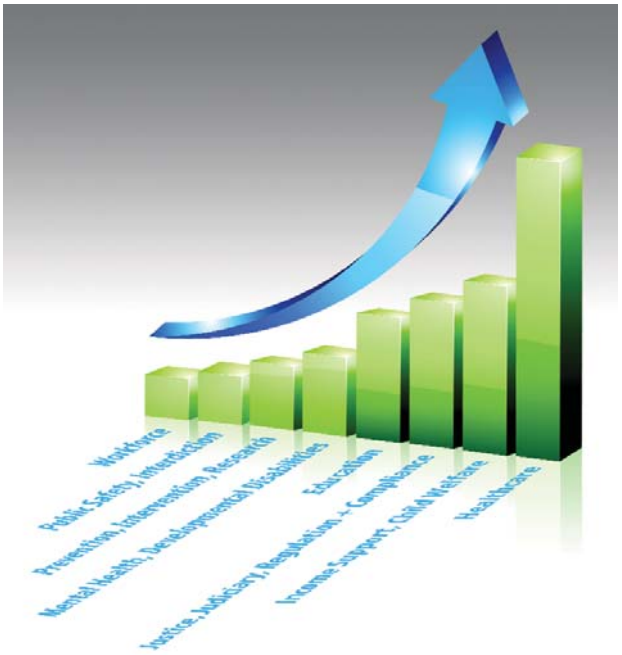
INDIANA
CENTER FOR HEALTH POLICY
RESEARCH FOR A HEALTHIER INDIANA
JANUARY 2010

The Economic Impact of Substance Misuse and Abuse in Indiana

Substance abuse and addiction have a profound impact on all sectors of our society. Indeed, they are major contributors to a wide range of health and social problems, including domestic violence, child abuse and neglect, crime, chronic health problems, increased mortality, higher health care costs, and lost productivity. The real economic impact of substance abuse is very difficult to quantify empirically because there are both direct and indirect consequences. Historically, public policymakers have been most interested in the more immediate or direct effects of individuals' substance misuse and abuse whether it be the occurrence of diseases directly caused by chronic alcohol abuse or fatal overdoses or deaths resulting from auto accidents caused by drivers under the influence. Over the years, however, prevention researchers have recognized that the impact of substance abuse extends beyond the direct effects and includes other more indirect consequences on both people and institutions. Family and friends, for example, often experience significant pain and suffering as well as lost productivity because of a loved one's substance abuse. Similarly, many government and social institutions must contend with the aftermath of substance abuse, such as providing supports or taking care of children of parents with substance abuse problems and the long-term loss of unrealized human potential.



Because of these complexities, only a handful of studies have tried to quantify the economic impact of substance abuse on the nation. A cost-benefit analysis that was conducted for the Substance Abuse and Mental Health Services Administration's (SAMHSA) Center for Substance Abuse Prevention (CSAP) estimated that in 1999 the national resource and productivity cost of substance abuse was $510.8 billion. Alcohol abuse accounted for $191.6 billion, tobacco use $167.8 billion, and drug abuse $151.4 billion. According to the report, lost productivity, i.e., lifetime wages and household work lost due to premature death, was responsible for two-thirds of the costs of substance abuse, followed closely by work lost to chronic illness and injury (Miller & Hendrie, 2009).

In 2001, Columbia University's National Center on Addiction and Substance Abuse (CASA) released a study that measured the financial burden of alcohol, tobacco, and other drug abuse/addiction on individual states (National Center on Addiction and Substance Abuse at Columbia University, 2001). An updated report released in 2009 included federal and local government costs in addition to state spending for a more comprehensive analysis (National Center on Addiction and Substance Abuse at Columbia University, 2009). However, Indiana was one of five states that did not participate in either study.

According to the 2009 CASA study, an estimated total of $467.7 billion (federal, state, and local) was spent on substance abuse and addiction in 2005. This is 10.7 percent of the entire national budget. More than half of the amount ($238.2 billion) came from federal sources; state and local spending added up to $135.8 billion and $93.8 billion, respectively. For every state and federal dollar spent on alcohol, tobacco, and other drug abuse, 95.6 cents went to "cleaning up" the consequences of substance abuse, while only 2.3 cents supported prevention, treatment, and research. The remainder, 2.1 cents, covered taxation, regulation, and interdiction (National Center on Addiction and Substance Abuse at Columbia University, 2009).

Since Indiana did not participate in the CASA study, and an estimate of costs attributable to substance abuse is critical in guiding prevention planning and allocation of funding, the State Epidemiology and Outcomes Workgroup (SEOW) decided to replicate CASA's methodology and assess Indiana's expenditures related to alcohol, tobacco, and drug abuse.

For this purpose, we (SEOW) followed CASA's methodology whenever possible. We attempted to identify federal, state, and local budget information for fiscal year (FY) 2008. In instances where we could not retrieve detailed data from state departments, we relied on the as-passed state budget for FY 2008, House Enrolled Act (HEA) No. 1001 (Indiana State Budget Agency, n.d.). To assess overall expenditures due to substance abuse, we examined these areas of funding:

- Substance-related prevention, treatment, and research
- Healthcare
- Criminal justice and juvenile justice
- Judiciary
- Education
- Child welfare programs
- Income support programs
- Mental health
- Developmental disabilities
- Public safety
- State workforce
- Regulation and compliance

The following analysis provides a general sense of substance abuse-related expenditures for the state of Indiana. Due to the nature of the study, findings need to be treated as estimates rather than precise values.

Substance-Related Prevention, Treatment, and Research

This category includes all programs and services with the explicit goal of preventing, treating, and researching alcohol, tobacco, and other drug use and addiction. Therefore, all of the money allocated to such efforts was attributed to substance use, and 100 percent of the expenditures were included in our analysis.

Almost $70 million was allocated for substance abuse prevention/intervention programs and research in Indiana, FY 2008, supporting services by the Family and Social Services Administration/Division of Mental Health and Addiction, Indiana Tobacco Prevention and Cessation Agency, and Indiana State Department of Health (Indiana State Budget Agency, n.d.).

Healthcare

Alcohol abuse, smoking, and illicit drug use have been shown to be associated with over 80 diseases and injuries (Rehm, Taylor, &

Estimated Costs/Allocations Attributable to Substance Use (Indiana, FY 2008)

Funding to Reduce Substance Use

- Prevention, Intervention and Research: $70 million

Funding to Address Consequences of Substance Use*

- Healthcare costs/Medicaid and Medicare: $4.8 billion
- Corrections and Judiciary: $1.3 billion
- Education: $621 million
- Child welfare: $685 million
- Income support: $133 million
- Mental health: $126 million
- Developmental disabilities/FASD**: $11 million
- Public safety: $60 million
- State workforce: $7 million

Net Gain from Substance Use

- Excise taxes for alcohol, tobacco, and controlled substances: $567 million***

TOTAL IMPACT: $7.3 BILLION

[See individual paragraphs for details data sources. For additional information on methodology, please refer to *The Consumption and Consequences of Alcohol, Tobacco, and Drugs in Indiana: A State Epidemiological Profile, 2009*, at www.policyinstitute.iu.edu/health/EPI.]

*Health, legal, financial, and societal outcomes associated with substance use.

**FASD=fetal alcohol spectrum disorder

***$567 million includes revenue from excise taxes minus administrative costs associated with tax collection.

Room, 2006), imposing a substantial cost to our healthcare system (Single, Robson, Xie, & Rehm, 1998).

For each disease identified in the literature, the reported relative risk can be converted to the population-attributable risk (PAR) using the prevalence rate of substance abuse in the population. The substance-attributable healthcare spending for that disease can then be calculated by aggregating the healthcare costs of individuals with that disease from national surveys and multiplying by the corresponding PAR. Adding across all related diseases and dividing by total healthcare costs of all individuals in the national surveys yields the substance-attributable fractions (SAF). These fractions can then be applied to state health spending to determine the amount attributable to substance abuse.

For this study, we used the national SAFs estimated by CASA (National Center on Addiction and Substance Abuse at Columbia University, 2009) and converted them to Indiana SAFs, using the ratio of substance abuse prevalence rates in Indiana to that of the nation. Since prevalence rates differed between the Medicaid and Medicare subpopulations, we calculated the Indiana SAFs for each of these categories. Population-specific SAFs were then applied to the corresponding state-level spending data obtained from the CMS National Health Expenditure data (Centers for Medicare and Medicaid Services, 2009) to calculate the amount attributable to substance abuse for each of the categories. Based on our analysis, $4.8 billion of healthcare costs in FY 2008 covered by Medicaid and Medicare were attributable to substance abuse.

Criminal Justice and Juvenile Justice

The massive impact of substance abuse costs on the criminal justice system has been extensively documented (National Center on Addiction and Substance Abuse at Columbia University, 1998, 2001, 2009; Office of National Drug Control Policy, 2001). CASA established that substance abuse is a factor in over 80 percent of adult corrections cases and in 79.5 percent of juvenile cases (National Center on Addiction and Substance Abuse at Columbia University, 2004, 2009).

We applied these substance-attributable shares to expenditures for Indiana's correctional system, including running and maintaining correctional facilities (including personnel costs), rehabilitation and reentry programs, probation for adult and juvenile offenders, and capital costs for correctional facilities. Additionally, we added 100 percent of costs from programs that explicitly address substance abuse and addiction. We estimated that almost $958 million of correctional costs were attributable to the use of alcohol, tobacco, and other drugs in FY 2008.

Judiciary

CASA identified substance-attributable shares of the judiciary system based on court type (National Center on Addiction and Substance Abuse at Columbia University, 2001, 2009) as follows:

- 100 percent of drug court costs are attributable to substance abuse;
- 86.3 percent of criminal court costs are attributable to substance abuse;
- 74.1 percent of family court costs are attributable to substance abuse; and
- 0 percent of civil court costs are attributable to substance abuse

Indiana does not necessarily compartmentalize funding for each type of court system; funds that could not be ascribed to a specific court were assigned a substance-related percentage of 65.1 percent, i.e., the average of the four percentages listed above.[1] We estimated that nearly $365 million of judiciary costs were related to substance abuse and addiction in FY 2008 (Indiana Criminal Justice Institute, 2009; Indiana Judicial Center, 2009; Indiana State Budget Agency, n.d.).

Education

Substance abuse can affect schools in several ways: Faculty and staff use can affect the learning environment; student use can affect the individual's academic capacity as well as school security; and parental use can affect the students' capacity and readiness to learn. CASA identified cost areas that can be linked to substance abuse and estimated that the aggregate of these costs would add up to 11.4 percent of the annual expenditures for elementary and secondary education (National Center on Addiction and Substance Abuse at Columbia University, 2009).

To assess the economic burden of substance abuse in the educational setting (K-12) in Indiana, we added 100 percent of the funding for substance use-related programs and 11.4 percent of all other educational allocations. For FY 2008, education expenditures of nearly $621 million can be attributed to substance abuse in Indiana (Indiana State Budget Agency, n.d.).

[1]**Drug courts (100.0%) + criminal courts (86.3%) + family courts (74.1%) + civil courts (0.0%) / 4 = 65.1%**

Child Welfare Programs

There is a well-documented link between substance abuse and child abuse and neglect (Denton & Kampfe, 1994; Downs & Harrison, 1998; Finkelhor & Dziuba-Leatherman, 1994; Harrison, Fulkerson, & Beebe, 1997; Sher, Gershuny, Peterson, & Raskin, 1997; Widom, 1989; Widom & Hiller-Sturmhofel, 2001), which often results in the placement of children into protective services. Studies place the rate of substance abuse between 40 and 80 percent among the parents of children in child protective services (Gardner & Young, 1996; Gelles, 1997; Semidei, Radel, & Nolan, 2001; U. S. General Accounting Office, 1994). CASA estimated that substance abuse and addiction contributed to 73.1 percent of child welfare cases nationally in 2005 (National Center on Addiction and Substance Abuse at Columbia University, 2001).

Using the substance-attributable share of 73.1 percent, an estimated $685 million of all FY 2008 child welfare allocations can be attributed to alcohol and other drug use (Indiana State Budget Agency, n.d.).

For every dollar Indiana spends on services dealing directly and indirectly with substance use, 66 cents are used for healthcare, while only 1 cent pays for prevention/intervention initiatives.

Income Support Programs

Substance abuse and addiction may interfere with a person's ability to be self-sufficient, increasing use of income assistance programs such as Temporary Assistance to Needy Families (TANF), general assistance (GA), and supplemental programs: Supplemental Security Income Program (SSI), housing and homeless assistance, employment, food and nutrition, and other assistance (National Center on Addiction and Substance Abuse at Columbia University, 2009). Many studies conducted on welfare have demonstrated that recipients often have problems with substance abuse (Olson & Pavetti, 1996), although there is little data on the effect on general assistance programs (National Center on Addiction and Substance Abuse at Columbia University, 2009).

For our analysis, we applied substance-attributable shares as identified by CASA (National Center on Addiction and Substance Abuse at Columbia University, 2009):

- TANF/GA—23.4 percent attributable to substance abuse
- Housing and homeless assistance—66.0 percent attributable to substance abuse
- Other assistance, including employment/food and nutrition—23.5 percent attributable to substance abuse

We estimated that nearly $133 million of all income support allocations were associated with substance abuse and addiction in FY 2008: $75 million for TANF/GA, $10.9 million for housing and homeless programs, and $46.7 million for other assistance programs (Indiana State Budget Agency, n.d.).

Mental Health

Prevalence of substance use varies by population; however, higher rates of use among the severely mentally ill have been confirmed by various studies (Grant et al., 2004; RachBeisel, Scott, & Dixon, 1999; Regier et al., 1990). Data from a nationally representative sample of the civilian, noninstitutionalized U.S. population indicate that 51 percent of those with a lifetime mental disorder also have a lifetime addictive disorder, i.e., alcohol or other drug abuse or dependence (National Center on Addiction and Substance Abuse at Columbia University, 2009).

Based on CASA's methodology (National Center on Addiction and Substance Abuse at Columbia University, 2009), we attributed 55.9 percent of Indiana's mental health budget to costs related to substance abuse. According to our analysis, over $126 million of mental health expenditures, including capital costs for facilities, can be attributed to substance use in FY 2008 (Indiana State Budget Agency, n.d.).

Developmental Disabilities

Fetal alcohol spectrum disorder (FASD) is an umbrella term describing the range of effects that can occur in an individual whose mother drank alcohol during pregnancy. These effects may include physical, mental, behavioral, and/or learning disabilities with possible lifelong implications. FASD comprises a spectrum of conditions, including fetal alcohol syndrome, fetal alcohol effects, alcohol-related neurodevelopmental disorder, and alcohol-related birth defects (Substance Abuse and Mental Health Services Administration and FASD Center for Excellence, 2009).

For this report, we estimated the prevalence of FASD among people with developmental disabilities (DD) in Indiana, and applied the substance-attributable share to funding for services addressing the needs of the DD population.

Based on the analysis, $11.1 million of the FY 2008 budget for developmental disabilities was related to FASD, and can, therefore, be attributed to substance use (Indiana State Budget Agency, n.d.).

Public Safety

Public safety issues are addressed by various agencies and programs, including homeland security, criminal justice, law enforcement, drug interdiction, corrections, and others. To compute the substance-attributable share for this category, we excluded public safety funding that has been addressed in any of the other sections, to avoid double-counting expenditures.

CASA estimated that 19.7 percent of highway traffic accidents were alcohol-involved (National Center on Addiction and Substance Abuse at Columbia University, 2009). Therefore, for our analysis we included 100 percent of funding for public safety services that target alcohol, tobacco, or other drug use directly, and applied 19.7 percent to all other eligible public safety costs. Based on this methodology, $60.3 million of public safety funding was attributed to substance abuse in FY 2008 (Indiana State Budget Agency, n.d.).

"If effective prevention programs were implemented nationwide, substance abuse initiation would decline for 1.5 million youth and be delayed for 2 years on average."

Source: Miller & Hendrie, 2009

State Workforce

Substance abuse and dependence compromises workforce productivity by contributing to absenteeism, lost productivity, an increase in workplace accidents, higher turnover rates, and higher health insurance costs, thus increasing the cost of business (Ames, Grube, & Moore, 1997; Frone, 2006; Larson, Eyerman, Foster, & Gfroerer, 2007; Mangione, Howland, & Lee, 1998; McFarlin & Fals-Stewart, 2002).

In 2008, the Indiana state government spent approximately $1.26 billion in payroll, in addition to $558 million in fringe benefits for state workers (Indiana State Personnel Department, 2009). In our computation, we included 100 percent of expenditures for programs explicitly addressing substance abuse in Indiana's workforce, and applied the CASA substance-attributable share of 0.37 percent to the total cost of payroll and fringe benefits (National Center on Addiction and Substance Abuse at Columbia University, 2009). Based on our estimate, $6.9 million of workforce expenditures were attributable to substance abuse in FY 2008 (Indiana State Personnel Department, 2009).

Regulation and Compliance

Excise tax is an indirect tax charged on the sale of a particular good or service, such as alcohol, tobacco, gasoline, airfare, or telecommunications. The State of Indiana collects the following excise taxes related to substance use: alcoholic beverages tax, cigarette and tobacco products tax, and a controlled substances tax.

In FY 2008, Indiana collected $570 million in substance-related excise taxes: $525.3 million for tobacco, $44.7 million for alcohol, and $27,005 for controlled substances. This total of $570 million represented four percent of Indiana's overall revenue from state taxes ($14.01 billion) (Indiana General Assembly, n.d.). To calculate the costs associated with collecting the substance-related excise tax, we applied the four-percent share to the overall budget for the Indiana Department of Revenue.

We estimated that in FY 2008, the net gain from substance-related excise taxes in Indiana was nearly $567 million (Indiana State Budget Agency, n.d.).

Burden of Substance Abuse on the State of Indiana

According to our findings, a total of $7.3 billion of Indiana's FY 2008 budget can be attributed directly and indirectly to substance abuse. This represents a per-capita share of $1,145 for each Hoosier. Most of these costs accrued through healthcare spending ($756 per capita).

Comparisons with surrounding states show that our neighbors' per-capita costs ranged from $1,425 in Kentucky to $1,617 in Michigan for FY 2005. Again, healthcare spending took the lion's share, encompassing roughly half of all costs related to substance abuse (National Center on Addiction and Substance Abuse at Columbia University, 2009). To provide a better basis for comparisons between Indiana and neighboring states, we calculated the average per-capita costs for Illinois, Michigan, Ohio, and Kentucky, and applied the Consumer Price Index (CPI) to adjust for the effects of inflation from 2005 to 2008. Based on the adjustment, the four-state average per-capita share was $1,688, which is 47 percent higher than Indiana's per-capita share of $1,145.

As mentioned before, most spending attributable to substance abuse occurred through the healthcare system. However, while healthcare costs made up 49 percent of the spending related to substance abuse in Illinois, Michigan, Ohio, and Kentucky, it contributed to 66 percent of the expenditures in Indiana.

See Appendix A for a summary of the financial burden of substance abuse on Indiana and surrounding states. However, caution needs to be exercised when comparing estimates between Indiana and the other states due to limitations of our study:

- Our analysis was primarily based on appropriations as passed by the Indiana General Assembly, not on actual spending.
- We greatly underestimated local costs due to unavailability of data.
- Indiana's estimate was based on FY 2008 information, while FY 2005 data formed the basis for other states' figures.

Thoughts for Policymakers

Our analysis implies that Indiana spends less (per capita) on substance-related issues than our neighboring states. However, this interpretation should be made cautiously because our calculations are, for the most part, based on the state's budget rather than actual spending information. More important, we spend significantly more on addressing the consequences of alcohol, tobacco, and other drug use than on prevention. For every dollar Indiana spends on services dealing directly and indirectly with substance use, 66 cents are used for healthcare, while only 1 cent pays for prevention/intervention initiatives.

The Substance Abuse and Mental Health Services Administration, part of the U.S. Department of Health and Human Services, asserts that the cost of substance abuse could be offset by implementation of effective prevention policies and programs; and that if such programs were implemented nationwide, substance abuse initiation would decline for 1.5 million youth and be delayed for 2 years on average (Miller & Hendrie, 2009).

APPENDIX A

Summary of Federal, State, and Local Spending and/or Expenditures (Per Capita) Attributable to Substance Use in Indiana, Illinois, Michigan, Ohio, and Kentucky

	Indiana FY 2008	Illinois FY 2005	Michigan FY 2005	Ohio FY 2005	Kentucky FY 2005	Surrounding 4-State Average FY 2005	Average Adjusted for Inflation* FY 2008	Details
Healthcare	$756.47	$743.75	$733.62	$749.54	$720.01	$736.73	$830.74	Includes Medicaid and Medicare spending.
Income Support, Child Welfare	$128.85	$219.65	$175.90	$159.76	$167.65	$180.74	$197.52	Includes TANF/GA, housing & homeless assistance; other supplemental programs; and child welfare funding.
Justice, Judiciary,Regulation + Compliance	$119.07	$200.72	$328.47	$314.13	$221.02	$266.09	$290.79	Includes funding for adult criminal justice programs; juvenile justice programs; drug, general, and family courts (plus capital costs for facilities). Also includes net gain from excise taxes for alcohol, tobacco, and controlled substances.
Education	$97.87	$144.87	$231.40	$172.91	$174.34	$180.88	$197.67	Includes funding for K-12 education.
Mental Health, Developmental Disabilities	$21.62	$41.14	$33.89	$47.91	$11.90	$33.71	$38.01	Includes funding for mental health services (plus capital costs for facilities) and for services related to FASD
Prevention, Intervention, Research	$10.99	$32.26	$23.19	$28.61	$42.49	$31.64	$35.67	Includes funding for prevention, treatment, and research of alcohol, tobacco, and other drug use.
Public Safety, Interdiction	$9.50	$81.01	$81.81	$81.58	$79.05	$80.86	$88.37	Includes funding for public safety programs and interdiction.
Workforce	$1.09	$9.14	$9.10	$8.46	$8.76	$8.87	$9.69	Includes payroll and fringe benefits of Indiana's workforce.
TOTAL	**$1,145.46**	**$1,472.54**	**$1,617.38**	**$1,562.90**	**$1,425.22**	**$1,519.51**	**$1,688.46**	

* To compare FY 2005 to FY 2008 data, we applied the Consumer Price Index (CPI) to adjust for the effects of inflation. For this purpose, we calculated the average substance abuse related costs for Illinois, Michigan, Ohio, and Kentucky (FY 2005), and multiplied each category by the Midwest Urban CPI. The categories "healthcare," "mental health and developmental disabilities," and "prevention, intervention, and research" were multiplied by the Midwest Urban CPI for medical care (1.13); all other fields were multiplied by the general Midwest Urban CPI (1.09).

Source: Centers for Medicare and Medicaid Services, 2009; Indiana Criminal Justice Institute, 2009; Indiana Department of Corrections, 2009; Indiana General Assembly, n.d.; Indiana Judicial Center, 2009; Indiana State Budget Agency, n.d.; Indiana State Personnel Department, 2009; National Center on Addiction and Substance Abuse at Columbia University, 2009

References

Ames, G. M., Grube, J. W., & Moore, R. S. (1997). The relationship of drinking and hangovers to workplace problems: An empirical study. *Journal of Studies on Alcohol, 58*(1).

Centers for Medicare and Medicaid Services. (2009). National Health Expenditure Account Data. Retrieved December 9, 2009, from http://www.cms.hhs.gov/NationalHealthExpendData/

Denton, R. E., & Kampfe, C. M. (1994). The relationship between family variables and adolescent substance abuse: a literature review. *Adolescence, 29*(114).

Downs, W. R., & Harrison, L. (1998). Childhood maltreatment and the risk of substance problems in later life. *Health & social care in the community, 6*(1), 35-46.

Finkelhor, D., & Dziuba-Leatherman, J. (1994). Children as victims of violence: A national survey. *Pediatrics, 94*(4), 413-420.

Frone, M. R. (2006). Prevalence and distribution of illicit drug use in the workforce and in the workplace: Findings and implications from a US national survey. *Journal of Applied Psychology, 91*(4), 856-869.

Gardner, S., & Young, N. (1996). *The Implications of Alcohol and Other Drug-Related Problems for Community-Wide Family Support Systems:* Prepared for the Kennedy School Executive Session on the Future of Child Protective Services. Irvine, Calif.: Children and Family Futures. November.

Gelles, R. J. (1997). *Book of David: How preserving families can cost children's lives:* Basic Books.

Grant, B. F., Stinson, F. S., Dawson, D. A., Chou, S. P., Dufour, M. C., Compton, W., et al. (2004). Prevalence and Co-occurrence of Substance Use Disorders and Independent Mood and Anxiety Disorders Results From the National Epidemiologic Survey on Alcohol and Related Conditions. *Archives of General Psychiatry, 61*(8), 807-816.

Harrison, P. A., Fulkerson, J. A., & Beebe, T. J. (1997). Multiple substance use among adolescent physical and sexual abuse victims. *Child Abuse & Neglect, 21*(6), 529-539.

Indiana Criminal Justice Institute. (2009). *Byrne-JAG Awards for Calendar Year 2008*. Indianapolis, IN: Information Received from Joshua Ross, Division Director, Research and Planning, Indiana Criminal Justice Institute.

Indiana Department of Corrections. (2009). *Correction costs and funding for FY 2008.* Indianapolis, IN: Information Received from Amanda Copeland; Director, Planning & Research, Indiana Department of Corrections.

Indiana General Assembly. (n.d.). *Indiana handbook of taxes, revenues, and appropriations - fiscal year 2008.* Retrieved November 19, 2009, from http://www.in.gov/legislative/publications/handbook.html

Indiana Judicial Center. (2009). *2007 Probation Report.* Indianapolis, IN: Information Received from Michelle Goodman, Staff Attorney, Indiana Judicial Center.

Indiana State Budget Agency. (n.d.). 2007–2009 As-Passed Budget. Retrieved September 24, 2009, from http://www.in.gov/sba/2473.htm

Indiana State Personnel Department. (2009). *Annual State Workforce, 2008.* Indianapolis: IN. Data provided by e-mail to Indiana University Center for Health Policy.

Larson, S. L., Eyerman, J., Foster, M. S., & Gfroerer, J. C. (2007). *Worker substance use and workplace policies and programs* (Vol. DHHS Publication No. SMA 07-4273, Analytic Series A-29). Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies.

Mangione, T. W., Howland, J., & Lee, M. (1998). *New perspectives for worksite alcohol strategies: Results from a corporate drinking study.* Boston, MA: JSI Research and Training Institute.

McFarlin, S. K., & Fals-Stewart, W. (2002). Workplace absenteeism and alcohol use: a sequential analysis. *Psychology of Addictive Behaviors, 16*(1), 17-21.

Miller, T., & Hendrie, D. (2009). *Substance abuse prevention dollars and cents: A cost-benefit analysis* (Vol. DHHS Pub. No. (SMA) 07-4298). Rockville, MD: Center for Substance Abuse Prevention, Substance Abuse and Mental Health Services Administration.

National Center on Addiction and Substance Abuse at Columbia University. (1998). *Behind bars: Substance abuse and America's prison population.* Retrieved September 24, 2009, from http://www.casacolumbia.org/absolutenm/articlefiles/379-Behind%20Bars.pdf

National Center on Addiction and Substance Abuse at Columbia University. (2001). *Shoveling Up: The Impact of Substance Abuse on State Budgets.*

National Center on Addiction and Substance Abuse at Columbia University. (2004). *Criminal Neglect: Substance abuse, juvenile justice and the children left behind.* Retrieved October 1, 2009, from http://www.casacolumbia.org/absolutenm/articlefiles/379-Criminal%20Neglect.pdf

National Center on Addiction and Substance Abuse at Columbia University. (2009). *Shoveling Up II: The Impact of Substance Abuse on Federal, State, and Local Budgets.* Retrieved September 24, 2009, from http://www.casacolumbia.org/absolutenm/articlefiles/380ShovelingUpII.pdf

Office of National Drug Control Policy. (2001). *The economic costs of drug abuse in the United States, 1992–1998.* Retrieved September 24, 2009, from http://www.whitehousedrugpolicy.gov/publications/pdf/economic_costs98.pdf

Olson, K. K., & Pavetti, L. (1996). *Personal and family challenges to the successful transition from welfare to work.* Retrieved September 28, 2009, from http://www.urban.org/publications/406850.html

RachBeisel, J., Scott, J., & Dixon, L. (1999). Co-occurring severe mental illness and substance use disorders: a review of recent research. *Psychiatric Services, 50*(11), 1427.

Regier, D. A., Farmer, M. E., Rae, D. S., Locke, B. Z., Keith, S. J., Judd, L. L., et al. (1990). Comorbidity of mental disorders with alcohol and other drug abuse. Results from the Epidemiologic Catchment Area (ECA) Study. *JAMA, 264*(19), 2511-2518.

Rehm, J., Taylor, B., & Room, R. (2006). Global burden of disease from alcohol, illicit drugs and tobacco. *Drug and Alcohol Review, 25*(6), 503-513.

Semidei, J., Radel, L. F., & Nolan, C. (2001). Substance abuse and child welfare: clear linkages and promising responses. *Child Welfare, 80*(2), 109.

Sher, K. J., Gershuny, B. S., Peterson, L., & Raskin, G. (1997). The role of childhood stressors in the intergenerational transmission of alcohol use disorders. *Journal of Studies on Alcohol, 58*(4).

Single, E., Robson, L., Xie, X., & Rehm, J. (1998). The economic costs of alcohol, tobacco and illicit drugs in Canada, 1992. *Addiction, 93*(7), 991-1006.

Substance Abuse and Mental Health Services Administration and FASD Center for Excellence. (2009). *The FASD Center.* Retrieved December 15, 2009, from http://www.fasdcenter.samhsa.gov/

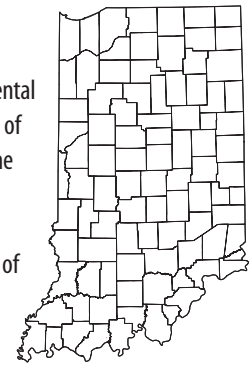
U. S. General Accounting Office. (1994). *Foster care: Parental drug abuse has alarming impact on young children.*

Widom, C. S. (1989). Does violence beget violence? A critical examination of the literature. *Psychological Bulletin, 106*(1), 3-28.

Widom, C. S., & Hiller-Sturmhofel, S. (2001). Alcohol Abuse as a Risk Factor for and Consequence of Child Abuse. *Alcohol Research & Health, 25*(1).

CENTER FOR HEALTH POLICY

Indiana University Center for Health Policy



The Indiana University Center for Health Policy is a nonpartisan applied research organization in the School of Public and Environmental Affairs at Indiana University–Purdue University Indianapolis. Researchers at CHP work on critical policy issues that affect the quality of health care delivery and access to health care. The Center for Health Policy is part of the Indiana University Public Policy Institute. The other partner centers are the Center for Urban Policy and the Environment and the Center for Criminal Justice Research.

Much of the research for this report was taken from work completed for the Indiana Office of the Governor and the Indiana Division of Mental Health and Addiction and funded by a grant from the U.S. Department of Health and Human Services' Center for Substance Abuse Prevention (CSAP), as part of the Strategic Prevention Framework State Incentive Grant (SPF SIG) Program.

For more information about the Center for Health Policy and access to other reports, visit its Web site at www.policyinstitute.iu.edu/health/. CHP and the Indiana University Public Policy Institute are grateful to the Indiana Division of Mental Health and Addiction for funding publication and distribution of this report and other information for leaders and policymakers in Indiana.

Authors: Eric R. Wright, PhD, Director, Center for Health Policy, School of Public and Environmental Affairs; Professor and Division Director for Health Policy and Management, IU School of Medicine, Department of Public Health; **Marion S. Greene, MPH,** Program Analyst; **Yong Li, PhD,** Assistant Professor; **Ann Marie Judson-Patrick, BA,** Research Assistant

CENTER FOR HEALTH POLICY

ADDRESS SERVICE REQUESTED

Non Profit
US Postage Paid
Indianapolis, IN
Permit No. 803

60
50
40
30
20
10
0
Physicians per 100,000 Population

410 W. 10th Street, Suite 3100
Indianapolis, IN 46202
www.healthpolicy.iupui.edu

SCHOOL OF PUBLIC AND ENVIRONMENTAL AFFAIRS
INDIANA UNIVERSITY
IUPUI

10-C01