform Crime Reports, the Florida Department of Corrections 2006-2007 report and previous methodology. Crime costs include incarceration costs and victim costs. Incarceration costs include total sentencing costs for all individuals admitted into Florida state prisons in one year. Victim costs include lost wages, lost productivity, medical care, quality of life, etc for each crime incident. There were 2,607 incarcerations due to alcohol use in Florida. There were also a minimum of 63,083 victims of alcohol attributable crimes. The total cost of crime caused by alcohol is $3,437,232,519.

This means:

- Over $9 million is spent on alcohol attributable crimes per day. This translates to over $392,000 spent every hour due to alcohol attributable crimes.

- Total victim costs consequent to alcohol attributable crimes exceeds $3 billion every year.

Drug Attributable Costs

The annual economic cost of drug attributable adverse events is $22,681,284,691. The majority of these costs are due to drug attributable deaths. It is estimated that 4,468 individuals lose their life due to drug use.

Health Conditions

The cost of drug attributable health conditions were estimated using the Agency for Healthcare Quality Database (2008). Illness costs include direct costs of hospital charges and work loss costs based on length of stay in hospital. There were a total of 16,740 hospitalizations as a result of drug use. Results indicate that $103,427,447 is spent due to hospitalizations that occur because of drug use. This translates to:

- $283,362 spent every day consequent to hospitalizations due to drug use.
- 46 hospitalizations occur every day because of drug use.

Drug Toxicity Fatalities

Deaths caused by drug toxicity were obtained via the Medical Examiner's Report (2007). This report provided information on deaths that were causally linked to drugs. 4,315 deaths occurred due to drug toxicity. Utilizing the willingness to pay method, we determined a total of $20,181,462,681 is lost consequent to deaths caused by drug toxicity.

This means:

- $2,303,820 is lost every hour consequent to drug use.
- Most deaths were a result of opiod toxicity. This study revealed:
  - 56% of deaths occur as a result of Opiods
  - 20% consequent to Benzodiazepine
  - 2% consequent to Methylated amphetamine
  - 20% consequent to Cocaine
  - 2% consequent to Carisprodol/Meprobamate.

Drug Attributable Crime

Crime Incidents were obtained from the Federal Bureau of Investigation's Uniform Crime Reports, and the Florida Department of Corrections 2006-2007 report. Incidents attributed to drugs were isolated using previous methodology (Miller, 2006a). Crime costs include incarceration costs and victim costs. Incarceration costs include total sentencing costs for all individuals admitted into Florida state prisons in one year. Victim

costs include lost wages, lost productivity, medical care, quality of life, etc. The total cost of crime caused by drugs is $2,396,620,311

This means:

- Over $200,000 is spent every hour consequent to drugs
- Incarceration costs alone totaled $1,118,762,981 for the course of inmates stay at Florida State prisons.
- Victim costs totaled $1,277,857,330. This means that approximately $145,000 is spent every hour consequent to crimes committed because of drugs.
- There were a total of 161,957 incidents of crime resultant of drugs. This means that 444 incidents occur every day because of drugs. This further translates to 18 crime incidents per hour because of drugs.

III. Implications

The annual economic impact of AAD in Florida allows for a baseline assessment of the scope of the problem. The results have significant implications for the State of Florida, particularly across the healthcare and transportation sectors. It is necessary to note that costs reported within this study are not due to direct costs related to alcohol prevention, treatment, or research, but rather are ancillary costs that are absorbed by other areas. This poses a problem as scarce resources are diverted from other areas to meet the demands of untreated alcohol and drug use.

According to Rice, Kelman, & Miller (1991), the cost of AAD are a significant economic burden within the United States. As this analysis reveals, the same is true for Florida as over $43 billion is spent on adverse events caused by AAD. The annual economic costs of AAD translate to over $2,300 per capita and accounts for approximately 6% of Florida's Gross Domestic Product. The tremendous cost of AAD cements substance abuse as a significant public health and safety challenge for Florida. The high costs of social consequences such as alcohol and drug attributable crime signify the need to address AAD through a public health model that emphasizes both the health and societal aspects of this illness. The soaring costs of deaths due to drug toxicity, especially prescription drug toxicity, evinces the need to formulate policies aimed at curbing consumption, regulating the sale of drugs, and limiting off label use of prescription drugs.

Despite the exorbitant costs of AAD in Florida, the troubling economic climate and resultant budgetary constraints have led to a decline of resources, especially in the field of substance abuse prevention and treatment. The Florida Department of Children and Families estimates that its funding is meeting only 30% of estimated substance abuse service needs of adults (Florida Substance Abuse and Mental Health Corporation & Florida Alcohol and Drug Abuse Association, 2008). Given the high price tag of alcohol and drug attributable adverse outcomes, it is vital to meet treatment funding to limit ancillary costs. Investing in prevention programs, early intervention programs and linking these with safety and health programs may help in reducing or containing costs resultant of AAD. Macro level policies aimed at curbing the consumption of alcohol and drugs

may be especially valuable in limiting both the clinical and societal consequences associated with AAD.

IV. Limitations

The economic costs presented are conservative estimates of alcohol and drug attributable adverse events; limitations in data availability occlude a comprehensive analysis of every incident caused by AAD. For instance, the illegal status of drugs creates a barrier to obtaining true estimates; it is suspected that current data available is underreported. Additionally, this analysis does not include costs incurred due to alcohol and drug prevention programs, treatment programs, and research. It also excludes quality of life costs due to nonfatal injuries and work-loss costs for fatalities. Other areas directly impacted by adverse events related to alcohol and drug use include child welfare and HIV (Florida Substance Abuse and Mental Health Corporation & Florida Alcohol and Drug Abuse Association, 2008; Miller, 2008); the costs incurred by these areas are also excluded due to data limitations.

Our analysis relies on previous methodology, national databases, and state databases (Blincoe et al., 2002; Miller et al., 1996; Miller et al., 2006a; Miller et al., 2006b; Rosen et al., 2008). National databases were utilized to gather data on adverse events related to each area of harm. Specifically, to determine total number of illnesses, the Agency for Healthcare Quality and Research Database (2008) was utilized. Injury statistics were obtained from the Florida Department of Health DeathStat Database (2007). Adverse traffic incidents were obtained from the Florida Highway Safety and Motor Vehicles: Traffic Crash and Statistics Report (2007). There were two sources of crime incidents: Federal Bureau of Investigation: Uniform Crime Reports (2008), and Florida Department of Corrections, 2006-2007 Annual Report. These databases were utilized to gather total incident data for each area of harm. We then isolated the proportion of cases attributable to alcohol by using the Centers of Disease Control and Prevention's Alcohol Related Disease Impact Software (ARDI) (2008) and previous studies (Miller et al., 1996; Miller et al., 2006a). Costs were assigned on a per case basis. Total deaths caused by drug use were obtained from the Medical Examiner's Report (Florida Department of Law Enforcement, 2007); this allowed for an overall estimate of economic costs of lives lost as a result of drug use. Though specific methodology differed for each category of harm, broadly the same methodology was followed: *incidents* x *attributable fraction* x *cost per case*. All costs were updated to 2008 dollars.

Though we believe the methodology to be sound, statistical inferences nevertheless introduces random error and approximations. To temper this, a conservative incidence estimation approach was employed. Nonetheless, there is a degree of estimation within this analysis.

V. References

Agency for Healthcare Administration (2008). Retrieved on November 12, 2008 from hhttp://www.floridahealthfinder.gov/researchers/researchers.shtml

Agency for Healthcare Administration (2006). Emergency Department Utilization Report. State Center for Health Statistics. Retrieved March 2, 2009 from www.floridahealthstat.com

Anderson, T.L., Kavanaugh, P.R., Bachman, R., Harrison, L. (2007). Exploring the Drugs Crime Connection within the Elecontronic Dance Music and Hip Hop Night Scene. Retrieved in June 2009 from http://www.ncjrs.gov/pdffiles1/nij/grants/219381.pdf

Babor, T.F., Caetano, R., Casswell, S., Edwards, G., Giesbrecht, N., Graham, K., Grube, J., Gruenewald, P., Hill, L., Holder, H., Homel, R., Osterberg, E., Rehm, J., Room, R. &Rossow, I. (2003). Alcohol: No ordinary commodity---Research and Public Policy. Oxford and London: Oxford University Press.

Blincoe L., Seay, A., Zaloshnja, E., Miller, T., Romano, E., Luchter, S., Spicer, R.S. (2002). The economic impact of motor vehicle crashes, 2000, Report No. DOT HS 809 446. National Highway Traffic Safety Administration, Department of Transportation, Washington, DC.

Blincoe, L.J (1994). Estimating crash costs in state or local jurisdictions. Washington, DC: US Department of Transportation, National Highway Traffic Safety Administration, Plans and Policy, report no. DOT-HS-808-135

Bureau of Labor Statistics (2008a). Consumer Price Index Inflation Calculator. Retrieved on January 15, 2009 from www.bls.gov/data/inflation_calculator.htm

Bureau of Labor Statistics (2008b) Florida Occupational Employment and Wages, 2008. Retrieved on January 13, 2009 from http://www.bls.gov/oes/data.htm

Bureau of Justice Statistics (2004). State Prison Expenditures, 2001. Retrieved on November, 2008 from http://www.usdoj.gov

Berkey-Gerard, Mark (2001). "Neighbors and Nightclubs." *Gotham Gazette*. Retrieved on July 1, 2009 from http://www.gothamgazette.com/iotw/disco/

Beer Industry of Florida (2007). Economic Benefits. Retrieved on December 15, 2008 from http://floridabeer.org/benefits.html

Beer Institute (2008). Brewer's Almanac. Retrieved from www.beerinstitute.org/statistics.asp?bid=200

Bureau of Justice Statistics (2001). Criminal Victimization in the United States, 1999: A national Crime Victimization Survey Report. U.S. Government Printing Office, Washington, DC.

Bureau of Justice Statistics (2007). State Court Sentences of Convicted Felons. Retrieved December 2008 from http://www.ojp.usdoj.gov/bjs/pub/html/scscf04/tables/scs04110tab.htm

Burd, L. (2008) Prevalence and Cost calculators. Retrieved on November 13, 2008 from www.online-clinic.com/content/materials/calculator.asp.

Centers for Disease Control and Prevention (2008). Alcohol and Disease Related Impact Software. Retrieved on December 12, 2008 from http://www.cdc.gov/alcohol/ardi.htm

Enterprise Florida Inc. (2009). Florida Gross Domestic Product and Income. Retrieved on December 29, 2008 from http://www.eflorida.com

Federal Bureau of Investigation (2008). Uniform Crime Reports. Retrieved on November 2008 from http://www.fbi.gov/ucr/ucr.htm

Florida Department of Corrections Annual Report, 2006-2007. Retrieved on November 2008 from http://www.dc.state.fl.us/pub/annual/0607/index.html

Florida Department of Health (2007). Florida Charts: Community Health Assessment Resource Tool Set: Population Estimates. Retrieved on November 15, 2008 from www.floridacharts.com/charts/censusdata.aspx.

Florida Department of Health (2006). DeathStat Database. Office of Vital Statistics, Office of Injury Prevention.

Florida Department of Law Enforcement (2008). Drugs Identified in Deceased Persons: Florida Medical Examiner's Report, 2007. Retrieved on January 3, 2009 from http://www.fdle.state.fl.us/content/getdoc/036671bc-4148-4749-a891-7e3932e0a483/Publications.aspx

Florida Department of Law Enforcement (2009). Drugs Identified in Deceased Persons: Florida Medical Examiner's Report, 2007. Retrieved July 13, 2009 from http://www.fdle.state.fl.us/Content/getdoc/a37959db-85e0-42f9-b6d6-cdef532f22f8/2008DrugReport.aspx

Florida Highway Safety and Motor Vehicles (2008). Traffic Crash Statistics Report, 2007 retrieved on November 2008 from www.flhsmv.gov

Florida Substance abuse and Mental Health Corporation, Florida Alcohol and Drug Abuse Association (2008). The Impact of Addiction on Florida's Economy.

Harwood, H., Fountain, D., Livermore, G. (1998) The Economic Costs of Alcohol and Drug Abuse in the United States, 1992. NIH Publication No. 98-4327. Department of Health and Human Services, Rockville, MD.

Holmberg, Mark (2001). "US VA: Nightclubs in Alphabet Soup with ABC Cracking Down on X." *Richmond Times-Dispatch.*

Hedlund, J.H. (1994). "If they didn't drink, would they crash anyway?" -- The role of alcohol in traffic crashes. *Alcohol, Drugs and Driving*, 110, 2, 115-125.

Marin Institute (2009). Tax/Fee Revenue Calculator. Retrieved on July 12, 2009 from http://www.marininstitute.org/site/index.php?Itemid=281

MayoClinic (2008). Type II Diabetes: Do Alcohol and Drug Use Increase the Risk of Diabetes. Retrieved on July 9, 2009 from www.mayoclinic.com

Miller, T.R. (1990). The plausible range for the value of life—red herrings among the mackerels. *Journal of Forensic Economy*, 3, 17-39.

Miller, T.R., Cohen, M.A., Wiersema, B. (1996).Victim Costs and Consequences: A New Look. National Institute of Justice.

Miller, T.R., Levy, D.T., Cohen, M.A., Cox, K.L. (2006a) Costs of alcohol and drug-involved crime. *Prevention Science*, 7, 333-342.

Miller, T.R., Levy, D.T., Spicer, R.S., Taylor, D.M. (2006b). Societal costs of underage drinking, *Journal of Studies on Alcohol*, 67, 4, 519-528.

National Highway Traffic Safety Administration (2005). Crash-cost Software. Retrieved on January 2009 from http://www.nhtsa.dot.gov/people/crash/MVS/

National Institute of Aging (2008). Alcohol use and abuse. Retrieved on December 18, 2008 from www.nia.nih.gov/healthinformation/publications/alcohol.htm.

Rice, D.P., Kelman, S., Miller, L.S. (1991). Estimates of economic costs of alcohol and drug abuse and mental illness, 1985 and 1988. *Public Health Rep*, 106, 280-292.

Sassi, F. (2006). How to do (or not to do). . . Calculating QALYs, Comparing QALY and DALY calculations. Oxford University Press.

The National Center on Addiction and Substance Abuse (2009) Shoveling up: The impact of substance abuse on state budgets. Retrieved on July 12, 2009 from http://www.casacolumbia.org/ViewProduct.aspx?PRODUCTID=3594d7eb-1e01-4c31-bf01-e363d92053ed

United States Department of Health and Human Services (2009). 2006-2007 State Estimates of Substance Use & Mental Health. Substance Abuse and Mental Health Services Administration, Office of Applied Statistics. Retrieved on December 17, 2008 from http://oas.samhsa.gov/2k6State/Florida.htm.

United States Department of Transportation (2005). Treatment of the Economic Value of a Statistical Life in Departmental Analyses. Retrieved on March 15, 2009 from http://ostpxweb.dot.gov/policy/reports/080205.htm

Rosen, S., Miller, T., Simon, M. (2008). The cost of alcohol in California. *Alcoholism: Clinical and Experimental Research*, 32, 11, 1-12.

Viscusi, W.K., Aldy, J.E. (2003). The value of statistical life: a critical review of market estimates throughout the world. *Journal of Risk Uncertainty*, 27, 5-76.

Whelan, R., Josephson, A., and Holcombe, J. (2008). The Economic Cost of Alcohol and Drug Abuse in Oregon. EcoNorthWest. Retrieved on March 12, 2009 from http://www.econw.com/reports/ECONorthwest_Costs-AlcoholDrugs.pdf