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MEMORANDUM

TO: Newberg Planning Commission
FROM: Steve Olson, Associate Planner
SUBJECT: Supplemental packet: Additional public testimony regarding medical marijuana dispensaries
File DCA-15-001
DATE: March 9, 2015

We have received some additional public testimony about the medical marijuana dispensary development code amendment, which is on the March 12, 2015 agenda. Please review this testimony and add this to your packet.

DRUG-FREE ZONE LAWS:
AN OVERVIEW OF STATE POLICIES

Drug-free zone laws are among the most longstanding sentencing policies in America's War on Drugs. In 1970 – 12 years before President Ronald Reagan officially used the term "War on Drugs" – Congress passed an early version of a law increasing penalties for certain drug offenses committed near schools. In the 1980s, many state governments began to do the same. Today, all 50 states and the District of Columbia have adopted some form of drug-free school zone law.

The premise behind drug-free zone laws was that drug trafficking near schools posed a danger to children. In order to protect children from drug activity, lawmakers established protected zones around the places where children were most likely to be present, including schools and public parks. Individuals caught using or selling drugs within the protected zone faced substantially higher penalties than others who engaged in the same conduct outside the zone.

The application of drug-free school zone laws has proved problematic for several reasons:

- First, in the sentencing schemes of several states defendants may face two distinct penalties for a single offense.
- Second, the laws are frequently drafted so broadly that they result in enhanced penalties for drug offenses that are a substantial distance from a school, that do not involve school children in the offense, or take place outside of school hours. In Alabama, for example, a drug sale that takes place as much as three miles from a school, college, or public housing project is subject to a mandatory five-year prison term.
- Third, because protected areas are clustered within urban, high-density population areas, the zones disproportionately affect people of color and economically disadvantaged citizens.[1]

In recent years, these problems have led at least seven states, including Connecticut, Delaware, Indiana, Kentucky, Massachusetts, New Jersey, and South Carolina, to reform their drug-free zone laws. This briefing paper provides an overview of these statutes nationally and an assessment of reform activity in recent years.

DRUG-FREE ZONES: DIVERSITY AMONG THE STATES

Drug-free school zone laws vary by jurisdiction, with the key distinctions being in these areas: zone size, locations covered, offenses covered, and penalties imposed (see Appendix for full description of each state's policies). Some states have also adopted restrictions on when and under what circumstances the enhanced penalties apply.

All 50 states and Washington, D.C. (see Appendix) apply some form of enhanced penalties to offenses involving

manufacture, sale, distribution, or possession with intent to distribute drugs. In nine states—Alaska, Arkansas, Arizona, Connecticut, Indiana, Minnesota, New Mexico, Michigan and Oklahoma— defendants in drug-free zones can also face enhanced penalties even for simple drug possession that does not involve sale to school children. In Arkansas, for example, simple possession of two grams of methamphetamine is sufficient to trigger a ten-year sentence with no parole in addition to the sentence imposed for the underlying offense.

their policies to areas beyond elementary and secondary schools and onboard school buses. For example, several states have enacted zones around public housing facilities, public parks, churches, and daycare centers. Others, including Missouri and West Virginia, include colleges and universities in their definition of "school." Utah adds shopping malls, amusement parks, and the parking lots of such areas to the list of covered areas.

Table 1 Drug-Free Zone Sizes by State

< 1,000 ft.	1,000 ft.			> 1,000 ft.
Alaska	Alabama	Maine	Ohio	Alabama
Arizona[a]	Arkansas	Maryland	Oklahoma	Connecticut
Delaware	California	Michigan	Oregon	Louisiana
Hawaii	Colorado	Mississippi	Pennsylvania	Mississippi
Indiana	Connecticut	Missouri	South Carolina	Missouri
Massachusetts	Florida	Nebraska	South Dakota	Oklahoma
Minnesota	Georgia	Nevada	Tennessee	South Carolina
Rhode Island	Idaho	New Hampshire	Texas	
Vermont	Illinois	New Jersey	Utah	
Wyoming	Iowa	New Mexico	Virginia	
	Kansas	New York	Washington	
	Kentucky	North Carolina	Washington DC	
	Louisiana	North Dakota	West Virginia	

[a]Arizona's drug-free zones apply to 300 feet from school property on private property and 1,000 feet from school property on public property.

As seen in Table 1, 32 states and the District of Columbia establish a zone area that extends 1,000 feet in all directions from the property line of schools and other protected areas. Thus, in most states a drug sale that takes place at a distance of more than three football fields away from a school building can result in enhanced prison time. Ten states have drawn zones more tightly so as to avoid overreaching in their impact, while seven others have cast a much wider net of 1,500 feet or more.

Though the stated intent of drug-free zone laws was to protect schools, 31 states have extended the scope of

31 states have extended the scope of their policies to areas beyond elementary and secondary schools.

The most expansive law in terms of covered locations is that of Arkansas, which draws zones around schools, public parks, public housing facilities, day care centers, colleges and universities, recreation centers, skating rinks, Boys' and Girls' Clubs, substance abuse treatment facilities, and churches.

PENALTIES

Drug-free zone laws apply enhanced penalties in two different ways among the states. In thirty states, the law designates drug offenses within the protected zone as distinct crimes with their own penalties or penalty ranges. In Colorado, for example, sale of a controlled substance within a drug-free zone is a distinct criminal offense that carries an eight-year mandatory minimum sentence. In other states, the law prescribes enhanced penalties for underlying crimes when they occur within the protected zone. In Arizona, for instance, committing

a covered offense within a drug-free zone increases the presumptive minimum and maximum penalties for the underlying offense by one year.

States also vary in the severity of the penalties drug offenders receive for violating drug-free school zone laws. In 13 states, violation of the law triggers a mandatory minimum sentence or sentence enhancement that ranges from one year in Virginia to eight years in Colorado. In Washington, DC, Rhode Island, and the state of Washington, the drug-free zone violation doubles the maximum penalty for the underlying offense.

Kansas, Nebraska, and Tennessee elevate the felony class of the underlying drug offense when it is committed within a drug-free zone, thereby exposing the defendant to harsher penalties. Similarly, Delaware and Nevada treat violation of the drug-free zone as an aggravating factor in the sentencing proceeding for the underlying drug offense. Finally, some states allow juvenile defendants to be prosecuted for a drug-free zone offense in adult court and to be sentenced to an adult institution for violations of drug-free zone laws.

LIMITATIONS ON DRUG-FREE ZONES

A number of states have imposed various restrictions on their drug-free zone laws with the intention of narrowing their focus to more closely align with the original purpose of the law. Lawmakers have limited the application of the zone laws based on the nature of the transaction, the age of the defendant, the time of day, the presence of children, and whether the offense takes place on public or private property.

Seven states—Alaska, Georgia, Louisiana, Montana, New Jersey, Texas, and Washington—apply an exception to their drug-free zone laws if the offense occurs within a private residence so long as no children are present and the defendant did not proÀt from the offense. Virginia similarly applies its law only on public property. California, Nebraska, and West Virginia exempt juvenile defendants from enhanced penalties, as does New Mexico for possession offenses. Florida, Massachusetts, and Nevada impose some form of time restrictions on their laws so that they only apply when children are present.

New York and South Carolina require that defendants know they are in the zone when they commit the offense, while North Carolina and North Dakota exempt small quantities of marijuana from their zone laws. Indiana is unique in that it creates afÀrmative defenses to its zone law: defendants may avoid the enhanced penalties of the law if they were only brieÁy in the zone while no minors were present or if they were in the zone solely because law enforcement ofÀcers stopped them there

DRUG-FREE ZONE LAWS: REFORMS

While courts have been reluctant to grant Constitutional challenges to drug-free zone laws, concerns over the laws have led a number of state legislatures to reform their drug-free zone policies. By 2005, lawmakers in Massachusetts, New Jersey, and Connecticut had commissioned studies to survey the impact and effectiveness of drug-free zone laws in their respective states, and identiÀed problems regarding the scope of their respective zones and resulting racial disparities.[2] Several states have since enacted policy reforms including Massachusetts, New Jersey, Connecticut, and Indiana. Delaware, Kentucky and South Carolina also reformed their drug-free zone laws as part of larger drug law reform bills. But other states, including Arkansas, Hawaii, and Texas, have adopted harsher penalties by expanding locations to include public housing and playgrounds where selling drugs can trigger enhanced penalties. [3]

CONNECTICUT

Connecticut's harsh drug-free zone law was enacted in 1987. In 2001, Connecticut legislators changed state law to grant judges discretion in applying the school zone penalty in certain drug offenses based on "good cause."[4] Yet the Connecticut statute imposing a three-year mandatory minimum sentence for committing a drug offense within 1,500 feet of a school, public housing complex, or daycare center remains in effect.

However, further reforms may soon be enacted. In the 2013 legislative session, Connecticut's Black and Puerto Rican Caucus sponsored a bill that would have reduced the size of the state's drug-free zones from 1,500 feet to 300 feet. The bill was debated in the Connecticut House

of Representatives but Republican opponents succeeded in filibustering the bill and its time expired without a vote. As a result, the bill stalled and will not become law for 2013. Nevertheless proponents of the bill have vowed to introduce it again in the next legislative session.

DELAWARE

Delaware's drug-free zone law was first adopted in 1989 and created 1,000-foot zones around schools and 300-foot zones around parks. Commission of a drug offense—including simple possession—within the zone constituted a distinct felony offense. In 2011, as part of a general effort to reduce excessive penalties for drug users and lower level sellers, the General Assembly passed and Governor Jack Markell signed a bill that substantially reformed the state's drug laws.

The 2011 law shrunk Delaware's drug-free zones from 1,000 feet to 300 feet. It also created three categories of drug offenses—simple possession, aggravated possession, and drug dealing—with the sentence for each offense depending on the type and quantity of drug involved and the presence or absence of aggravating circumstances. The law makes commission of the underlying offense within a drug-free zone an aggravating factor for the purposes of sentencing.

INDIANA

Indiana's original drug-free zone law, passed in 1987, raised the felony class of the underlying drug offense from Class B to Class A if the offense occurred within 1,000 feet of school property, a public park, a public housing complex, or a youth program center. Under state law, the penalties imposed for committing a Class A felony are substantially harsher than those imposed for a Class B felony: a Class A felony exposes a defendant to a sentence of 20 to 50 years in prison with an advisory sentence of 30 years, while a Class B felony exposes a defendant to a sentence of 6 to 20 years in prison with an advisory sentence of 10 years. In 2007, two bills were introduced—one in each house of the legislature—that would have expanded drug-free zones to churches and marked bus stops, respectively.

In response to the 2007 bills, Kelsey Kauffman, formerly of DePauw University, and her students began studying the impact and effectiveness of the state law. Their findings were similar to those in Massachusetts and Connecticut: drug-free zones blanketed large portions of inner city areas in Indianapolis and more than 75% of defendants who had their felony class raised under the drug-free zone statute were black.[5] Professor Kauffman and her students presented their findings before the Indiana Senate Committee on Corrections, Criminal, and Civil Matters in 2007 and 2008 and again before the specially-convened Indiana Sentencing Policy Study Committee in October 2008. Their testimony contributed to the defeat of the bills in the legislature.

In a drug-free zone case in February 2012, the Indiana Supreme Court reduced the 20-year sentence of a Kokomo man convicted of possessing small amounts of marijuana and cocaine within a drug-free zone.[6] Because the man would have faced a maximum prison sentence of only 18 months if his offense had occurred outside the zone, the court found that the 20-year sentence was grossly disproportionate to the severity of the crime. Furthermore, the court signaled that it would continue to reduce harsh sentences imposed under the drug-free zone law when it reduced a similar sentence in June 2012.[7]

In response, to address the concerns of the Indiana Supreme Court as well as the issues documented in the DePauw University study, the legislature passed and Governor Mike Pence signed a bill that substantially reformed the state's law. The bill reduced Indiana's zones from 1,000 feet to 500 feet and eliminated the zones around public housing complexes and youth program centers. It also added the requirement that a minor must be reasonably expected to be present when the underlying drug offense occurs. Lastly, the measure made violation of the drug-free zone law an "enhancing circumstance" of the underlying drug offense, the severity of which is dependent upon the type and quantity of the drug involved. Because the law also restructures Indiana's felony classification structure and penalties, a defendant sentenced under the revised law now faces a mandatory minimum penalty of one year rather than twenty years.

KENTUCKY

Lawmakers modiÀed the state's drug free zone in 2011. The provision was included in a larger package of sentencing reforms that were adopted to address the state's growing prison population. State lawmakers shrunk the drug free zone from 1,000 yards to 1,000 feet. Anecdotal reports suggest that the original zone was a mistake given that most states impose a zone measured in feet rather than yards. The change in policy was adopted without opposition

MASSACHUSETTS

In 1989, the General Assembly of Massachusetts passed the state's Àrst drug-free zone law, which imposed a 2-15-year mandatory minimum sentence for convictions of selling or distributing drugs within 1,000 feet of a school. A 1993 amendment drew a 100-foot zone around parks, and a 1998 amendment added a 1,000-foot zone around day care and Head Start facilities.[8] Efforts to reform the law began in 2000, when Dorchester District Court Judge Sydney Hanlon noticed that a majority of drug-free zone defendants in her courtroom were black or Hispanic and requested that Northeastern University researchers conduct an analysis on the racial impact of the law. The researchers documented that 80% of the defendants who received enhanced sentences under the drug-free zone law were black or Hispanic—even though 45% of those arrested for drug violations statewide were white.

The next layer of drug-free zone research was conducted by William Brownsberger at the Boston University School of Public Health. In his analysis of 443 drug sale cases in Fall River, New Bedford, and SpringÀeld, Massachusetts, Brownsberger found that school zones covered 29% of the three studied cities and 56% of high-poverty areas.[9] These Àndings led Brownsberger to recommend that the Massachusetts zone be shrunk from 1,000 feet to 100-250 feet.

These Àndings were bolstered by a 2009 report issued by the Prison Policy Initiative (PPI). PPI's research, which focused on Hampden County in western Massachusetts, revealed that residents of urban areas were Àve times as likely to live within a drug-free zone as residents of rural areas.[10] The data further showed that more than half of black and Hispanic residents lived in drug-free zones while less than a third of white residents did so. PPI also found that the addition of Head Start facilities to the law in 1998 disproportionately impacted poor neighborhoods since such facilities service poor neighborhoods and are therefore more likely to be located there.

As a result of the issues surrounding the state's drug-free school zone law, legislators serving on Massachusetts's joint Judiciary Committee approved a bill that would have shrunk the size of the zones and limited the hours of their effectiveness, but it died on the Áoor of the General Assembly. In the summer of 2012, however, with the endorsement of Governor Deval Patrick, the General Assembly passed a bill that reduced the size of Massachusetts's zones from 1,000 feet to 300 feet and limited the hours of the zones' operation from 5 a.m.-midnight.

NEW JERSEY

New Jersey Àrst enacted its drug-free zone law as part of sweeping drug legislation in 1987. The original law drew a 1,000-foot zone around schools; distributing, dispensing, or possessing with intent to distribute drugs within that zone was classiÀed as a third-degree felony with a three-year mandatory minimum prison sentence. In 1998, New Jersey lawmakers added a 500-foot zone for drug sales around public housing complexes, parks, libraries, and museums. Violation of the 1998 law constituted a second-degree offense, for which a prison term is the presumptive sentence. Furthermore, New Jersey courts have interpreted the word "school" in the statute to be broad, including daycare centers, vocational training centers, and other educational facilities.

Advocacy organizations including the Drug Policy Alliance and Families Against Mandatory Minimums prioritized reform of the state's drug-free school zone laws. This was instrumental in the legislature's decision to convene the New Jersey Commission to Review Criminal Sentencing in 2004. The Commission found that that enforcement of the drug-free-zone laws had a devastating impact on minority defendants because New Jersey's densely populated urban areas were transformed into massive "drug-free" zones. Nearly every defendant (96%) convicted and incarcerated for a drug-free zone

offense in New Jersey was either black or Latino.[11] The Commission recommended that the legislature shrink the size of the zones from 1,000 to 200 feet and eliminate the mandatory minimum sentence for school zone violations.

The commission's bill passed in committee in 2005 but stalled in the legislature later that year. Five years later, Governor Jon Corzine signed into law a bill that did not alter the 1,000-foot zone size, but eliminated the mandatory minimum prison sentence for school zone offenses and enhanced judicial discretion in such cases.

SOUTH CAROLINA

South Carolina maintains an expansive zone of more than 2,600 feet, or a half mile, around restricted areas. However, lawmakers modiÀed the triggers for penalty enhancements in restricted areas when a comprehensive package of sentencing reforms that garnered bipartisan support was adopted in 2010. The modiÀcation requires that anyone arrested for a drug offense in an enhancement zone must have knowledge that he or she was in a restricted area with the intent of selling.

CONCLUSION

Drug-free zone laws were initially promoted as an attempt to keep dangerous drug activity away from children. In practice, drug-free zone laws have created a number of serious issues within the criminal justice system, by frequently imposing excessive penalties and by subjecting urban poor and minority populations to harsher penalties than others for similar drug offenses. Spurred by more than a decade of research, a number of states are taking measures to reform their drug-free zone laws to alleviate the burdens they impose on poor people and people of color with no beneÀt to public safety. These states should serve as a model for other jurisdictions as the movement for fairer, more effective drug laws continues to build momentum in the United States.

ENDNOTES

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Justice Policy
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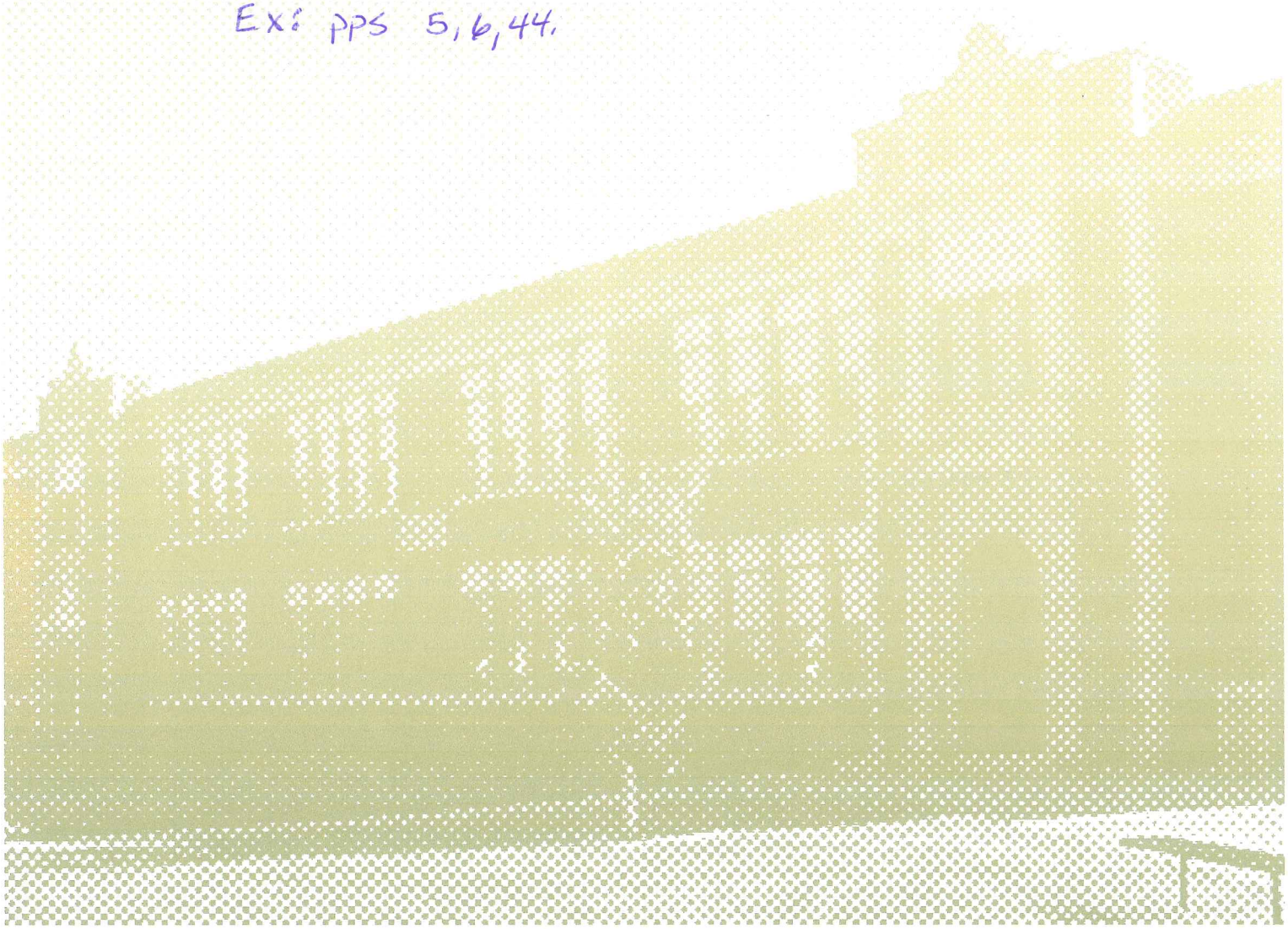

A Justice Policy Institute Report
Commissioned by
The Drug Policy Alliance
Judith Greene, Kevin Pranis, Jason Ziedenberg
March, 2006

Disparity by Design:

How drug-free zone laws impact racial disparity – and fail to protect youth

II. What are drug-free zones, and where have they been enacted?

> "The purpose of drug-free school zones was to protect children and schools by insulating them from drug activity. We recognized that the "war on drugs" would be won or lost in the schoolhouse. Our intention was to create a safe harbor for children by pushing the pushers away. Unfortunately, the current 1,000-foot zones have failed to achieve that objective."
>
> - New Jersey Assistant Attorney General Ron Susswein

Drug-free zone laws provide heightened penalties for drug offenses that occur within restricted areas surrounding schools, public housing projects, parks, playgrounds, and other proscribed locations. The typical statute establishes a 1,000-foot zone surrounding schools and equal or smaller zones for other structures or locations, but the size of the zone can vary from 300 feet to three miles depending the state. Most drug-free zones apply only to manufacture, distribution, or possession of a controlled substance with intent to distribute, but a few also cover simple drug possession.

Alabama's three-mile zone around both schools (including colleges and universities) and public housing projects, covers an area of more than 27 square miles.

A handful of states make drug activity in a prohibited zone a separate, stand-alone offense, but in most states the drug-free zone charge is an enhancement to the penalty imposed for the underlying possession or sale offense. The penalties and penalty enhancements assigned to drug-free zone violations vary widely, but in many states they include mandatory or presumptive sentences. Like other mandatory minimum drug sentencing laws, these statutes have contributed to prison population growth, and to racial and ethnic disparity in the use of incarceration.

Offenses vs. enhancements

Drug-free zone laws come in two forms. 1) The first designates distribution and/or possession of illegal drugs in a prohibited zone as a distinct crime that carries a specific penalty or penalty range. 2) The second, more common form of the law provides for heightened or additional penalties when specified drug crimes occur in a prohibited zone. Although the consequences for defendants are often similar, the legal distinction is important, and the report attempts to maintain it by referring either to drug-free zone "offenses" (separate crimes) or "enhancements" (heightened and additional penalties) when describing the laws and how they function.

The first drug-free zone law was enacted in a rudimentary form as part of the Comprehensive Drug Abuse, Prevention and Control Act of 1970 and amended to its current form in 1984 when the "crack" epidemic hit urban areas of the U.S. The federal statute provides a penalty enhancement that applies to distribution, possession with intent to distribute, or manufacture of a controlled substance within 1,000 feet of a school, college, or playground; or within 100 feet of a youth center, swimming pool, or video arcade. Drug-free zone offenses are subject to twice the maximum punishment authorized for offenses committed outside the zones. The only exemption is for cases involving five grams or less of marijuana.

In the summer of 1986, Len Bias, an all-American college basketball star at the University of Maryland, collapsed from a cardiac arrest in his dorm room and died shortly thereafter.

The news that his death may have been related to a drug overdose fueled enactment of drug-free zone laws, modeled on the federal statute, in state after state. By 2000, a draft analysis prepared by the National Alliance for Model State Drug Laws (NAMSDL) found that all 50 states and the District of Columbia had enacted statutes increasing penalties for drug offenses committed in prohibited zones surrounding schools and other public and quasi-public locations.[1]

The parameters of state drug-free zone statutes – size, location, offenses, and penalties

There is no central repository of information on state sentencing laws upon which to base a comparative analysis of drug-free zone statutes. The best available information comes from the NAMSDL survey, which is neither comprehensive nor current but which is helpful in drawing some general conclusions about how the laws have been structured.[2]

Zone size: From 300 feet to 3 miles

The typical drug-free zone extends 1,000 feet in every direction from the property line of the school or other covered structure or location – roughly the length of three football fields. A number of states have, however, established zones that are more narrowly focused on the area immediately surrounding schools and other locations that children frequent.

Minnesota, North Carolina, and Rhode Island lawmakers determined that a 300-foot zone provides the necessary protection for children.[3] Drug-free zones in Alaska and Wyoming extend 500 feet from schools, while lawmakers in Hawaii set the boundary at 750 feet. Vermont lawmakers opted not to establish a specific "zone" and instead reserved enhanced penalties for drug deliveries that take place within school grounds, on property adjoining school grounds, or on school buses.

On the other hand, a handful of states went in the opposite direction. In Connecticut and Mississippi, drug-free zones extend 1,500 feet from institutions;[4] Missouri and Oklahoma establish zones that reach 2,000 feet;[5] and South Carolina designates a half-mile (2,640 feet) as the radius of drug-free school zones. While Mississippi, Missouri, Oklahoma, and South Carolina are somewhat less densely populated, diluting the effect of the expanded zones, Connecticut has the fourth-highest population density in the nation which magnifies the impact of the larger zone.

No other state, however, approaches the scale chosen by lawmakers in Alabama who established a *three-mile* (15,840-foot) zone around both schools (including colleges and universities) and public housing projects. Each zone covers an area of more than 27 square miles – nearly half the size of the state's fifth-most populous city (Tuscaloosa) and more than half the size of Boston. In Birmingham, the "school-zone" surrounding the University of Alabama campus alone encompasses bulk of the central city and comes within blocks of the international airport.

Locations: From schools to shopping malls

A few states have narrowly tailored their drug-free zone statutes to focus on schools, the original target of the laws. Most, however, have attached the zones to locations such as parks and public housing developments, and more than a few have tacked on a laundry list of other public and private structures and locations.

Conclusion

A substantial body of evidence from research and policy studies indicates that drug-free zone laws, as they are typically configured, are not effective in reducing the sale or use of drugs, or in protecting school children – and the role these laws play to increase unwarranted racial disparity is well documented. The case studies detailed in this report demonstrate that policymakers in jurisdictions from coast to coast are moving to reform or replace drug-free zone laws with more effective measures. These include:

1) Shrinking the size of the zones to 200 feet

- **New Jersey:** The sentencing commission recommended that lawmakers narrow the zones to 200 feet: *"[R]educe the surface area of the zones to establish smaller, more discrete and therefore more recognizable areas around those facilities entitled to greater protection."* Bill S 278 incorporates the commission's reform recommendation.

- **Connecticut:** HB 5780, "An act concerning safe schools," is under consideration in the Judiciary Committee. The bill would narrow the scope of the zones from 1,500 to 200 feet from the perimeter of the prohibited structures and locations, and would require the posting of signs to mark the boundaries of prohibited zones.

- **Washington:** Senator Adam Kline (D – Seattle) introduced a bill to reform Washington's drug-free zone statute (SB 5258). Kline proposed that decreasing the space restriction around school grounds and school bus route stops from 1,000 feet to 200 feet, and specifying that the restrictions apply, respectively, during regular school hours and during the time that students are waiting for a bus or being discharged.

Seattle King County prosecutor: "We recognized that the enhancements could be more surgically applied to carry forward legislative intent."

2) Replacing drug-free zone laws with laws that target the problem

- **Utah:** The parole board recommends that legislators replace the drug-free zone enhancement with a narrowly tailored enhancement for those convicted of selling or manufacturing drugs in the presence of children.

- **Illinois:** Illinois law had provided automatic transfer of 15- and 16-year-olds charged with drug crimes within 1,000 feet of a school to adult criminal court without judicial review. In 2005, Governor Rod Blagojevich signed SB 283 – giving judges discretion to determine whether a youth will be prosecuted as an adult or a juvenile for drug offenses.

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Trends in Caffeine Intake Among US Children and Adolescents

Amy M. Branum, Lauren M. Rossen and Kenneth C. Schoendorf

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Trends in Caffeine Intake Among US Children and Adolescents

WHAT'S KNOWN ON THIS SUBJECT: The majority of caffeine intake among children and adolescents is due to soda and tea consumption. Energy drinks, which provide a potent source of caffeine, have increased in availability in the United States in recent years.

WHAT THIS STUDY ADDS: This analysis presents trends in caffeine intake between 1999 and 2010, which have previously not been described in the United States, and reveals the impact of increasing energy drink use, also previously not described, on these trends among children and adolescents.

abstract

FREE

BACKGROUND AND OBJECTIVE: Physicians and policy makers are increasingly interested in caffeine intake among children and adolescents in the advent of increasing energy drink sales. However, there have been no recent descriptions of caffeine or energy drink intake in the United States. We aimed to describe trends in caffeine intake over the past decade among US children and adolescents.

METHODS: We assessed trends and demographic differences in mean caffeine intake among children and adolescents by using the 24-hour dietary recall data from the 1999–2010 NHANES. In addition, we described the proportion of caffeine consumption attributable to different beverages, including soda, energy drinks, and tea.

RESULTS: Approximately 73% of children consumed caffeine on a given day. From 1999 to 2010, there were no significant trends in mean caffeine intake overall; however, caffeine intake decreased among 2- to 11-year-olds (P , .01) and Mexican-American children (P = .003). Soda accounted for the majority of caffeine intake, but this contribution declined from 62% to 38% (P , .001). Coffee accounted for 10% of caffeine intake in 1999–2000 but increased to nearly 24% of intake in 2009–2010 (P , .001). Energy drinks did not exist in 1999–2000 but increased to nearly 6% of caffeine intake in 2009–2010.

CONCLUSIONS: Mean caffeine intake has not increased among children and adolescents in recent years. However, coffee and energy drinks represent a greater proportion of caffeine intake as soda intake has declined. These findings provide a baseline for caffeine intake among US children and young adults during a period of increasing energy drink use. *Pediatrics* 2014;133:386–393

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KEY WORDS

diet, survey, children, adolescents, trends

ABBREVIATIONS

FDA—US Food and Drug Administration
MEC—mobile examination center
PIR—poverty-income ratio

Dr Branum codesigned the study, performed the literature review, and drafted the initial manuscript; Dr Rossen codesigned the study, performed the statistical analyses, and formatted the tables and figures; Dr Schoendorf conceptualized the study and critically reviewed the manuscript; and all authors approved the final manuscript as submitted.

The findings and conclusions in this article are those of the authors and do not necessarily represent the views of the National Center for Health Statistics, Centers for Disease Control and Prevention.

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The assessment of caffeine intake among children and adolescents is important to health professionals and policy makers. Historically, soda and tea have been the main sources of caffeine in the diets of children and adolescents[1]; however, the availability and sales of energy drinks, specialty coffee drinks, and food products containing caffeine, including candy bars, potato chips, and gum, have dramatically increased over the past decade and are often marketed toward children and adolescents.[2,3] Although caffeine is considered a "safe" substance by the US Food and Drug Administration (FDA), its potential adverse effects on children and adolescents are largely unknown because most research has been in adult populations.[3] In addition, the caffeine content of energy drinks, unlike that of cola, is not currently regulated by the FDA because the former are marketed as and considered dietary supplements.[2] Excess consumption of caffeine can result in tachycardia, arrhythmia, hypertension, hyperactivity, anxiety, and increased blood sugar concentrations because many energy drinks, specialty coffee drinks, and other drinks that contain large amounts of caffeine (eg, some brands of soda) often also contain high amounts of sugar.[4,5] Case reports of caffeine toxicity and deaths among adolescents and adults reflect the potential dangers of excess caffeine or energy drink consumption.[5,6]

The American Academy of Pediatrics currently takes the position that "stimulant-containing energy drinks have no place in the diets of children and adolescents"[7]. In addition, neither the *Dietary Guidelines for Americans* nor the Institute of Medicine provides guidance for caffeine as a nutrient. With the exception of an analysis of Continuing Survey of Food Intakes by Individuals data from the mid-to-late 1990s,[1] which predate energy drink production in the United States, there have been no descriptions of caffeine or energy drink intake among adolescents in the United States using a nationally representative population. This analysis fills these important gaps by examining trends in caffeine intake over the past decade among US children, adolescents, and young adults and assessing caffeine intake from energy drinks and other beverages.

METHODS

Study Population

We analyzed data from the 1999–2000, 2001–2002, 2003–2004, 2005–2006, 2007–2008, and 2009–2010 NHANES, a nationally representative survey of the civilian noninstitutionalized population in the United States.[8] The NHANES comprises both a household interview and mobile examination center (MEC) component. Participants are administered a series of questionnaires during the household interview; those that consent to an MEC examination undergo selected medical and physiologic measurements and laboratory tests.[8] The overall response rates for NHANES MEC participants were 75% to 80% for the survey periods used in this analysis.[9]

Study Variables

Our main outcome was caffeine intake from all foods and beverages reported on the first 24-hour dietary recall among NHANES participants ages 2 through 22 years. This 24-hour dietary recall is conducted in person in the MEC by a trained interviewer by using the Automated Multi-Pass Method, which involves leading the respondent through a series of questions regarding all food and beverage intake in the previous 24 hours.[10] Since 2003, a second dietary recall has been conducted via telephone 3 to 10 days after the first; however, because we were making population-level mean estimates and only have 1 recall for 1999–2002, this analysis was limited to the first-day dietary recall. For children younger than 6 years, recalls were answered by a proxy respondent, typically a caregiver. Children between 6 and 11 years of age completed the dietary recalls with assistance from a proxy respondent, and children 12 and older reported intake unassisted. More information regarding the dietary recall methodology can be found elsewhere.[11] Data on caffeine were taken from the Total Nutrient file, which contains summed nutrients for an individual from all food and beverages reported on the dietary recall.[12] The nutrient information is derived from the US Department of Agriculture's Food and Nutrient Database for Dietary Studies, which contains food and beverage nutrient composition data and is used in conjunction with the NHANES dietary recall data to assign nutrient values to reported foods and beverages.[13]

We also examined caffeine intake from specific food and beverages by using the Individual Foods files. Foods reported in the NHANES dietary recalls are assigned an 8-digit code beginning with the numbers 1 through 9, which distinguishes certain food groups from each other.[13] To examine food and beverage contributors to caffeine intake, we used these codes to create categories for specific beverages as follows: flavored dairy (eg, chocolate milk), coffee, soda, tea, and energy drinks. We also included 3 specific food categories, sweetened grains (eg, chocolate cake), sugars/sweets, and "other," due to the presence of caffeine in select items within these categories.

We examined trends in caffeine intake by demographic characteristics including age (2–5, 6–11, 12–16, 17–18, and 19–22 years), race/ethnicity (non-Hispanic white, non-Hispanic black, and Mexican American), and poverty status. These age groups align with the differences in the way the dietary recall

information was reported and also allowed a more detailed examination of caffeine intake among older adolescents and young adults. Although 19- to 22-year-olds are not typically included in analyses of children and adolescents, this age group was included due to concern about caffeine intake (and energy drink consumption, in particular) among college-aged youth. Race/ethnicity analysis was restricted to non-Hispanic white, non-Hispanic black, and Mexican American only because the relatively small sample sizes for children of "other Hispanic" and "other race/ethnicity" did not permit separate analyses. Poverty status was measured by using the poverty-income ratio (PIR), which accounts for household income according to household or family size, household age composition, and year.[14] We created ordinal categories of PIR expressed as a percentage of the federal poverty threshold (0%–99%, 100%–199%, 200%–299%, 300%–399%, and $ 400%).

Statistical Analysis

We estimated the mean caffeine intake (mg/day) by survey year and by demographic characteristics. Guidance from the online NHANES Dietary tutorial states that 1 day of dietary recall is subject to random error, mainly in the form of intraindividual daily variability in food intake, and bias (eg, underreporting of food intake based on weight or demographic characteristics).[15] Although it is assumed that the random errors will negate each other when intake is examined over an entire population, bias may still be present.[15] Therefore, the use of the first-day dietary recall to make population estimates of mean caffeine intake for a given day is sufficient for this analysis, although it may be limited by potential bias if certain demographic groups were more likely to misreport caffeine intake. Mean caffeine intake was not normally distributed because ~30% of respondents reported no caffeine intake on their first-day recall. Due to the large number of zero values, the distribution was also not easily transformable. Therefore, we estimated mean intake only among those reporting caffeine intake ("consumers") and examined the proportion reporting no caffeine intake ("nonconsumers") over time. We did this to determine whether the proportion of nonconsumers was different over time and therefore could bias the results of the mean analysis. The proportion of caffeine intake attributable to various food and beverage categories was assessed by multiplying caffeine intake in the Individual Foods file by the first-day dietary recall weight, as delineated in the NHANES analytic guidelines.[16] Using this value as the sample weight and tabulating the food and beverage categories subsequently produces the population-weighted proportion of caffeine intake attributable to each food and beverage category.

Trends over time were assessed overall and by demographic subgroups. Log-binomial models were used to model the proportion of youth reporting positive caffeine intake on a given day. Due to skewed distribution of caffeine intake among consumers, intake was log-transformed and linear regressions were used to examine associations between demographic characteristics, as well as to model trends over time. Statistical significance of trends was assessed by using orthogonal polynomial contrasts, which test a hypothesis of no linear or quadratic trend. Because of the large number of children with no caffeine intake, sensitivity analyses used zero-inflated negative binomial models to examine intake including nonconsumers. Analyses were performed by using Stata/SE (version 12.1; StataCorp, College Station, TX). Day 1 dietary recall weights and survey procedures were used in all analyses to account for the complex, stratified, multistage probability sample design of NHANES.

RESULTS

Approximately 73% of children consumed caffeine on a given day; this proportion did not change over time. However, there were some significant differences by age, race/ethnicity, and PIR (see Table 1). There was a significant quadratic trend for age; the percentage of consumers increased from 63% among 2- to 5-year-old children to ~75% among the older age groups. There was a linear trend for PIR where higher-income children were more likely to consume caffeine than children below the poverty threshold. Non-Hispanic white children were more likely to consume caffeine than non-Hispanic black or Mexican-American children. There were no differences over time in the proportion of youth consuming caffeine for any sociodemographic subgroup, except that youth in the lowest-income category (0%–99% of the federal poverty threshold) demonstrated a significant linear decrease in the likelihood of consuming caffeine across the study period ($P = .03$; data not shown).

Among caffeine consumers, there was an increase in caffeine intake with age (P , .001; Table 1). In addition, non-Hispanic white children consumed a greater amount of caffeine on a given day than non-Hispanic black or Mexican-American children (P , .001), and boys consumed a greater amount than girls (P , .001). There were no significant differences in mean caffeine intake by PIR.

There was no significant trend in mean caffeine intake (mg/day) among children with reported caffeine intake (Fig 1; $P = .104$). Similar results were found by using a zero-inflated negative binomial model to examine trends among all children, not just caffeine

TABLE 1 Percentage of US Children and Adolescents (2–22 Years Old) Consuming Caffeine and Intake Among Consumers: NHANES 1999–2010

	Percentage Consuming Caffeine	Mean Intake Among Consumers, mg
Year		
1999–2000	73.7 6 1.3	77.4 6 8.3
2001–2002	73.4 6 1.1	63.3 6 3.1
2003–2004	75.5 6 1.4	67.3 6 4.9
2005–2006	72.4 6 1.3	60.0 6 3.8
2007–2008	72.1 6 1.1	69.1 6 3.5
2009–2010	72.1 6 0.9	58.1 6 4.8
Gender		
Male	73.3 6 0.7	73.1 6 3.3
Female	73.1 6 0.7	57.7 6 1.7[a]
Age[a,b]		
2–5 years	62.7 6 1.1	15.9 6 1.2
6–11 years	74.8 6 0.9	31.8 6 1.6
12–16 years	75.3 6 0.9	67.5 6 2.4
17–18 years	75.8 6 1.2	109.9 6 7.1
19–22 years	76.8 6 1.6	125.5 6 6.0
Race/ethnicity		
Non-Hispanic white	77.5 6 0.7	74.2 6 2.6
Non-Hispanic black	58.7 6 0.9[c]	39.4 6 1.7[c]
Mexican American	73.3 6 0.9[d]	46.0 6 1.6[c]
PIR[e,f]		
0%–99% of FPT	71.9 6 0.9	66.8 6 4.0
100%–199% of FPT	72.4 6 1.2	70.9 6 5.3
200%–299% of FPT	73.9 6 1.7	58.1 6 3.1
300%–399% of FPT	74.6 6 1.1	68.6 6 5.7
$ 400% of FPT	75.1 6 1.2	61.6 6 3.1

Data are presented as percentages or means 6 SEs. FPT, federal poverty threshold.
[a] Indicates different from reference group of males, P , .05.
[b] Indicates significant linear trend, P , .001.
[c] Indicates different from reference group of non-Hispanic whites, P , .001.
[d] Indicates different from reference group of non-Hispanic whites, P , .05.
[e] Indicates significant linear trend, P , .01.
[f] Indicates significant quadratic trend, P , .01.

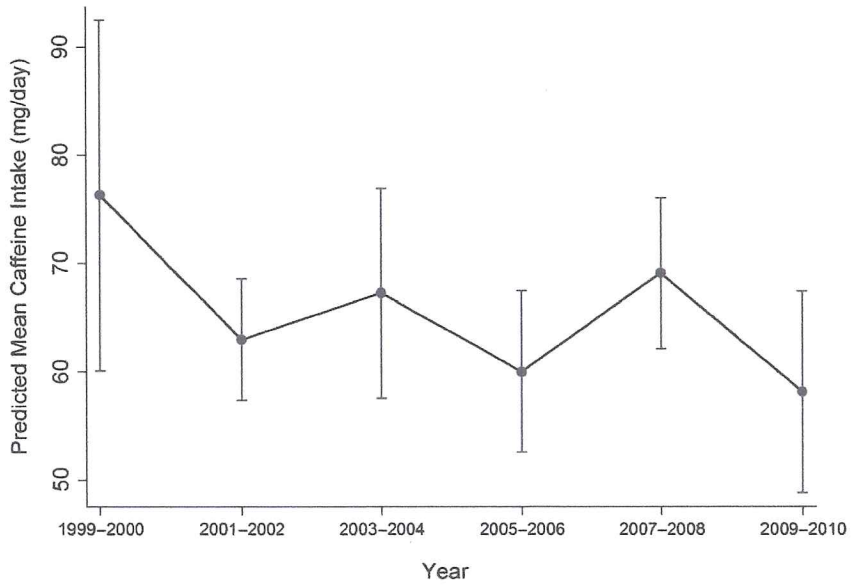

FIGURE 1
Mean caffeine intake (mg/day) and 95% confidence intervals among consumers of caffeine aged 2 to 22 years: NHANES 1999–2010.

consumers (data not shown). Table 2 describes mean caffeine intake over the study period among consumers by sociodemographic characteristics. Sensitivity analyses using zero-inflated negative binomial models and including nonconsumers were consistent with results presented (Supplemental Table 4). There were significant linear decreases over the study period in the mean amount of caffeine consumed on a given day among 2- to 5-year-olds (P , .001), 6- to 11-year-olds (P = .008), and Mexican-American children (P = .003). There were no statistically significant linear or quadratic time trends in caffeine intake among other sociodemographic subgroups.

Proportion of Caffeine Intake Attributable to Food/Beverage Categories

Soda accounted for the majority of caffeine intake in 1999–2000 (62%) and remained the largest contributor to caffeine intake throughout the study period (Fig 2). However, the proportion of intake attributable to soda declined from 62% in 1999–2000 to 38% in 2009–2010 (P , .001). Tea was the second largest contributor to overall caffeine intake, and remained relatively stable from 1999–2000 to 2009–2010. Coffee accounted for only 10% of caffeine intake in 1999–2000, but increased significantly to nearly 24% of intake in 2009–2010 (P , .001). Energy drinks did not exist as a category in 1999–2000, but represented nearly 6% of caffeine intake in 2009–2010. This increase represented a significant linear trend (P , .001), even though the sample size of children reporting use of energy drinks was small (unweighted n = 111, survey-weighted proportion of children reporting = 0.7%).

Table 3 shows the proportions of caffeine intake attributable to various sources by age group. Across all age groups, soda represented the largest contributor to caffeine intake in 1999–

TABLE 2 Mean Caffeine Intake Among Consumers Only Aged 2 to 22 Years Old: NHANES 1999–2010

	1999–2000	2001–2002	2003–2004	2005–2006	2007–2008	2009–2010
Gender, mg/d						
Male	86.3 6 14.5	72.7 6 4.4	73.9 6 6.5	71.2 6 6.8	71.3 6 5.2	65.2 6 7.2
Female	68.7 6 3.7	53.8 6 4.1	60.0 6 4.2	48.3 6 3.1	66.9 6 4.6	50.9 6 4.5
Age, mg/d						
2–5 years[a]	17.4 6 1.9	20.6 6 3.6	21.9 6 5.6	12.2 6 0.7	13.0 6 1.6	10.0 6 1.0
6–11 years[a]	39.4 6 8.0	31.4 6 2.1	38.3 6 3.8	24.6 6 2.1	33.7 6 3.4	23.0 6 1.4
12–16 years	80.6 6 4.6	61.2 6 4.9	68.7 6 4.4	59.6 6 3.9	72.0 6 5.2	64.3 6 9.8
17–18 years	124.4 6 16.1	105 6 6.8	92.8 6 12.0	117.3 6 19.2	130.9 6 30.9	96.1 6 7.2
19–22 years	142.9 6 15.7	123.7 6 13.2	126.3 6 13.5	118.2 6 14.8	127.5 6 19	116.4 6 8.4
Race/ethnicity, mg/d						
Non-Hispanic white	81.5 6 8.8	68.8 6 4.7	75.9 6 6.1	69.4 6 6.0	84.2 6 5.1	67.4 6 7.2
Non-Hispanic black	38.9 6 2.6	37.1 6 2.9	38.4 6 3.5	42.1 6 4.1	37.7 6 5.3	42.2 6 5.2
Mexican American[b]	52.9 6 2.3	47.4 6 3.4	50.7 6 5.1	39.5 6 3.7	41.8 6 4.0	42.4 6 3.3
PIR, mg/d						
0%–99% of FPT	86.1 6 11.2	52.9 6 4.5	61.2 6 6.5	68.1 6 15.9	75.7 6 12.8	60.6 6 5.0
100%–199% of FPT	98.1 6 22.3	65.8 6 6.9	62.3 6 8.6	61.8 6 9.3	79.5 6 12.5	60.5 6 7.0
200%–299% of FPT	63.3 6 7.1	60.5 6 7.8	59.3 6 9.3	54.5 6 6.8	62.2 6 6.2	51.2 6 7.3
300%–399% of FPT	62.9 6 8.4	83.9 6 18.4	81.8 6 12.7	54.1 6 5.9	62.3 6 14.2	68.8 6 21.3
$ 400% of FPT	69.4 6 7.0	59.7 6 5.7	74.1 6 9.7	58.6 6 8.9	60.8 6 6.2	49.8 6 6.7

Data are presented as means 6 SEs. FPT, federal poverty threshold.

[a] Indicates significant linear trend, P , .001.

[b] Indicates significant linear trend, P , .01.

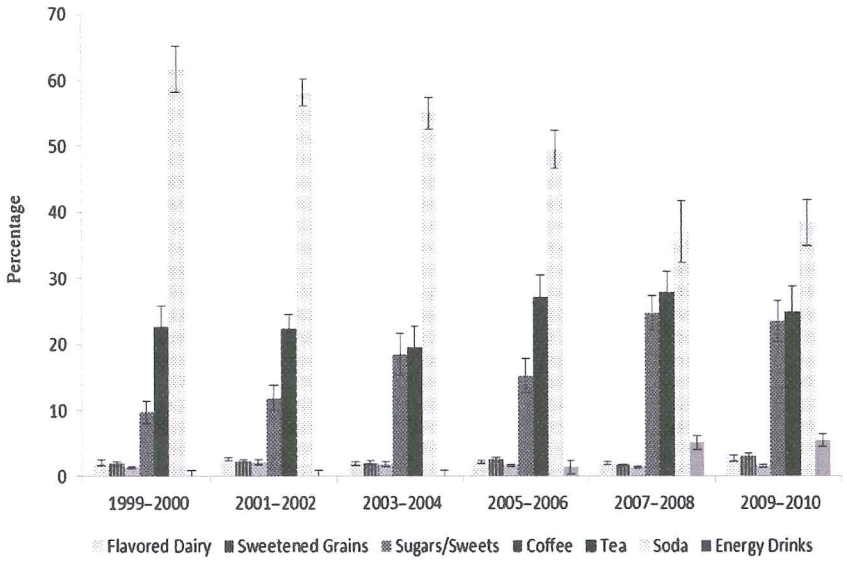

FIGURE 2

Percentages and SEs of total caffeine intake from different sources among 2- to 22-year-olds: NHANES 1999–2010. Linear trends for soda, coffee, and energy drinks were significant at P , .001.

2000. By 2009–2010, different patterns had emerged by age, although soda became a less predominant contributor to caffeine intakes across all groups. Among 2- to 5-year-olds, tea overtook soda as the largest contributor to caffeine intake. Among 19- to 22-year-olds, coffee emerged as the largest contributor to caffeine intake by 2009–2010. Energy drinks also increased from 0% of caffeine intake in 1999–2000 to just over 10% of caffeine intake among 19- to 22-year-olds in 2009–2010.Trends in the amount of caffeine attributable to different sources are presented in Supplemental Table 5 and are largely consistent with the trends in proportions described above. In addition, trends in caffeine intake attributable to sources by race/ethnicity are available in Supplemental Table 6.

DISCUSSION

Mean caffeine intake among the ~75% of children, adolescents, and young adults who consume caffeine in the United States has remained stable among adolescents and young adults but decreased among young children over the past 10 years. Although the trend in mean caffeine intake among consumers has not significantly changed for adolescents and young adults, the proportion of caffeine intake from soda, which historically has accounted for the majority of caffeine intake, decreased whereas the proportion of intake from coffee and energy drinks increased.

There is concern that caffeine intake may be increasing among children and adolescents as a result of the growing popularity and use of energy drinks.[5,17] In addition, consumption of sweetened coffee drinks has also

TABLE 3 Proportion of Total Caffeine Intake From Different Sources, by Age Group: NHANES 1999–2010

Age Group	1999–2000	2001–2002	2003–2004	2005–2006	2007–2008	2009–2010
2–5 years						
Flavored dairy[a]	10.5 6 1.9	10.0 6 2.3	9.2 6 2.6	12.6 6 1.2	15.2 6 2.6	17.0 6 2.3
Sweetened grains[b]	7.9 6 1.9	6.2 6 1.5	6.6 6 2.1	9.7 6 1.7	7.9 6 1.2	14.8 6 2.8
Sugars/sweets[a,c]	5.0 6 1.3	2.4 6 0.8	2.4 6 0.6	6.1 6 1.3	5.3 6 1.0	7.0 6 1.3
Coffee[b]	2.1 6 1.5	0.9 6 0.6	3.8 6 3.1	5.5 6 2.5	6.1 6 3.5	4.6 6 1.8
Tea	27.1 6 8	36.2 6 6.6	46.1 6 8.9	23.4 6 3.7	32.0 6 5.1	29.4 6 5.0
Soda[a]	47.2 6 5.8	44.1 6 5.1	31.3 6 3.3	42.6 6 4.2	33.4 6 3.9	26.8 6 3.7
Energy drinks	0.0 6 0.0	0.0 6 0.0	0.5 6 0.6	0.0 6 0.0	0.0 6 0.0	0.0 6 0.0
6–11 years						
Flavored dairy	4.9 6 1.3	7.4 6 1.1	5.5 6 1.0	8.9 6 0.7	5.9 6 0.7	9.6 6 0.9
Sweetened grains[a]	4.3 6 1.1	4.7 6 0.5	4.4 6 0.7	9.2 6 1.3	4.1 6 0.5	8.8 6 0.7
Sugars/sweets	3.0 6 0.5	4.3 6 0.6	2.2 6 0.4	3.9 6 0.6	2.7 6 0.5	4.3 6 0.6
Coffee[b]	2.2 6 1.1	5.4 6 3.4	1.5 6 0.6	4.5 6 2.1	8.0 6 2.3	8.5 6 2.6
Tea	25.1 6 8.0	21.1 6 3.2	19.9 6 4.5	21.9 6 3.5	29.7 6 5.6	29.7 6 5.9
Soda[d]	60.4 6 5.2	57.1 6 3.7	65.2 6 4.7	50.5 6 3.8	44.3 6 7.4	39.1 6 3.8
Energy drinks	0.0 6 0.0	0.0 6 0.0	1.5 6 1.3	0.1 6 0.1	5.3 6 2.8	0.0 6 0.0
12–16 years						
Flavored dairy[b]	2.3 6 0.3	2.8 6 0.4	1.4 6 0.3	1.7 6 0.4	1.5 6 0.3	2.5 6 0.5
Sweetened grains	2.2 6 0.5	2.8 6 0.3	2.1 6 0.3	2.9 6 0.4	2.0 6 0.2	3.4 6 0.9
Sugars/sweets	1.5 6 0.1	1.7 6 0.3	1.9 6 0.3	2.0 6 0.3	1.5 6 0.3	1.3 6 0.3
Coffee[d]	5.1 6 1.9	4.0 6 0.8	10.3 6 2.7	11.4 6 1.8	21.3 6 3.3	12.2 6 3.8
Tea	24.2 6 3.4	22.8 6 2.4	22.5 6 4.5	21.4 6 2.1	24.4 6 3.7	31.8 6 9.1
Soda[d]	64.6 6 4.1	65.3 6 2.3	61.5 6 3.5	58.9 6 2.1	44.1 6 6	45.8 6 7.7
Energy drinks[a]	0.0 6 0.0	0.6 6 0.5	0.3 6 0.3	1.7 6 1.0	5.2 6 2.3	3.0 6 1.2
17–18 years						
Flavored dairy	0.8 6 0.2	0.8 6 0.1	1.0 6 0.2	0.6 6 0.2	0.9 6 0.4	1.3 6 0.3
Sweetened grains	1.1 6 0.4	1.6 6 0.4	1.2 6 0.3	1.0 6 0.2	0.8 6 0.2	1.1 6 0.2
Sugars/sweets	0.9 6 0.2	1.1 6 0.2	1.4 6 0.4	0.8 6 0.1	1.0 6 0.4	1.5 6 0.4
Coffee[b]	15.0 6 4.7	12.7 6 4.0	24.9 6 7.6	17.3 6 6.9	27.1 6 4.5	28.6 6 4.8
Tea	19.9 6 4.4	20.2 6 3.6	16.9 6 6.3	24.2 6 6.8	32.2 6 4.8	25.4 6 5.8
Soda[d]	62.3 6 3.8	63.5 6 4.2	53.9 6 6.2	52.2 6 7.8	29.4 6 7.9	39.9 6 4.9
Energy drinks[c,d]	0.0 6 0.0	0.1 6 0.1	0.3 6 0.3	4.0 6 2.3	8.4 6 3.1	2.2 6 1.2
19–22 years						
Flavored dairy	0.8 6 0.3	0.5 6 0.1	0.4 6 0.1	0.5 6 0.1	0.5 6 0.2	0.6 6 0.1
Sweetened grains	0.8 6 0.2	1 6 0.5	0.8 6 0.3	0.8 6 0.2	0.9 6 0.1	1.1 6 0.3
Sugars/sweets[b]	0.7 6 0.2	2.2 6 0.7	1.9 6 0.7	0.9 6 0.2	0.8 6 0.3	0.8 6 0.2
Coffee[d]	14.1 6 3.3	20.9 6 4.1	30.1 6 6.4	20.5 6 4.1	33.2 6 5.2	34.2 6 4.2
Tea	21.3 6 4.1	21.5 6 5.7	15.5 6 5.3	33.7 6 7.2	26.9 6 3.2	18.7 6 2.9
Soda[d]	61.5 6 5.9	53.3 6 4.9	50.1 6 3.9	42.7 6 4.8	34 6 4.7	33.5 6 4.4
Energy drinks[d]	0.0 6 0.0	0.2 6 0.1	0.5 6 0.5	0.6 6 0.3	3.6 6 1.1	10.3 6 3

Data are presented as proportions +/- SEs.
[a] Indicates significant linear trend, P , .01.
[b] Indicates significant linear trend, P , .05.
[c] Indicates significant quadratic trend, P , .05.
[d] Indicates significant linear trend, P , .001.

increased.[18] The increase in caffeine intake from energy drinks and coffee since 1999–2000 has been offset by decreases in soda consumption over the same period, resulting in no significant change over time for most groups; however, if current trends in energy drink and coffee consumption continue, especially among population groups who consume more caffeine, such as older adolescents, that may no longer hold true.

There have been 2 previous reports of caffeine intake using nationally representative data from the United States. Using the Continuing Survey of Food Intakes by Individuals data from 1994 to 1996 and from 1998, which also used a 24-hour dietary recall, Frary et al[1] reported a greater proportion of children and adolescents consuming caffeine ($ 90% for most age and gender categories) compared with our results. Although our estimates of mean intake among children aged 2 to 5 years in 1999–2000 were similar to those reported by Frary et al, our estimates for older children were somewhat greater, although the use of different age groups and specific age and gender categories in their analysis make direct comparisons difficult. Similar proportions of caffeine intake from soda, tea, and coffee in 1999–2000 were observed in this study, compared with previous estimates.[1] A 2010 report from the FDA using NHANES data from same period as our study, which described caffeine intake among US children and adults, was also largely consistent with our results, although that report described per capita intake instead of intake among consumers only.[17] In addition, the FDA report used a consumer panel database to examine caffeine intake by food or beverage category, rather than NHANES; consequently, differences in methodology and age groups make findings not directly comparable.[19]

Our findings do compare with recently documented trends in beverage consumption. By using the NHANES data over the same time period, Kit et al,[18] found that soda consumption has declined in recent years whereas sweetened coffee and energy drink intake (combined with sports drinks) has increased among children and adolescents. The increasing trend in caffeine from energy drinks is temporally associated with sales data that show a sixfold increase in sales of energy drinks,[19,20] and with a doubling of visits to emergency departments related to energy drink consumption, mostly among 18- to 25-year-olds.[21]

Although there are currently no guidelines for daily maximum caffeine intake in individuals, the FDA sets tolerance limits on the amount of caffeine in cola-type beverages at # 0.02% of the substance.[22] However, the FDA does set limits on caffeine-containing

supplements at 200 mg per dose, a threshold at which acute caffeine toxicity is thought to occur.[22] Previous reports indicate that many caffeine-toxicity episodes occur among older teenagers and young adults, largely as a result of ingesting large amounts of caffeine coupled with alcohol and other legal and illegal drugs.[21]

To our knowledge, this is the first detailed description of caffeine intake from energy drink consumption among children, adolescents, and young adults in the United States. Although energy drinks accounted for a relatively small proportion of caffeine intake in 2009–2010, intake increased rapidly in a short period of time. With the recent emphasis on reducing intake of soda and juice as an obesity-reduction strategy, more research is needed to determine if children and adolescents are substituting energy drinks or coffee for soda. On average, a 12-oz serving of energy drink contains 36 g of sugar and ~160 calories, nearly the same as a 12-oz can of soda.[23] However, the amount of caffeine in energy drinks varies between brands but can be as high as 130 mg in a 12-oz serving, equivalent to four 12-oz servings of caffeinated soda.[23] Although many energy drinks are sold in 8-oz sizes, sales of larger containers are increasing.[2] Similarly, sweetened coffee drinks can contain large amounts of sugar, nearly double the amount of calories of soda depending on size and flavoring and caffeine amounts similar to that of energy drinks.[23] Future research should continue to monitor trends in energy drink and coffee consumption among youth, as well as determine the potential impact of these beverages on health outcomes.

This study is subject to some limitations. First, we used only the first day of dietary recall in documenting trends in intake, which does not account for intraindividual variation. Therefore, results do not necessarily represent usual intake of caffeine. Second, although increasing, energy drink intake remains relatively low, precluding reliable estimates for some groups (eg, children , 12 years). Finally data on caffeine intake may be subject to recall and social desirability biases as well as misreporting, because caregivers/proxies complete the recall or assist younger children in the sample. This study is the first detailed analysis of trends in, and sources of, caffeine intake among children and adolescents in the United States using 10 years of nationally representative data. This analysis of caffeine intake among youth provides valuable data in the context of the recent and rapid increase in the development and marketing of highly caffeinated food and beverage products. Moreover, this study is among the first to examine sociodemographic patterns in caffeine intake.

CONCLUSIONS

Mean caffeine intake has not increased among children and adolescents in recent years. However, coffee and energy drinks represent a greater proportion of caffeine intake as soda intake has declined, and generally have higher concentrations and amounts of caffeine than soda.[23] These findings provide a baseline for caffeine intake among US children and young adults in the advent of increasing energy drink sales and availability. Additional research will be needed to continue to monitor these trends and to determine the role of increasing energy drink and coffee consumption on child and adolescent health.

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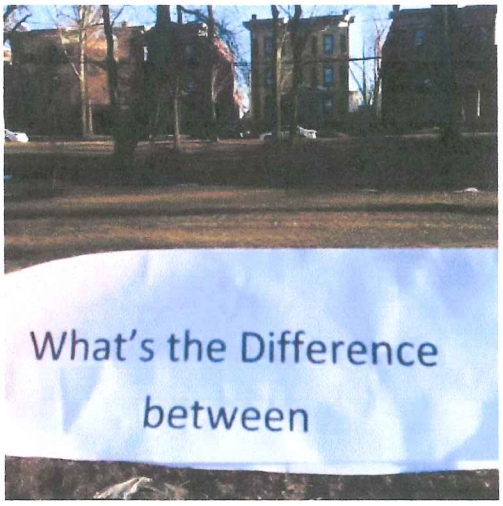
"Sentencing enhancement zones" fail to protect children and worsen racial disparity in incarceration

Most states have laws that are intended to protect children by creating enhanced penalties for various crimes committed within a certain distance of schools. These laws sound like a common-sense approach, but our research has shown that these laws do not work, will not work and have serious negative effects.

In Connecticut, for example, certain drug offenses committed within 1,500 feet of schools are punished with a longer sentence. The oringinal intent behind the law was noble: protect children from harmful activity by creating an incentive for bad activity to move elsewhere. The flaw is that the designated distance is too large. To create a safety zone around schools, the area to be protected needs to be small enough to incentivize moving illegal activity elsewhere. Imposing a higher penalty over an entire city or state by blanketing it in overlapping enhancement zones nullifies the legislatures' effort to give schools special protection. Simply put, *when a legislature says that every place is special, no place is special.*

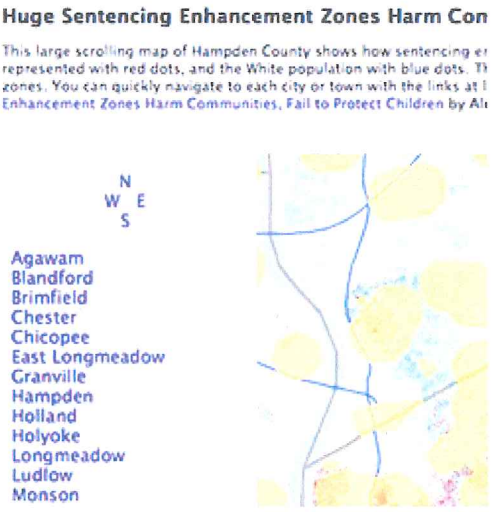
These laws were a noble, if naive, experiment when they began sweeping the nation in the late 1980s and 1990s. But now the evidence is in. They have not

worked to move areas around schools safer, and the extreme reach of these laws ensure that they will never serve the intended deterrent effect. But what these laws have done is consume criminal justice resources that could otherwise go to enforcing existing laws that directly and effectively protect children from being involved in criminal activity.



Sentencing enhancement laws also create a two-tiered system of justice: a harsher one for dense urban areas with numerous schools and overlapping zones and a milder one for rural and suburban areas, where schools are relatively few and far between.

Our first of a kind research mapped every sentencing enhancement zone in urban, rural and suburban Hampden County, Mass., and quantified the race and ethnicity of the people who live inside and outside of the zones. We found that residents of urban areas are five times more likely to live in a sentencing enhancement zone than those in rural areas, and Latinos are more than twice as likely as Whites to live in a sentencing enhancement zone. We demonstrated that the Massachusetts legislature erred in assuming that 1,000 feet was a reasonable or effective distance for the zones. Our research into Connecticut's 1,500 foot zones revealed similar patterns. Based on our research, we concluded that a 100-foot distance would be more effective for a geography-based sentencing enhancement.



Progress: Massachusetts rolls back law (August 2012)

Massachusetts has rolled back the sentencing enhancement zone law to 300 feet and the law no longer applies between the hours of midnight and 5am. As part of a 2011 package to save the budget and reduce the prison population, Governor Patrick endorsed our proposal to shrink the sentencing enhancement zones to 100 feet. The final bill, passed in 2012, reduces the zones to 300 feet. Based on our research, this distance is too large to allow the law to function as intended to protect children from drug activity; but it will at least greatly reduce the number of

people who receive the enhanced penalty.

We continue to push for further reforms....

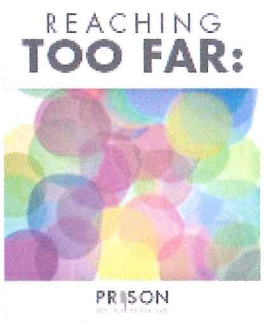
Connecticut

Senate Bill 259 was introduced by the Judiciary Committee in 2014. The bill would reduce the size of Connecticut's sentencing enhancement zones to 200 feet, would make the law more effective in protecting children while reducing the urban penalty in sentencing. A map of these proposed 200-foot zones is attached to our testimony submitted to the Judiciary Committee.

Massachusetts

Bill H.1645 was filed by Representative Swan for the 188th General Court. The bill would further reduce the size of school zones from 300 feet to 100 feet. The enhanced penalties would also be removed in cases where drug offenses occur within a private home or where a student under 18 sells drugs to another student. It would also allow all school zone offenders to be eligible for parole, work release and earned good time after serving half of the mandatory minimum. Finally, a school zone sentence could be served at the same time as another drug-related sentence. More information on the bill is available from FAMM.

Reports

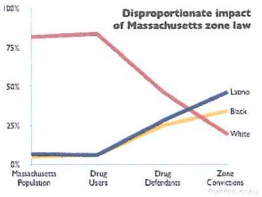


Reaching too far: How Connecticut's large sentencing enhancement zones miss the mark

by Aleks Kajstura, March 2014.
This report analyzes Connecticut's 1,500-foot sentencing enhancement zones, mapping the zones in the state's cities and towns and demonstrating both that the law is ineffective, and that it creates an "urban penalty".

The Geography of Punishment: How Huge Sentencing Enhancement Zones Harm Communities, Fail to Protect Children

by Aleks Kajstura, Peter Wagner and William Goldberg, July 2008.
This first-of-a-kind report mapped every sentencing enhancement zone in urban, rural and suburban Hampden County, and quantified the race and ethnicity of the people who live inside and outside of the zones.



Reaching too far, coming up short: How large sentencing enhancement zones miss the mark

by Aleks Kajstura, Peter Wagner and Leah Sakala
January, 2009.

This followup report, again focusing on Hampden County, Massachusetts, found that Blacks are 26 times as likely, and Latinos 30 times as likely as White residents to be convicted and receive a mandatory sentencing enhancement zone sentence.

Articles and op-eds

- Smart on crime, letter to the editor, from Peter Wagner, *Boston Herald*, Feb 4, 2011
- School Zone Laws Don't Work, by Peter Wagner (letter), *Valley Advocate*, March 12, 2009.
- PRRAC Researcher Report: Sentencing Enhancement Zones Fail to Protect Children, by Aleks Kajstura & Peter Wagner *Poverty & Race* November/December 2008.

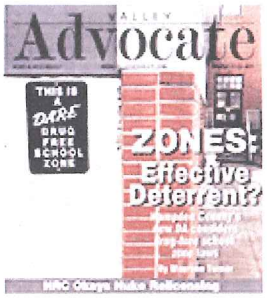
Related advocacy and resources

- Testimony before Connecticut's Joint Committee on Judiciary in support of S.B. 259, "An Act Concerning the Recommendations of the Connecticut Sentencing Commission Regarding the Enhanced Penalty for the Sale or Possession of Drugs Newr Schools, Day Care Centers and Public Housing Pojects." The bill, which would reduce the size of Connecticut's sentencing enhancement zones to 200 feet, would make the law more effective in protecting children while reducing the urban penalty in sentencing. Two fact sheets are attached to the testimony.
- Testimony before the Joint Committee on the Judiciary of the Massachusetts General Court in support of H2267/S908, "An Act to Reform the 'School Zone' Law for Drug Offenses." The bill, which would reduce the size of Massachusetts' school zones to 100 feet, would make the law more effective in protecting children while reducing racial disparities in sentenceing.
- Testimony to the Rhode Island Senate in opposition to S2644 which would have imposed longer sentences for felonies committed within 1,000 feet of educational institutions.
- 1,000 feet is further than you think is a graphical introduction to distance, and a version as a powerpoint presentation.

Coverage of our work:

The Hidden Price Of Drug-Free Zones, Christie Thompson, *ThinkProgress*, April 14, 2014

Lawmakers Debate Drug-Free School Zones, Amaris Elliott-Engel, *The Connecticut Law Tribune* March 28, 2014



Zones: Effective Deterrent? Are they an effective deterrent, or just a lever to force lesser pleas from drug offenders? The new DA Talks About Drug-Free School Zones, by Maureen Turner, *Valley Advocate*, March 18, 2011

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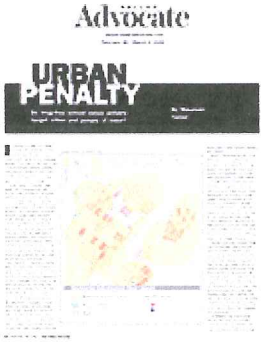
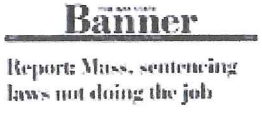
Partial progress on justice reform, by Maureen Turner, *Valley Advocate* (W. Mass.) June 3, 2010



"Urban Penalty: Do drug-free school zones unfairly target cities and people of color?", by Maureen Turner, *Valley Advocate* (Western Massachusetts) February 26, 2009.



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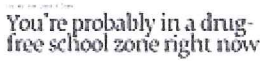

"You're Probably in a Drug-Free School Zone Right Now: For all the good it does", by Chris Faraone, *Boston Phoenix* February 11, 2009.

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DRUG-FREE ZONE LAWS:
AN OVERVIEW OF STATE POLICIES

Drug-free zone laws are among the most longstanding sentencing policies in America's War on Drugs. In 1970 – 12 years before President Ronald Reagan officially used the term "War on Drugs" – Congress passed an early version of a law increasing penalties for certain drug offenses committed near schools. In the 1980s, many state governments began to do the same. Today, all 50 states and the District of Columbia have adopted some form of drug-free school zone law.

The premise behind drug-free zone laws was that drug trafficking near schools posed a danger to children. In order to protect children from drug activity, lawmakers established protected zones around the places where children were most likely to be present, including schools and public parks. Individuals caught using or selling drugs within the protected zone faced substantially higher penalties than others who engaged in the same conduct outside the zone.

The application of drug-free school zone laws has proved problematic for several reasons:

- First, in the sentencing schemes of several states defendants may face two distinct penalties for a single offense.
- Second, the laws are frequently drafted so broadly that they result in enhanced penalties for drug offenses that are a substantial distance from a school, that do not involve school children in the offense, or take place outside of school hours. In Alabama, for example, a drug sale that takes place as much as three miles from a school, college, or public housing project is subject to a mandatory five-year prison term.
- Third, because protected areas are clustered within urban, high-density population areas, the zones disproportionately affect people of color and economically disadvantaged citizens.[1]

In recent years, these problems have led at least seven states, including Connecticut, Delaware, Indiana, Kentucky, Massachusetts, New Jersey, and South Carolina, to reform their drug-free zone laws. This briefing paper provides an overview of these statutes nationally and an assessment of reform activity in recent years.

DRUG-FREE ZONES: DIVERSITY AMONG THE STATES

Drug-free school zone laws vary by jurisdiction, with the key distinctions being in these areas: zone size, locations covered, offenses covered, and penalties imposed (see Appendix for full description of each state's policies). Some states have also adopted restrictions on when and under what circumstances the enhanced penalties apply.

All 50 states and Washington, D.C. (see Appendix) apply some form of enhanced penalties to offenses involving

manufacture, sale, distribution, or possession with intent to distribute drugs. In nine states—Alaska, Arkansas, Arizona, Connecticut, Indiana, Minnesota, New Mexico, Michigan and Oklahoma— defendants in drug-free zones can also face enhanced penalties even for simple drug possession that does not involve sale to school children. In Arkansas, for example, simple possession of two grams of methamphetamine is sufficient to trigger a ten-year sentence with no parole in addition to the sentence imposed for the underlying offense.

their policies to areas beyond elementary and secondary schools and onboard school buses. For example, several states have enacted zones around public housing facilities, public parks, churches, and daycare centers. Others, including Missouri and West Virginia, include colleges and universities in their definition of "school." Utah adds shopping malls, amusement parks, and the parking lots of such areas to the list of covered areas.

Table 1 Drug-Free Zone Sizes by State

< 1,000 ft.	1,000 ft.			> 1,000 ft.
Alaska	Alabama	Maine	Ohio	Alabama
Arizona[a]	Arkansas	Maryland	Oklahoma	Connecticut
Delaware	California	Michigan	Oregon	Louisiana
Hawaii	Colorado	Mississippi	Pennsylvania	Mississippi
Indiana	Connecticut	Missouri	South Carolina	Missouri
Massachusetts	Florida	Nebraska	South Dakota	Oklahoma
Minnesota	Georgia	Nevada	Tennessee	South Carolina
Rhode Island	Idaho	New Hampshire	Texas	
Vermont	Illinois	New Jersey	Utah	
Wyoming	Iowa	New Mexico	Virginia	
	Kansas	New York	Washington	
	Kentucky	North Carolina	Washington DC	
	Louisiana	North Dakota	West Virginia	

[a]Arizona's drug-free zones apply to 300 feet from school property on private property and 1,000 feet from school property on public property.

As seen in Table 1, 32 states and the District of Columbia establish a zone area that extends 1,000 feet in all directions from the property line of schools and other protected areas. Thus, in most states a drug sale that takes place at a distance of more than three football fields away from a school building can result in enhanced prison time. Ten states have drawn zones more tightly so as to avoid overreaching in their impact, while seven others have cast a much wider net of 1,500 feet or more.

Though the stated intent of drug-free zone laws was to protect schools, 31 states have extended the scope of

31 states have extended the scope of their policies to areas beyond elementary and secondary schools.

The most expansive law in terms of covered locations is that of Arkansas, which draws zones around schools, public parks, public housing facilities, day care centers, colleges and universities, recreation centers, skating rinks, Boys' and Girls' Clubs, substance abuse treatment facilities, and churches.

PENALTIES

Drug-free zone laws apply enhanced penalties in two different ways among the states. In thirty states, the law designates drug offenses within the protected zone as distinct crimes with their own penalties or penalty ranges. In Colorado, for example, sale of a controlled substance within a drug-free zone is a distinct criminal offense that carries an eight-year mandatory minimum sentence. In other states, the law prescribes enhanced penalties for underlying crimes when they occur within the protected zone. In Arizona, for instance, committing

a covered offense within a drug-free zone increases the presumptive minimum and maximum penalties for the underlying offense by one year.

States also vary in the severity of the penalties drug offenders receive for violating drug-free school zone laws. In 13 states, violation of the law triggers a mandatory minimum sentence or sentence enhancement that ranges from one year in Virginia to eight years in Colorado. In Washington, DC, Rhode Island, and the state of Washington, the drug-free zone violation doubles the maximum penalty for the underlying offense.

Kansas, Nebraska, and Tennessee elevate the felony class of the underlying drug offense when it is committed within a drug-free zone, thereby exposing the defendant to harsher penalties. Similarly, Delaware and Nevada treat violation of the drug-free zone as an aggravating factor in the sentencing proceeding for the underlying drug offense. Finally, some states allow juvenile defendants to be prosecuted for a drug-free zone offense in adult court and to be sentenced to an adult institution for violations of drug-free zone laws.

LIMITATIONS ON DRUG-FREE ZONES

A number of states have imposed various restrictions on their drug-free zone laws with the intention of narrowing their focus to more closely align with the original purpose of the law. Lawmakers have limited the application of the zone laws based on the nature of the transaction, the age of the defendant, the time of day, the presence of children, and whether the offense takes place on public or private property.

Seven states—Alaska, Georgia, Louisiana, Montana, New Jersey, Texas, and Washington—apply an exception to their drug-free zone laws if the offense occurs within a private residence so long as no children are present and the defendant did not proÀt from the offense. Virginia similarly applies its law only on public property. California, Nebraska, and West Virginia exempt juvenile defendants from enhanced penalties, as does New Mexico for possession offenses. Florida, Massachusetts, and Nevada impose some form of time restrictions on their laws so that they only apply when children are present.

New York and South Carolina require that defendants know they are in the zone when they commit the offense, while North Carolina and North Dakota exempt small quantities of marijuana from their zone laws. Indiana is unique in that it creates afÀrmative defenses to its zone law: defendants may avoid the enhanced penalties of the law if they were only brieÁy in the zone while no minors were present or if they were in the zone solely because law enforcement ofÀcers stopped them there

DRUG-FREE ZONE LAWS: REFORMS

While courts have been reluctant to grant Constitutional challenges to drug-free zone laws, concerns over the laws have led a number of state legislatures to reform their drug-free zone policies. By 2005, lawmakers in Massachusetts, New Jersey, and Connecticut had commissioned studies to survey the impact and effectiveness of drug-free zone laws in their respective states, and identiÀed problems regarding the scope of their respective zones and resulting racial disparities.[2] Several states have since enacted policy reforms including Massachusetts, New Jersey, Connecticut, and Indiana. Delaware, Kentucky and South Carolina also reformed their drug-free zone laws as part of larger drug law reform bills. But other states, including Arkansas, Hawaii, and Texas, have adopted harsher penalties by expanding locations to include public housing and playgrounds where selling drugs can trigger enhanced penalties. [3]

CONNECTICUT

Connecticut's harsh drug-free zone law was enacted in 1987. In 2001, Connecticut legislators changed state law to grant judges discretion in applying the school zone penalty in certain drug offenses based on "good cause."[4] Yet the Connecticut statute imposing a three-year mandatory minimum sentence for committing a drug offense within 1,500 feet of a school, public housing complex, or daycare center remains in effect.

However, further reforms may soon be enacted. In the 2013 legislative session, Connecticut's Black and Puerto Rican Caucus sponsored a bill that would have reduced the size of the state's drug-free zones from 1,500 feet to 300 feet. The bill was debated in the Connecticut House

of Representatives but Republican opponents succeeded in filibustering the bill and its time expired without a vote. As a result, the bill stalled and will not become law for 2013. Nevertheless proponents of the bill have vowed to introduce it again in the next legislative session.

DELAWARE

Delaware's drug-free zone law was first adopted in 1989 and created 1,000-foot zones around schools and 300-foot zones around parks. Commission of a drug offense—including simple possession—within the zone constituted a distinct felony offense. In 2011, as part of a general effort to reduce excessive penalties for drug users and lower level sellers, the General Assembly passed and Governor Jack Markell signed a bill that substantially reformed the state's drug laws.

The 2011 law shrunk Delaware's drug-free zones from 1,000 feet to 300 feet. It also created three categories of drug offenses—simple possession, aggravated possession, and drug dealing—with the sentence for each offense depending on the type and quantity of drug involved and the presence or absence of aggravating circumstances. The law makes commission of the underlying offense within a drug-free zone an aggravating factor for the purposes of sentencing.

INDIANA

Indiana's original drug-free zone law, passed in 1987, raised the felony class of the underlying drug offense from Class B to Class A if the offense occurred within 1,000 feet of school property, a public park, a public housing complex, or a youth program center. Under state law, the penalties imposed for committing a Class A felony are substantially harsher than those imposed for a Class B felony: a Class A felony exposes a defendant to a sentence of 20 to 50 years in prison with an advisory sentence of 30 years, while a Class B felony exposes a defendant to a sentence of 6 to 20 years in prison with an advisory sentence of 10 years. In 2007, two bills were introduced—one in each house of the legislature—that would have expanded drug-free zones to churches and marked bus stops, respectively.

In response to the 2007 bills, Kelsey Kauffman, formerly of DePauw University, and her students began studying the impact and effectiveness of the state law. Their findings were similar to those in Massachusetts and Connecticut: drug-free zones blanketed large portions of inner city areas in Indianapolis and more than 75% of defendants who had their felony class raised under the drug-free zone statute were black.[5] Professor Kauffman and her students presented their findings before the Indiana Senate Committee on Corrections, Criminal, and Civil Matters in 2007 and 2008 and again before the specially-convened Indiana Sentencing Policy Study Committee in October 2008. Their testimony contributed to the defeat of the bills in the legislature.

In a drug-free zone case in February 2012, the Indiana Supreme Court reduced the 20-year sentence of a Kokomo man convicted of possessing small amounts of marijuana and cocaine within a drug-free zone.[6] Because the man would have faced a maximum prison sentence of only 18 months if his offense had occurred outside the zone, the court found that the 20-year sentence was grossly disproportionate to the severity of the crime. Furthermore, the court signaled that it would continue to reduce harsh sentences imposed under the drug-free zone law when it reduced a similar sentence in June 2012.[7]

In response, to address the concerns of the Indiana Supreme Court as well as the issues documented in the DePauw University study, the legislature passed and Governor Mike Pence signed a bill that substantially reformed the state's law. The bill reduced Indiana's zones from 1,000 feet to 500 feet and eliminated the zones around public housing complexes and youth program centers. It also added the requirement that a minor must be reasonably expected to be present when the underlying drug offense occurs. Lastly, the measure made violation of the drug-free zone law an "enhancing circumstance" of the underlying drug offense, the severity of which is dependent upon the type and quantity of the drug involved. Because the law also restructures Indiana's felony classification structure and penalties, a defendant sentenced under the revised law now faces a mandatory minimum penalty of one year rather than twenty years.

KENTUCKY

Lawmakers modiÀed the state's drug free zone in 2011. The provision was included in a larger package of sentencing reforms that were adopted to address the state's growing prison population. State lawmakers shrunk the drug free zone from 1,000 yards to 1,000 feet. Anecdotal reports suggest that the original zone was a mistake given that most states impose a zone measured in feet rather than yards. The change in policy was adopted without opposition

MASSACHUSETTS

In 1989, the General Assembly of Massachusetts passed the state's Àrst drug-free zone law, which imposed a 2-15-year mandatory minimum sentence for convictions of selling or distributing drugs within 1,000 feet of a school. A 1993 amendment drew a 100-foot zone around parks, and a 1998 amendment added a 1,000-foot zone around day care and Head Start facilities.[8] Efforts to reform the law began in 2000, when Dorchester District Court Judge Sydney Hanlon noticed that a majority of drug-free zone defendants in her courtroom were black or Hispanic and requested that Northeastern University researchers conduct an analysis on the racial impact of the law. The researchers documented that 80% of the defendants who received enhanced sentences under the drug-free zone law were black or Hispanic—even though 45% of those arrested for drug violations statewide were white.

The next layer of drug-free zone research was conducted by William Brownsberger at the Boston University School of Public Health. In his analysis of 443 drug sale cases in Fall River, New Bedford, and SpringÀeld, Massachusetts, Brownsberger found that school zones covered 29% of the three studied cities and 56% of high-poverty areas.[9] These Àndings led Brownsberger to recommend that the Massachusetts zone be shrunk from 1,000 feet to 100-250 feet.

These Àndings were bolstered by a 2009 report issued by the Prison Policy Initiative (PPI). PPI's research, which focused on Hampden County in western Massachusetts, revealed that residents of urban areas were Àve times as likely to live within a drug-free zone as residents of rural areas.[10] The data further showed that more than half of black and Hispanic residents lived in drug-free zones while less than a third of white residents did so. PPI also found that the addition of Head Start facilities to the law in 1998 disproportionately impacted poor neighborhoods since such facilities service poor neighborhoods and are therefore more likely to be located there.

As a result of the issues surrounding the state's drug-free school zone law, legislators serving on Massachusetts's joint Judiciary Committee approved a bill that would have shrunk the size of the zones and limited the hours of their effectiveness, but it died on the Áoor of the General Assembly. In the summer of 2012, however, with the endorsement of Governor Deval Patrick, the General Assembly passed a bill that reduced the size of Massachusetts's zones from 1,000 feet to 300 feet and limited the hours of the zones' operation from 5 a.m.-midnight.

NEW JERSEY

New Jersey Àrst enacted its drug-free zone law as part of sweeping drug legislation in 1987. The original law drew a 1,000-foot zone around schools; distributing, dispensing, or possessing with intent to distribute drugs within that zone was classiÀed as a third-degree felony with a three-year mandatory minimum prison sentence. In 1998, New Jersey lawmakers added a 500-foot zone for drug sales around public housing complexes, parks, libraries, and museums. Violation of the 1998 law constituted a second-degree offense, for which a prison term is the presumptive sentence. Furthermore, New Jersey courts have interpreted the word "school" in the statute to be broad, including daycare centers, vocational training centers, and other educational facilities.

Advocacy organizations including the Drug Policy Alliance and Families Against Mandatory Minimums prioritized reform of the state's drug-free school zone laws. This was instrumental in the legislature's decision to convene the New Jersey Commission to Review Criminal Sentencing in 2004. The Commission found that that enforcement of the drug-free-zone laws had a devastating impact on minority defendants because New Jersey's densely populated urban areas were transformed into massive "drug-free" zones. Nearly every defendant (96%) convicted and incarcerated for a drug-free zone

offense in New Jersey was either black or Latino.[11] The Commission recommended that the legislature shrink the size of the zones from 1,000 to 200 feet and eliminate the mandatory minimum sentence for school zone violations.

The commission's bill passed in committee in 2005 but stalled in the legislature later that year. Five years later, Governor Jon Corzine signed into law a bill that did not alter the 1,000-foot zone size, but eliminated the mandatory minimum prison sentence for school zone offenses and enhanced judicial discretion in such cases.

SOUTH CAROLINA

South Carolina maintains an expansive zone of more than 2,600 feet, or a half mile, around restricted areas. However, lawmakers modiÀed the triggers for penalty enhancements in restricted areas when a comprehensive package of sentencing reforms that garnered bipartisan support was adopted in 2010. The modiÀcation requires that anyone arrested for a drug offense in an enhancement zone must have knowledge that he or she was in a restricted area with the intent of selling.

CONCLUSION

Drug-free zone laws were initially promoted as an attempt to keep dangerous drug activity away from children. In practice, drug-free zone laws have created a number of serious issues within the criminal justice system, by frequently imposing excessive penalties and by subjecting urban poor and minority populations to harsher penalties than others for similar drug offenses. Spurred by more than a decade of research, a number of states are taking measures to reform their drug-free zone laws to alleviate the burdens they impose on poor people and people of color with no beneÀt to public safety. These states should serve as a model for other jurisdictions as the movement for fairer, more effective drug laws continues to build momentum in the United States.

ENDNOTES

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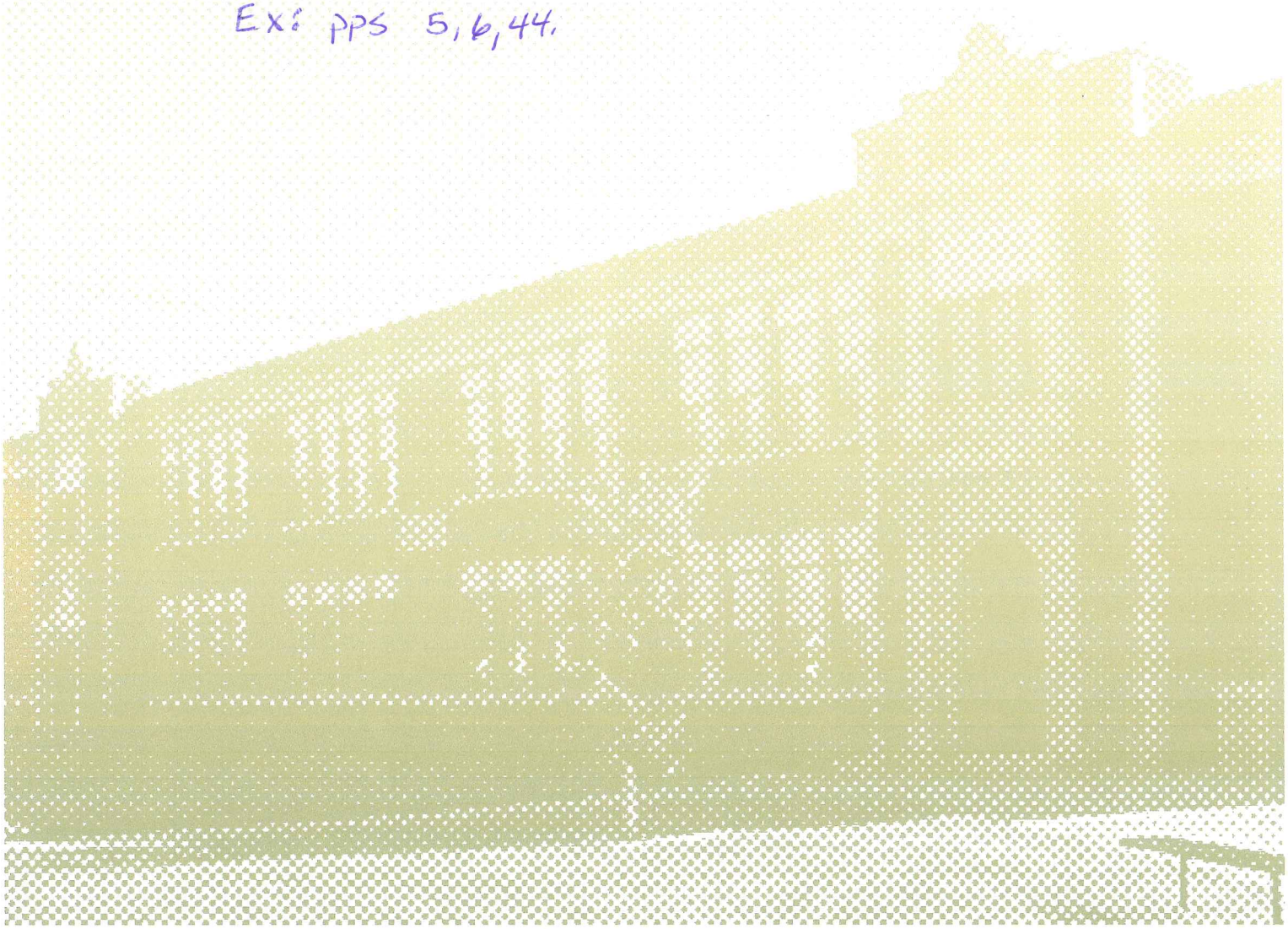

A Justice Policy Institute Report
Commissioned by
The Drug Policy Alliance
Judith Greene, Kevin Pranis, Jason Ziedenberg
March, 2006

Disparity by Design:

How drug-free zone laws impact racial disparity – and fail to protect youth

II. What are drug-free zones, and where have they been enacted?

> "The purpose of drug-free school zones was to protect children and schools by insulating them from drug activity. We recognized that the "war on drugs" would be won or lost in the schoolhouse. Our intention was to create a safe harbor for children by pushing the pushers away. Unfortunately, the current 1,000-foot zones have failed to achieve that objective."
>
> - New Jersey Assistant Attorney General Ron Susswein

Drug-free zone laws provide heightened penalties for drug offenses that occur within restricted areas surrounding schools, public housing projects, parks, playgrounds, and other proscribed locations. The typical statute establishes a 1,000-foot zone surrounding schools and equal or smaller zones for other structures or locations, but the size of the zone can vary from 300 feet to three miles depending the state. Most drug-free zones apply only to manufacture, distribution, or possession of a controlled substance with intent to distribute, but a few also cover simple drug possession.

Alabama's three-mile zone around both schools (including colleges and universities) and public housing projects, covers an area of more than 27 square miles.

A handful of states make drug activity in a prohibited zone a separate, stand-alone offense, but in most states the drug-free zone charge is an enhancement to the penalty imposed for the underlying possession or sale offense. The penalties and penalty enhancements assigned to drug-free zone violations vary widely, but in many states they include mandatory or presumptive sentences. Like other mandatory minimum drug sentencing laws, these statutes have contributed to prison population growth, and to racial and ethnic disparity in the use of incarceration.

Offenses vs. enhancements

Drug-free zone laws come in two forms. 1) The first designates distribution and/or possession of illegal drugs in a prohibited zone as a distinct crime that carries a specific penalty or penalty range. 2) The second, more common form of the law provides for heightened or additional penalties when specified drug crimes occur in a prohibited zone. Although the consequences for defendants are often similar, the legal distinction is important, and the report attempts to maintain it by referring either to drug-free zone "offenses" (separate crimes) or "enhancements" (heightened and additional penalties) when describing the laws and how they function.

The first drug-free zone law was enacted in a rudimentary form as part of the Comprehensive Drug Abuse, Prevention and Control Act of 1970 and amended to its current form in 1984 when the "crack" epidemic hit urban areas of the U.S. The federal statute provides a penalty enhancement that applies to distribution, possession with intent to distribute, or manufacture of a controlled substance within 1,000 feet of a school, college, or playground; or within 100 feet of a youth center, swimming pool, or video arcade. Drug-free zone offenses are subject to twice the maximum punishment authorized for offenses committed outside the zones. The only exemption is for cases involving five grams or less of marijuana.

In the summer of 1986, Len Bias, an all-American college basketball star at the University of Maryland, collapsed from a cardiac arrest in his dorm room and died shortly thereafter.

The news that his death may have been related to a drug overdose fueled enactment of drug-free zone laws, modeled on the federal statute, in state after state. By 2000, a draft analysis prepared by the National Alliance for Model State Drug Laws (NAMSDL) found that all 50 states and the District of Columbia had enacted statutes increasing penalties for drug offenses committed in prohibited zones surrounding schools and other public and quasi-public locations.[1]

The parameters of state drug-free zone statutes – size, location, offenses, and penalties

There is no central repository of information on state sentencing laws upon which to base a comparative analysis of drug-free zone statutes. The best available information comes from the NAMSDL survey, which is neither comprehensive nor current but which is helpful in drawing some general conclusions about how the laws have been structured.[2]

Zone size: From 300 feet to 3 miles

The typical drug-free zone extends 1,000 feet in every direction from the property line of the school or other covered structure or location – roughly the length of three football fields. A number of states have, however, established zones that are more narrowly focused on the area immediately surrounding schools and other locations that children frequent.

Minnesota, North Carolina, and Rhode Island lawmakers determined that a 300-foot zone provides the necessary protection for children.[3] Drug-free zones in Alaska and Wyoming extend 500 feet from schools, while lawmakers in Hawaii set the boundary at 750 feet. Vermont lawmakers opted not to establish a specific "zone" and instead reserved enhanced penalties for drug deliveries that take place within school grounds, on property adjoining school grounds, or on school buses.

On the other hand, a handful of states went in the opposite direction. In Connecticut and Mississippi, drug-free zones extend 1,500 feet from institutions;[4] Missouri and Oklahoma establish zones that reach 2,000 feet;[5] and South Carolina designates a half-mile (2,640 feet) as the radius of drug-free school zones. While Mississippi, Missouri, Oklahoma, and South Carolina are somewhat less densely populated, diluting the effect of the expanded zones, Connecticut has the fourth-highest population density in the nation which magnifies the impact of the larger zone.

No other state, however, approaches the scale chosen by lawmakers in Alabama who established a *three-mile* (15,840-foot) zone around both schools (including colleges and universities) and public housing projects. Each zone covers an area of more than 27 square miles – nearly half the size of the state's fifth-most populous city (Tuscaloosa) and more than half the size of Boston. In Birmingham, the "school-zone" surrounding the University of Alabama campus alone encompasses bulk of the central city and comes within blocks of the international airport.

Locations: From schools to shopping malls

A few states have narrowly tailored their drug-free zone statutes to focus on schools, the original target of the laws. Most, however, have attached the zones to locations such as parks and public housing developments, and more than a few have tacked on a laundry list of other public and private structures and locations.

Conclusion

A substantial body of evidence from research and policy studies indicates that drug-free zone laws, as they are typically configured, are not effective in reducing the sale or use of drugs, or in protecting school children – and the role these laws play to increase unwarranted racial disparity is well documented. The case studies detailed in this report demonstrate that policymakers in jurisdictions from coast to coast are moving to reform or replace drug-free zone laws with more effective measures. These include:

1) Shrinking the size of the zones to 200 feet

- **New Jersey:** The sentencing commission recommended that lawmakers narrow the zones to 200 feet: *"[R]educe the surface area of the zones to establish smaller, more discrete and therefore more recognizable areas around those facilities entitled to greater protection."* Bill S 278 incorporates the commission's reform recommendation.

- **Connecticut:** HB 5780, "An act concerning safe schools," is under consideration in the Judiciary Committee. The bill would narrow the scope of the zones from 1,500 to 200 feet from the perimeter of the prohibited structures and locations, and would require the posting of signs to mark the boundaries of prohibited zones.

Seattle King County prosecutor: "We recognized that the enhancements could be more surgically applied to carry forward legislative intent."

- **Washington:** Senator Adam Kline (D – Seattle) introduced a bill to reform Washington's drug-free zone statute (SB 5258). Kline proposed that decreasing the space restriction around school grounds and school bus route stops from 1,000 feet to 200 feet, and specifying that the restrictions apply, respectively, during regular school hours and during the time that students are waiting for a bus or being discharged.

2) Replacing drug-free zone laws with laws that target the problem

- **Utah:** The parole board recommends that legislators replace the drug-free zone enhancement with a narrowly tailored enhancement for those convicted of selling or manufacturing drugs in the presence of children.

- **Illinois:** Illinois law had provided automatic transfer of 15- and 16-year-olds charged with drug crimes within 1,000 feet of a school to adult criminal court without judicial review. In 2005, Governor Rod Blagojevich signed SB 283 – giving judges discretion to determine whether a youth will be prosecuted as an adult or a juvenile for drug offenses.

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Trends in Caffeine Intake Among US Children and Adolescents

Amy M. Branum, Lauren M. Rossen and Kenneth C. Schoendorf

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Trends in Caffeine Intake Among US Children and Adolescents

WHAT'S KNOWN ON THIS SUBJECT: The majority of caffeine intake among children and adolescents is due to soda and tea consumption. Energy drinks, which provide a potent source of caffeine, have increased in availability in the United States in recent years.

WHAT THIS STUDY ADDS: This analysis presents trends in caffeine intake between 1999 and 2010, which have previously not been described in the United States, and reveals the impact of increasing energy drink use, also previously not described, on these trends among children and adolescents.

abstract

FREE

BACKGROUND AND OBJECTIVE: Physicians and policy makers are increasingly interested in caffeine intake among children and adolescents in the advent of increasing energy drink sales. However, there have been no recent descriptions of caffeine or energy drink intake in the United States. We aimed to describe trends in caffeine intake over the past decade among US children and adolescents.

METHODS: We assessed trends and demographic differences in mean caffeine intake among children and adolescents by using the 24-hour dietary recall data from the 1999–2010 NHANES. In addition, we described the proportion of caffeine consumption attributable to different beverages, including soda, energy drinks, and tea.

RESULTS: Approximately 73% of children consumed caffeine on a given day. From 1999 to 2010, there were no significant trends in mean caffeine intake overall; however, caffeine intake decreased among 2- to 11-year-olds (P , .01) and Mexican-American children (P = .003). Soda accounted for the majority of caffeine intake, but this contribution declined from 62% to 38% (P , .001). Coffee accounted for 10% of caffeine intake in 1999–2000 but increased to nearly 24% of intake in 2009–2010 (P , .001). Energy drinks did not exist in 1999–2000 but increased to nearly 6% of caffeine intake in 2009–2010.

CONCLUSIONS: Mean caffeine intake has not increased among children and adolescents in recent years. However, coffee and energy drinks represent a greater proportion of caffeine intake as soda intake has declined. These findings provide a baseline for caffeine intake among US children and young adults during a period of increasing energy drink use. *Pediatrics* 2014;133:386–393

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KEY WORDS

diet, survey, children, adolescents, trends

ABBREVIATIONS

FDA—US Food and Drug Administration
MEC—mobile examination center
PIR—poverty-income ratio

Dr Branum codesigned the study, performed the literature review, and drafted the initial manuscript; Dr Rossen codesigned the study, performed the statistical analyses, and formatted the tables and figures; Dr Schoendorf conceptualized the study and critically reviewed the manuscript; and all authors approved the final manuscript as submitted.

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The assessment of caffeine intake among children and adolescents is important to health professionals and policy makers. Historically, soda and tea have been the main sources of caffeine in the diets of children and adolescents[1]; however, the availability and sales of energy drinks, specialty coffee drinks, and food products containing caffeine, including candy bars, potato chips, and gum, have dramatically increased over the past decade and are often marketed toward children and adolescents.[2,3] Although caffeine is considered a "safe" substance by the US Food and Drug Administration (FDA), its potential adverse effects on children and adolescents are largely unknown because most research has been in adult populations.[3] In addition, the caffeine content of energy drinks, unlike that of cola, is not currently regulated by the FDA because the former are marketed as and considered dietary supplements.[2] Excess consumption of caffeine can result in tachycardia, arrhythmia, hypertension, hyperactivity, anxiety, and increased blood sugar concentrations because many energy drinks, specialty coffee drinks, and other drinks that contain large amounts of caffeine (eg, some brands of soda) often also contain high amounts of sugar.[4,5] Case reports of caffeine toxicity and deaths among adolescents and adults reflect the potential dangers of excess caffeine or energy drink consumption.[5,6]

The American Academy of Pediatrics currently takes the position that "stimulant-containing energy drinks have no place in the diets of children and adolescents"[7]. In addition, neither the *Dietary Guidelines for Americans* nor the Institute of Medicine provides guidance for caffeine as a nutrient. With the exception of an analysis of Continuing Survey of Food Intakes by Individuals data from the mid-to-late 1990s,[1] which predate energy drink production in the United States, there have been no descriptions of caffeine or energy drink intake among adolescents in the United States using a nationally representative population. This analysis fills these important gaps by examining trends in caffeine intake over the past decade among US children, adolescents, and young adults and assessing caffeine intake from energy drinks and other beverages.

METHODS

Study Population

We analyzed data from the 1999–2000, 2001–2002, 2003–2004, 2005–2006, 2007–2008, and 2009–2010 NHANES, a nationally representative survey of the civilian noninstitutionalized population in the United States.[8] The NHANES comprises both a household interview and mobile examination center (MEC) component. Participants are administered a series of questionnaires during the household interview; those that consent to an MEC examination undergo selected medical and physiologic measurements and laboratory tests.[8] The overall response rates for NHANES MEC participants were 75% to 80% for the survey periods used in this analysis.[9]

Study Variables

Our main outcome was caffeine intake from all foods and beverages reported on the first 24-hour dietary recall among NHANES participants ages 2 through 22 years. This 24-hour dietary recall is conducted in person in the MEC by a trained interviewer by using the Automated Multi-Pass Method, which involves leading the respondent through a series of questions regarding all food and beverage intake in the previous 24 hours.[10] Since 2003, a second dietary recall has been conducted via telephone 3 to 10 days after the first; however, because we were making population-level mean estimates and only have 1 recall for 1999–2002, this analysis was limited to the first-day dietary recall. For children younger than 6 years, recalls were answered by a proxy respondent, typically a caregiver. Children between 6 and 11 years of age completed the dietary recalls with assistance from a proxy respondent, and children 12 and older reported intake unassisted. More information regarding the dietary recall methodology can be found elsewhere.[11] Data on caffeine were taken from the Total Nutrient file, which contains summed nutrients for an individual from all food and beverages reported on the dietary recall.[12] The nutrient information is derived from the US Department of Agriculture's Food and Nutrient Database for Dietary Studies, which contains food and beverage nutrient composition data and is used in conjunction with the NHANES dietary recall data to assign nutrient values to reported foods and beverages.[13]

We also examined caffeine intake from specific food and beverages by using the Individual Foods files. Foods reported in the NHANES dietary recalls are assigned an 8-digit code beginning with the numbers 1 through 9, which distinguishes certain food groups from each other.[13] To examine food and beverage contributors to caffeine intake, we used these codes to create categories for specific beverages as follows: flavored dairy (eg, chocolate milk), coffee, soda, tea, and energy drinks. We also included 3 specific food categories, sweetened grains (eg, chocolate cake), sugars/sweets, and "other," due to the presence of caffeine in select items within these categories.

We examined trends in caffeine intake by demographic characteristics including age (2–5, 6–11, 12–16, 17–18, and 19–22 years), race/ethnicity (non-Hispanic white, non-Hispanic black, and Mexican American), and poverty status. These age groups align with the differences in the way the dietary recall

information was reported and also allowed a more detailed examination of caffeine intake among older adolescents and young adults. Although 19- to 22-year-olds are not typically included in analyses of children and adolescents, this age group was included due to concern about caffeine intake (and energy drink consumption, in particular) among college-aged youth. Race/ethnicity analysis was restricted to non-Hispanic white, non-Hispanic black, and Mexican American only because the relatively small sample sizes for children of "other Hispanic" and "other race/ethnicity" did not permit separate analyses. Poverty status was measured by using the poverty-income ratio (PIR), which accounts for household income according to household or family size, household age composition, and year.[14] We created ordinal categories of PIR expressed as a percentage of the federal poverty threshold (0%–99%, 100%–199%, 200%–299%, 300%–399%, and $ 400%).

Statistical Analysis

We estimated the mean caffeine intake (mg/day) by survey year and by demographic characteristics. Guidance from the online NHANES Dietary tutorial states that 1 day of dietary recall is subject to random error, mainly in the form of intraindividual daily variability in food intake, and bias (eg, underreporting of food intake based on weight or demographic characteristics).[15] Although it is assumed that the random errors will negate each other when intake is examined over an entire population, bias may still be present.[15] Therefore, the use of the first-day dietary recall to make population estimates of mean caffeine intake for a given day is sufficient for this analysis, although it may be limited by potential bias if certain demographic groups were more likely to misreport caffeine intake. Mean caffeine intake was not normally distributed because ~30% of respondents reported no caffeine intake on their first-day recall. Due to the large number of zero values, the distribution was also not easily transformable. Therefore, we estimated mean intake only among those reporting caffeine intake ("consumers") and examined the proportion reporting no caffeine intake ("nonconsumers") over time. We did this to determine whether the proportion of nonconsumers was different over time and therefore could bias the results of the mean analysis. The proportion of caffeine intake attributable to various food and beverage categories was assessed by multiplying caffeine intake in the Individual Foods file by the first-day dietary recall weight, as delineated in the NHANES analytic guidelines.[16] Using this value as the sample weight and tabulating the food and beverage categories subsequently produces the population-weighted proportion of caffeine intake attributable to each food and beverage category.

Trends over time were assessed overall and by demographic subgroups. Log-binomial models were used to model the proportion of youth reporting positive caffeine intake on a given day. Due to skewed distribution of caffeine intake among consumers, intake was log-transformed and linear regressions were used to examine associations between demographic characteristics, as well as to model trends over time. Statistical significance of trends was assessed by using orthogonal polynomial contrasts, which test a hypothesis of no linear or quadratic trend. Because of the large number of children with no caffeine intake, sensitivity analyses used zero-inflated negative binomial models to examine intake including nonconsumers. Analyses were performed by using Stata/SE (version 12.1; StataCorp, College Station, TX). Day 1 dietary recall weights and survey procedures were used in all analyses to account for the complex, stratified, multistage probability sample design of NHANES.

RESULTS

Approximately 73% of children consumed caffeine on a given day; this proportion did not change over time. However, there were some significant differences by age, race/ethnicity, and PIR (see Table 1). There was a significant quadratic trend for age; the percentage of consumers increased from 63% among 2- to 5-year-old children to ~75% among the older age groups. There was a linear trend for PIR where higher-income children were more likely to consume caffeine than children below the poverty threshold. Non-Hispanic white children were more likely to consume caffeine than non-Hispanic black or Mexican-American children. There were no differences over time in the proportion of youth consuming caffeine for any sociodemographic subgroup, except that youth in the lowest-income category (0%–99% of the federal poverty threshold) demonstrated a significant linear decrease in the likelihood of consuming caffeine across the study period ($P = .03$; data not shown).

Among caffeine consumers, there was an increase in caffeine intake with age (P , .001; Table 1). In addition, non-Hispanic white children consumed a greater amount of caffeine on a given day than non-Hispanic black or Mexican-American children (P , .001), and boys consumed a greater amount than girls (P , .001). There were no significant differences in mean caffeine intake by PIR.

There was no significant trend in mean caffeine intake (mg/day) among children with reported caffeine intake (Fig 1; $P = .104$). Similar results were found by using a zero-inflated negative binomial model to examine trends among all children, not just caffeine

TABLE 1 Percentage of US Children and Adolescents (2–22 Years Old) Consuming Caffeine and Intake Among Consumers: NHANES 1999–2010

	Percentage Consuming Caffeine	Mean Intake Among Consumers, mg
Year		
1999–2000	73.7 6 1.3	77.4 6 8.3
2001–2002	73.4 6 1.1	63.3 6 3.1
2003–2004	75.5 6 1.4	67.3 6 4.9
2005–2006	72.4 6 1.3	60.0 6 3.8
2007–2008	72.1 6 1.1	69.1 6 3.5
2009–2010	72.1 6 0.9	58.1 6 4.8
Gender		
Male	73.3 6 0.7	73.1 6 3.3
Female	73.1 6 0.7	57.7 6 1.7[a]
Age[a,b]		
2–5 years	62.7 6 1.1	15.9 6 1.2
6–11 years	74.8 6 0.9	31.8 6 1.6
12–16 years	75.3 6 0.9	67.5 6 2.4
17–18 years	75.8 6 1.2	109.9 6 7.1
19–22 years	76.8 6 1.6	125.5 6 6.0
Race/ethnicity		
Non-Hispanic white	77.5 6 0.7	74.2 6 2.6
Non-Hispanic black	58.7 6 0.9[c]	39.4 6 1.7[c]
Mexican American	73.3 6 0.9[d]	46.0 6 1.6[c]
PIR[e,f]		
0%–99% of FPT	71.9 6 0.9	66.8 6 4.0
100%–199% of FPT	72.4 6 1.2	70.9 6 5.3
200%–299% of FPT	73.9 6 1.7	58.1 6 3.1
300%–399% of FPT	74.6 6 1.1	68.6 6 5.7
$ 400% of FPT	75.1 6 1.2	61.6 6 3.1

Data are presented as percentages or means 6 SEs. FPT, federal poverty threshold.
[a] Indicates different from reference group of males, P , .05.
[b] Indicates significant linear trend, P , .001.
[c] Indicates different from reference group of non-Hispanic whites, P , .001.
[d] Indicates different from reference group of non-Hispanic whites, P , .05.
[e] Indicates significant linear trend, P , .01.
[f] Indicates significant quadratic trend, P , .01.

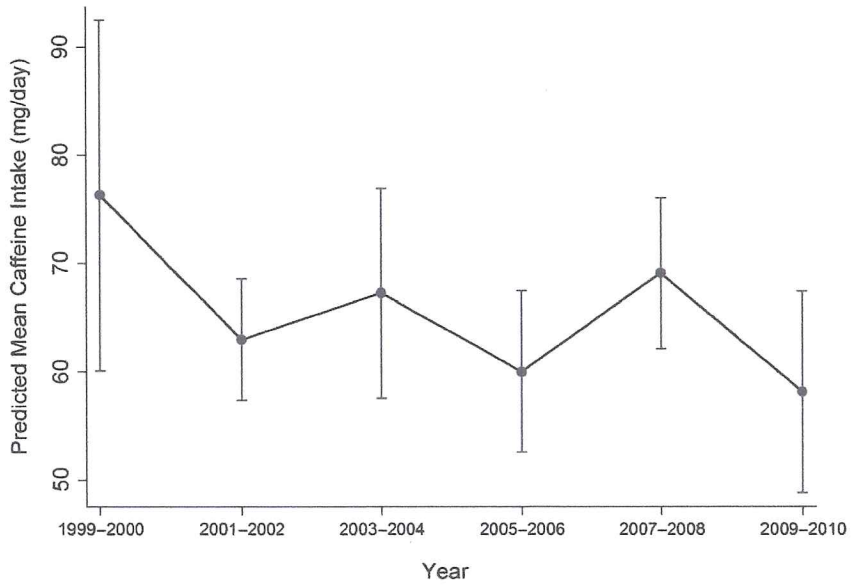

FIGURE 1
Mean caffeine intake (mg/day) and 95% confidence intervals among consumers of caffeine aged 2 to 22 years: NHANES 1999–2010.

consumers (data not shown). Table 2 describes mean caffeine intake over the study period among consumers by sociodemographic characteristics. Sensitivity analyses using zero-inflated negative binomial models and including nonconsumers were consistent with results presented (Supplemental Table 4). There were significant linear decreases over the study period in the mean amount of caffeine consumed on a given day among 2- to 5-year-olds (P , .001), 6- to 11-year-olds (P = .008), and Mexican-American children (P = .003). There were no statistically significant linear or quadratic time trends in caffeine intake among other sociodemographic subgroups.

Proportion of Caffeine Intake Attributable to Food/Beverage Categories

Soda accounted for the majority of caffeine intake in 1999–2000 (62%) and remained the largest contributor to caffeine intake throughout the study period (Fig 2). However, the proportion of intake attributable to soda declined from 62% in 1999–2000 to 38% in 2009–2010 (P , .001). Tea was the second largest contributor to overall caffeine intake, and remained relatively stable from 1999–2000 to 2009–2010. Coffee accounted for only 10% of caffeine intake in 1999–2000, but increased significantly to nearly 24% of intake in 2009–2010 (P , .001). Energy drinks did not exist as a category in 1999–2000, but represented nearly 6% of caffeine intake in 2009–2010. This increase represented a significant linear trend (P , .001), even though the sample size of children reporting use of energy drinks was small (unweighted n = 111, survey-weighted proportion of children reporting = 0.7%).

Table 3 shows the proportions of caffeine intake attributable to various sources by age group. Across all age groups, soda represented the largest contributor to caffeine intake in 1999–

TABLE 2 Mean Caffeine Intake Among Consumers Only Aged 2 to 22 Years Old: NHANES 1999–2010

	1999–2000	2001–2002	2003–2004	2005–2006	2007–2008	2009–2010
Gender, mg/d						
Male	86.3 6 14.5	72.7 6 4.4	73.9 6 6.5	71.2 6 6.8	71.3 6 5.2	65.2 6 7.2
Female	68.7 6 3.7	53.8 6 4.1	60.0 6 4.2	48.3 6 3.1	66.9 6 4.6	50.9 6 4.5
Age, mg/d						
2–5 years[a]	17.4 6 1.9	20.6 6 3.6	21.9 6 5.6	12.2 6 0.7	13.0 6 1.6	10.0 6 1.0
6–11 years[a]	39.4 6 8.0	31.4 6 2.1	38.3 6 3.8	24.6 6 2.1	33.7 6 3.4	23.0 6 1.4
12–16 years	80.6 6 4.6	61.2 6 4.9	68.7 6 4.4	59.6 6 3.9	72.0 6 5.2	64.3 6 9.8
17–18 years	124.4 6 16.1	105 6 6.8	92.8 6 12.0	117.3 6 19.2	130.9 6 30.9	96.1 6 7.2
19–22 years	142.9 6 15.7	123.7 6 13.2	126.3 6 13.5	118.2 6 14.8	127.5 6 19	116.4 6 8.4
Race/ethnicity, mg/d						
Non-Hispanic white	81.5 6 8.8	68.8 6 4.7	75.9 6 6.1	69.4 6 6.0	84.2 6 5.1	67.4 6 7.2
Non-Hispanic black	38.9 6 2.6	37.1 6 2.9	38.4 6 3.5	42.1 6 4.1	37.7 6 5.3	42.2 6 5.2
Mexican American[b]	52.9 6 2.3	47.4 6 3.4	50.7 6 5.1	39.5 6 3.7	41.8 6 4.0	42.4 6 3.3
PIR, mg/d						
0%–99% of FPT	86.1 6 11.2	52.9 6 4.5	61.2 6 6.5	68.1 6 15.9	75.7 6 12.8	60.6 6 5.0
100%–199% of FPT	98.1 6 22.3	65.8 6 6.9	62.3 6 8.6	61.8 6 9.3	79.5 6 12.5	60.5 6 7.0
200%–299% of FPT	63.3 6 7.1	60.5 6 7.8	59.3 6 9.3	54.5 6 6.8	62.2 6 6.2	51.2 6 7.3
300%–399% of FPT	62.9 6 8.4	83.9 6 18.4	81.8 6 12.7	54.1 6 5.9	62.3 6 14.2	68.8 6 21.3
$ 400% of FPT	69.4 6 7.0	59.7 6 5.7	74.1 6 9.7	58.6 6 8.9	60.8 6 6.2	49.8 6 6.7

Data are presented as means 6 SEs. FPT, federal poverty threshold.

[a] Indicates significant linear trend, P , .001.

[b] Indicates significant linear trend, P , .01.

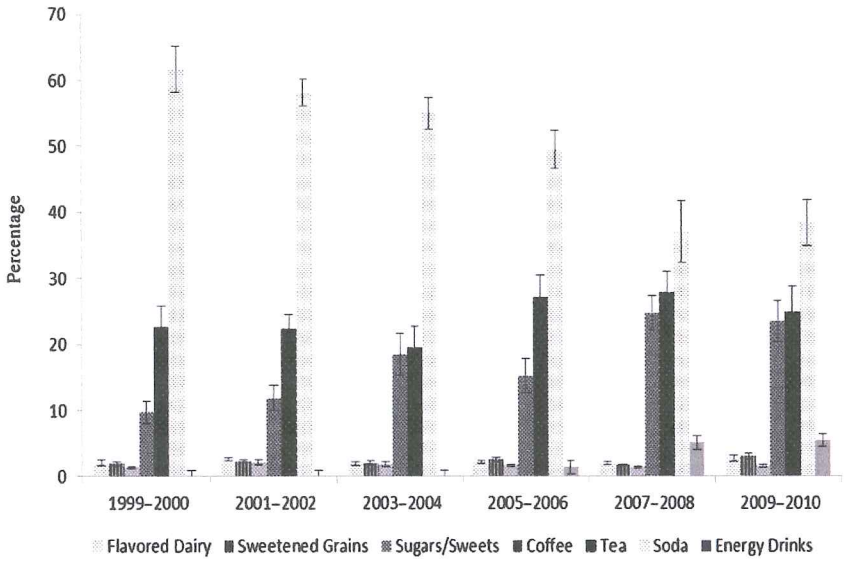

FIGURE 2

Percentages and SEs of total caffeine intake from different sources among 2- to 22-year-olds: NHANES 1999–2010. Linear trends for soda, coffee, and energy drinks were significant at P , .001.

2000. By 2009–2010, different patterns had emerged by age, although soda became a less predominant contributor to caffeine intakes across all groups. Among 2- to 5-year-olds, tea overtook soda as the largest contributor to caffeine intake. Among 19- to 22-year-olds, coffee emerged as the largest contributor to caffeine intake by 2009–2010. Energy drinks also increased from 0% of caffeine intake in 1999–2000 to just over 10% of caffeine intake among 19- to 22-year-olds in 2009–2010.Trends in the amount of caffeine attributable to different sources are presented in Supplemental Table 5 and are largely consistent with the trends in proportions described above. In addition, trends in caffeine intake attributable to sources by race/ethnicity are available in Supplemental Table 6.

DISCUSSION

Mean caffeine intake among the ~75% of children, adolescents, and young adults who consume caffeine in the United States has remained stable among adolescents and young adults but decreased among young children over the past 10 years. Although the trend in mean caffeine intake among consumers has not significantly changed for adolescents and young adults, the proportion of caffeine intake from soda, which historically has accounted for the majority of caffeine intake, decreased whereas the proportion of intake from coffee and energy drinks increased.

There is concern that caffeine intake may be increasing among children and adolescents as a result of the growing popularity and use of energy drinks.[5,17] In addition, consumption of sweetened coffee drinks has also

TABLE 3 Proportion of Total Caffeine Intake From Different Sources, by Age Group: NHANES 1999–2010

Age Group	1999–2000	2001–2002	2003–2004	2005–2006	2007–2008	2009–2010
2–5 years						
Flavored dairy[a]	10.5 6 1.9	10.0 6 2.3	9.2 6 2.6	12.6 6 1.2	15.2 6 2.6	17.0 6 2.3
Sweetened grains[b]	7.9 6 1.9	6.2 6 1.5	6.6 6 2.1	9.7 6 1.7	7.9 6 1.2	14.8 6 2.8
Sugars/sweets[a,c]	5.0 6 1.3	2.4 6 0.8	2.4 6 0.6	6.1 6 1.3	5.3 6 1.0	7.0 6 1.3
Coffee[b]	2.1 6 1.5	0.9 6 0.6	3.8 6 3.1	5.5 6 2.5	6.1 6 3.5	4.6 6 1.8
Tea	27.1 6 8	36.2 6 6.6	46.1 6 8.9	23.4 6 3.7	32.0 6 5.1	29.4 6 5.0
Soda[a]	47.2 6 5.8	44.1 6 5.1	31.3 6 3.3	42.6 6 4.2	33.4 6 3.9	26.8 6 3.7
Energy drinks	0.0 6 0.0	0.0 6 0.0	0.5 6 0.6	0.0 6 0.0	0.0 6 0.0	0.0 6 0.0
6–11 years						
Flavored dairy	4.9 6 1.3	7.4 6 1.1	5.5 6 1.0	8.9 6 0.7	5.9 6 0.7	9.6 6 0.9
Sweetened grains[a]	4.3 6 1.1	4.7 6 0.5	4.4 6 0.7	9.2 6 1.3	4.1 6 0.5	8.8 6 0.7
Sugars/sweets	3.0 6 0.5	4.3 6 0.6	2.2 6 0.4	3.9 6 0.6	2.7 6 0.5	4.3 6 0.6
Coffee[b]	2.2 6 1.1	5.4 6 3.4	1.5 6 0.6	4.5 6 2.1	8.0 6 2.3	8.5 6 2.6
Tea	25.1 6 8.0	21.1 6 3.2	19.9 6 4.5	21.9 6 3.5	29.7 6 5.6	29.7 6 5.9
Soda[d]	60.4 6 5.2	57.1 6 3.7	65.2 6 4.7	50.5 6 3.8	44.3 6 7.4	39.1 6 3.8
Energy drinks	0.0 6 0.0	0.0 6 0.0	1.5 6 1.3	0.1 6 0.1	5.3 6 2.8	0.0 6 0.0
12–16 years						
Flavored dairy[b]	2.3 6 0.3	2.8 6 0.4	1.4 6 0.3	1.7 6 0.4	1.5 6 0.3	2.5 6 0.5
Sweetened grains	2.2 6 0.5	2.8 6 0.3	2.1 6 0.3	2.9 6 0.4	2.0 6 0.2	3.4 6 0.9
Sugars/sweets	1.5 6 0.1	1.7 6 0.3	1.9 6 0.3	2.0 6 0.3	1.5 6 0.3	1.3 6 0.3
Coffee[d]	5.1 6 1.9	4.0 6 0.8	10.3 6 2.7	11.4 6 1.8	21.3 6 3.3	12.2 6 3.8
Tea	24.2 6 3.4	22.8 6 2.4	22.5 6 4.5	21.4 6 2.1	24.4 6 3.7	31.8 6 9.1
Soda[d]	64.6 6 4.1	65.3 6 2.3	61.5 6 3.5	58.9 6 2.1	44.1 6 6	45.8 6 7.7
Energy drinks[a]	0.0 6 0.0	0.6 6 0.5	0.3 6 0.3	1.7 6 1.0	5.2 6 2.3	3.0 6 1.2
17–18 years						
Flavored dairy	0.8 6 0.2	0.8 6 0.1	1.0 6 0.2	0.6 6 0.2	0.9 6 0.4	1.3 6 0.3
Sweetened grains	1.1 6 0.4	1.6 6 0.4	1.2 6 0.3	1.0 6 0.2	0.8 6 0.2	1.1 6 0.2
Sugars/sweets	0.9 6 0.2	1.1 6 0.2	1.4 6 0.4	0.8 6 0.1	1.0 6 0.4	1.5 6 0.4
Coffee[b]	15.0 6 4.7	12.7 6 4.0	24.9 6 7.6	17.3 6 6.9	27.1 6 4.5	28.6 6 4.8
Tea	19.9 6 4.4	20.2 6 3.6	16.9 6 6.3	24.2 6 6.8	32.2 6 4.8	25.4 6 5.8
Soda[d]	62.3 6 3.8	63.5 6 4.2	53.9 6 6.2	52.2 6 7.8	29.4 6 7.9	39.9 6 4.9
Energy drinks[c,d]	0.0 6 0.0	0.1 6 0.1	0.3 6 0.3	4.0 6 2.3	8.4 6 3.1	2.2 6 1.2
19–22 years						
Flavored dairy	0.8 6 0.3	0.5 6 0.1	0.4 6 0.1	0.5 6 0.1	0.5 6 0.2	0.6 6 0.1
Sweetened grains	0.8 6 0.2	1 6 0.5	0.8 6 0.3	0.8 6 0.2	0.9 6 0.1	1.1 6 0.3
Sugars/sweets[b]	0.7 6 0.2	2.2 6 0.7	1.9 6 0.7	0.9 6 0.2	0.8 6 0.3	0.8 6 0.2
Coffee[d]	14.1 6 3.3	20.9 6 4.1	30.1 6 6.4	20.5 6 4.1	33.2 6 5.2	34.2 6 4.2
Tea	21.3 6 4.1	21.5 6 5.7	15.5 6 5.3	33.7 6 7.2	26.9 6 3.2	18.7 6 2.9
Soda[d]	61.5 6 5.9	53.3 6 4.9	50.1 6 3.9	42.7 6 4.8	34 6 4.7	33.5 6 4.4
Energy drinks[d]	0.0 6 0.0	0.2 6 0.1	0.5 6 0.5	0.6 6 0.3	3.6 6 1.1	10.3 6 3

Data are presented as proportions +/- SEs.
[a] Indicates significant linear trend, P , .01.
[b] Indicates significant linear trend, P , .05.
[c] Indicates significant quadratic trend, P , .05.
[d] Indicates significant linear trend, P , .001.

increased.[18] The increase in caffeine intake from energy drinks and coffee since 1999–2000 has been offset by decreases in soda consumption over the same period, resulting in no significant change over time for most groups; however, if current trends in energy drink and coffee consumption continue, especially among population groups who consume more caffeine, such as older adolescents, that may no longer hold true.

There have been 2 previous reports of caffeine intake using nationally representative data from the United States. Using the Continuing Survey of Food Intakes by Individuals data from 1994 to 1996 and from 1998, which also used a 24-hour dietary recall, Frary et al[1] reported a greater proportion of children and adolescents consuming caffeine ($ 90% for most age and gender categories) compared with our results. Although our estimates of mean intake among children aged 2 to 5 years in 1999–2000 were similar to those reported by Frary et al, our estimates for older children were somewhat greater, although the use of different age groups and specific age and gender categories in their analysis make direct comparisons difficult. Similar proportions of caffeine intake from soda, tea, and coffee in 1999–2000 were observed in this study, compared with previous estimates.[1] A 2010 report from the FDA using NHANES data from same period as our study, which described caffeine intake among US children and adults, was also largely consistent with our results, although that report described per capita intake instead of intake among consumers only.[17] In addition, the FDA report used a consumer panel database to examine caffeine intake by food or beverage category, rather than NHANES; consequently, differences in methodology and age groups make findings not directly comparable.[19]

Our findings do compare with recently documented trends in beverage consumption. By using the NHANES data over the same time period, Kit et al,[18] found that soda consumption has declined in recent years whereas sweetened coffee and energy drink intake (combined with sports drinks) has increased among children and adolescents. The increasing trend in caffeine from energy drinks is temporally associated with sales data that show a sixfold increase in sales of energy drinks,[19,20] and with a doubling of visits to emergency departments related to energy drink consumption, mostly among 18- to 25-year-olds.[21]

Although there are currently no guidelines for daily maximum caffeine intake in individuals, the FDA sets tolerance limits on the amount of caffeine in cola-type beverages at # 0.02% of the substance.[22] However, the FDA does set limits on caffeine-containing

supplements at 200 mg per dose, a threshold at which acute caffeine toxicity is thought to occur.[22] Previous reports indicate that many caffeine-toxicity episodes occur among older teenagers and young adults, largely as a result of ingesting large amounts of caffeine coupled with alcohol and other legal and illegal drugs.[21]

To our knowledge, this is the first detailed description of caffeine intake from energy drink consumption among children, adolescents, and young adults in the United States. Although energy drinks accounted for a relatively small proportion of caffeine intake in 2009–2010, intake increased rapidly in a short period of time. With the recent emphasis on reducing intake of soda and juice as an obesity-reduction strategy, more research is needed to determine if children and adolescents are substituting energy drinks or coffee for soda. On average, a 12-oz serving of energy drink contains 36 g of sugar and ~160 calories, nearly the same as a 12-oz can of soda.[23] However, the amount of caffeine in energy drinks varies between brands but can be as high as 130 mg in a 12-oz serving, equivalent to four 12-oz servings of caffeinated soda.[23] Although many energy drinks are sold in 8-oz sizes, sales of larger containers are increasing.[2] Similarly, sweetened coffee drinks can contain large amounts of sugar, nearly double the amount of calories of soda depending on size and flavoring and caffeine amounts similar to that of energy drinks.[23] Future research should continue to monitor trends in energy drink and coffee consumption among youth, as well as determine the potential impact of these beverages on health outcomes.

This study is subject to some limitations. First, we used only the first day of dietary recall in documenting trends in intake, which does not account for intraindividual variation. Therefore, results do not necessarily represent usual intake of caffeine. Second, although increasing, energy drink intake remains relatively low, precluding reliable estimates for some groups (eg, children , 12 years). Finally data on caffeine intake may be subject to recall and social desirability biases as well as misreporting, because caregivers/proxies complete the recall or assist younger children in the sample. This study is the first detailed analysis of trends in, and sources of, caffeine intake among children and adolescents in the United States using 10 years of nationally representative data. This analysis of caffeine intake among youth provides valuable data in the context of the recent and rapid increase in the development and marketing of highly caffeinated food and beverage products. Moreover, this study is among the first to examine sociodemographic patterns in caffeine intake.

CONCLUSIONS

Mean caffeine intake has not increased among children and adolescents in recent years. However, coffee and energy drinks represent a greater proportion of caffeine intake as soda intake has declined, and generally have higher concentrations and amounts of caffeine than soda.[23] These findings provide a baseline for caffeine intake among US children and young adults in the advent of increasing energy drink sales and availability. Additional research will be needed to continue to monitor these trends and to determine the role of increasing energy drink and coffee consumption on child and adolescent health.

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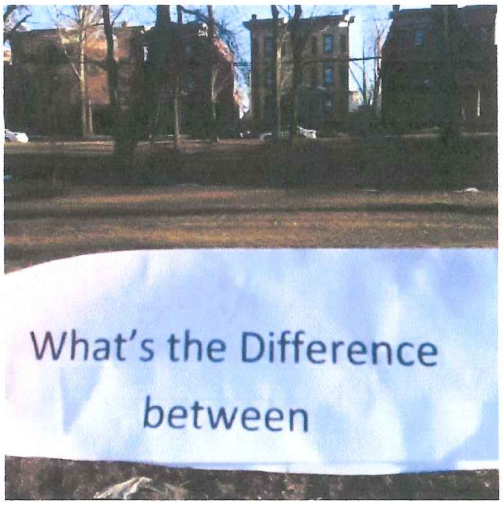
"Sentencing enhancement zones" fail to protect children and worsen racial disparity in incarceration

Most states have laws that are intended to protect children by creating enhanced penalties for various crimes committed within a certain distance of schools. These laws sound like a common-sense approach, but our research has shown that these laws do not work, will not work and have serious negative effects.

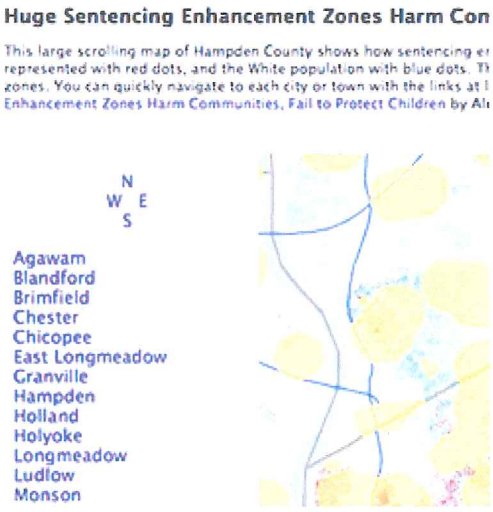
In Connecticut, for example, certain drug offenses committed within 1,500 feet of schools are punished with a longer sentence. The oringinal intent behind the law was noble: protect children from harmful activity by creating an incentive for bad activity to move elsewhere. The flaw is that the designated distance is too large. To create a safety zone around schools, the area to be protected needs to be small enough to incentivize moving illegal activity elsewhere. Imposing a higher penalty over an entire city or state by blanketing it in overlapping enhancement zones nullifies the legislatures' effort to give schools special protection. Simply put, *when a legislature says that every place is special, no place is special.*

These laws were a noble, if naive, experiment when they began sweeping the nation in the late 1980s and 1990s. But now the evidence is in. They have not

worked to move areas around schools safer, and the extreme reach of these laws ensure that they will never serve the intended deterrent effect. But what these laws have done is consume criminal justice resources that could otherwise go to enforcing existing laws that directly and effectively protect children from being involved in criminal activity.



Sentencing enhancement laws also create a two-tiered system of justice: a harsher one for dense urban areas with numerous schools and overlapping zones and a milder one for rural and suburban areas, where schools are relatively few and far between.



Our first of a kind research mapped every sentencing enhancement zone in urban, rural and suburban Hampden County, Mass., and quantified the race and ethnicity of the people who live inside and outside of the zones. We found that residents of urban areas are five times more likely to live in a sentencing enhancement zone than those in rural areas, and Latinos are more than twice as likely as Whites to live in a sentencing enhancement zone. We demonstrated that the Massachusetts legislature erred in assuming that 1,000 feet was a reasonable or effective distance for the zones. Our research into Connecticut's 1,500 foot zones revealed similar patterns. Based on our research, we concluded that a 100-foot distance would be more effective for a geography-based sentencing enhancement.

Progress: Massachusetts rolls back law (August 2012)

Massachusetts has rolled back the sentencing enhancement zone law to 300 feet and the law no longer applies between the hours of midnight and 5am. As part of a 2011 package to save the budget and reduce the prison population, Governor Patrick endorsed our proposal to shrink the sentencing enhancement zones to 100 feet. The final bill, passed in 2012, reduces the zones to 300 feet. Based on our research, this distance is too large to allow the law to function as intended to protect children from drug activity; but it will at least greatly reduce the number of

people who receive the enhanced penalty.

We continue to push for further reforms....

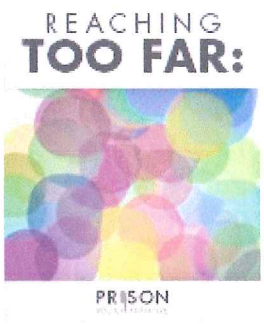
Connecticut

Senate Bill 259 was introduced by the Judiciary Committee in 2014. The bill would reduce the size of Connecticut's sentencing enhancement zones to 200 feet, would make the law more effective in protecting children while reducing the urban penalty in sentencing. A map of these proposed 200-foot zones is attached to our testimony submitted to the Judiciary Committee.

Massachusetts

Bill H.1645 was filed by Representative Swan for the 188th General Court. The bill would further reduce the size of school zones from 300 feet to 100 feet. The enhanced penalties would also be removed in cases where drug offenses occur within a private home or where a student under 18 sells drugs to another student. It would also allow all school zone offenders to be eligible for parole, work release and earned good time after serving half of the mandatory minimum. Finally, a school zone sentence could be served at the same time as another drug-related sentence. More information on the bill is available from FAMM.

Reports

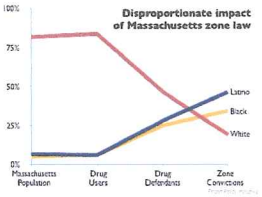


Reaching too far: How Connecticut's large sentencing enhancement zones miss the mark

by Aleks Kajstura, March 2014.
This report analyzes Connecticut's 1,500-foot sentencing enhancement zones, mapping the zones in the state's cities and towns and demonstrating both that the law is ineffective, and that it creates an "urban penalty".

The Geography of Punishment: How Huge Sentencing Enhancement Zones Harm Communities, Fail to Protect Children

by Aleks Kajstura, Peter Wagner and William Goldberg, July 2008.
This first-of-a-kind report mapped every sentencing enhancement zone in urban, rural and suburban Hampden County, and quantified the race and ethnicity of the people who live inside and outside of the zones.



Reaching too far, coming up short: How large sentencing enhancement zones miss the mark

by Aleks Kajstura, Peter Wagner and Leah Sakala
January, 2009.

This followup report, again focusing on Hampden County, Massachusetts, found that Blacks are 26 times as likely, and Latinos 30 times as likely as White residents to be convicted and receive a mandatory sentencing enhancement zone sentence.

Articles and op-eds

- Smart on crime, letter to the editor, from Peter Wagner, *Boston Herald*, Feb 4, 2011
- School Zone Laws Don't Work, by Peter Wagner (letter), *Valley Advocate*, March 12, 2009.
- PRRAC Researcher Report: Sentencing Enhancement Zones Fail to Protect Children, by Aleks Kajstura & Peter Wagner *Poverty & Race* November/December 2008.

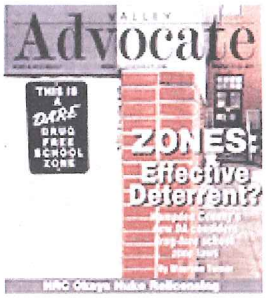
Related advocacy and resources

- Testimony before Connecticut's Joint Committee on Judiciary in support of S.B. 259, "An Act Concerning the Recommendations of the Connecticut Sentencing Commission Regarding the Enhanced Penalty for the Sale or Possession of Drugs Newr Schools, Day Care Centers and Public Housing Pojects." The bill, which would reduce the size of Connecticut's sentencing enhancement zones to 200 feet, would make the law more effective in protecting children while reducing the urban penalty in sentencing. Two fact sheets are attached to the testimony.
- Testimony before the Joint Committee on the Judiciary of the Massachusetts General Court in support of H2267/S908, "An Act to Reform the 'School Zone' Law for Drug Offenses." The bill, which would reduce the size of Massachusetts' school zones to 100 feet, would make the law more effective in protecting children while reducing racial disparities in sentenceing.
- Testimony to the Rhode Island Senate in opposition to S2644 which would have imposed longer sentences for felonies committed within 1,000 feet of educational institutions.
- 1,000 feet is further than you think is a graphical introduction to distance, and a version as a powerpoint presentation.

Coverage of our work:

The Hidden Price Of Drug-Free Zones, Christie Thompson, *ThinkProgress*, April 14, 2014

Lawmakers Debate Drug-Free School Zones, Amaris Elliott-Engel, *The Connecticut Law Tribune* March 28, 2014



Zones: Effective Deterrent? Are they an effective deterrent, or just a lever to force lesser pleas from drug offenders? The new DA Talks About Drug-Free School Zones, by Maureen Turner, *Valley Advocate*, March 18, 2011

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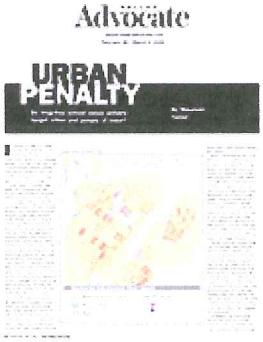

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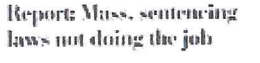

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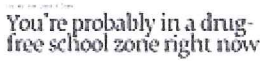

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