

**Dayton Area Drug Survey: 2016  
Summary of Main Findings**

**Robert G. Carlson, PI, Raminta Daniulaityte, Co-PI, D. Linna Li, Co-I**

**Center for Interventions, Treatment and Addictions Research  
Department of Population and Public Health Sciences  
Wright State University Boonshoft School of Medicine  
3171 Research Park Blvd, Suite 124  
Kettering, OH 45420**

**Funded by:  
Montgomery County, OH,  
Alcohol, Drug Abuse, and Mental Health Services Board**

**In collaboration with participating Dayton, OH, area schools.**

**September 9, 2016**

## **Highlights**

- Results from the 2016 Dayton Area Drug Survey (DADS) show declines (or stability) in the lifetime and current prevalence of use of virtually every drug among 12<sup>th</sup> grade students when compared with results from the 2014 DADS.
- Alcohol remains the most widely abused drug at all grade levels. Among 12<sup>th</sup> graders, 61.6% reported lifetime use, essentially the same as 2014 (62.0%).
- Marijuana ranks second in lifetime prevalence of use among 12<sup>th</sup> graders (41.0%), unchanged from 2014 (41.4%).
- The DADs assessed the use of e-cigarettes for the first time in 2016. The lifetime prevalence of e-cigarette use among 12<sup>th</sup> graders was 31.6%. Electronic cigarettes ranked third in terms of lifetime prevalence of use among 12<sup>th</sup> graders, while tobacco cigarettes ranked fourth.
- Among 12<sup>th</sup> graders, lifetime prevalence of cigarette use fell from 29.1% in 2014 to 23.5% in 2016.
- The DADs assessed the use of marijuana concentrates for the first time in 2016. Among 12<sup>th</sup> graders, 16.6% reported lifetime use of marijuana concentrates.
- Use of non-prescribed pharmaceutical opioids (e.g., hydrocodone, oxycodone) decreased. Among 12<sup>th</sup> graders, lifetime prevalence of use fell from 12.0% in 2014 to 8% in 2016.
- Among 12<sup>th</sup> graders, lifetime prevalence of heroin use fell from 3.6% in 2014 to 2.1% in 2016.
- Lifetime prevalence of synthetic cannabinoid use among 12<sup>th</sup> graders fell from 8% in 2014 to 4.1% in 2016.
- Among 12<sup>th</sup> grade students, 17% said they had operated a motor vehicle while under the influence of alcohol or non-prescribed drugs in their lifetimes, unchanged from 2014 (17.7%).

## **Introduction**

The Dayton Area Drug Survey (DADS) is a biennial, cross-sectional study that provides estimates of non-medical drug use by school-aged teenagers in the Dayton, Ohio, area. First administered in 1990, the DADS is a collaborative effort between the Center for Interventions, Treatment, and Addictions Research at Wright State University's Boonshoft School of Medicine and area school districts. All area school districts are invited to participate in the survey at no charge and choose which grades between 7 and 12 they wish to survey. All schools are asked to conduct surveys for Grades 7, 9, and 12. Students respond anonymously and on a voluntary basis to the survey, completed by hand using a scantron form, following a protocol approved by the Wright State University Institutional Review Board. For the first time since the initiation of DADS in 1990, the Center for Interventions, Treatment, and Addictions Research received funding to conduct the survey from the Montgomery County Alcohol, Drug Abuse, and Mental Health Services Board.

In early 2016, 10,786 students from 20 Miami Valley area schools provided usable data. Overall, the majority of the sample was White (81.6%), followed by African Americans (7.2%), Other (6.7%), and Asian (4.6%). The sample was nearly evenly split between boys and girls.

## **Alcohol**

**Alcohol** was used by more school-aged teenagers than any other drug. Among 12<sup>th</sup> graders (n=2,220), 61.6% reported drinking alcohol at least once in their lifetime, essentially unchanged from 62% in 2014 (Figure 1). Use of alcohol in the past 30 days was unchanged: 2016, 29.2%; 2014, 28.7%. The percentage of 12<sup>th</sup> graders who reported drinking to the point of drunkenness at least once in his/her lifetime remained stable at 45.3% in 2016, compared to 44.8% in 2014. Among those who reported drinking to the point of drunkenness at least once, 34.9% said they had done so 10 or more times--down from 38.7% in 2014. The percentage of 12<sup>th</sup> graders who reported being drunk or "very high" from drinking alcohol in the last 30 days remained stable (22.8% in 2016 versus 22.4% in 2014). In the two weeks before taking the survey, 18.1% of the 12<sup>th</sup> graders reported having had five or more drinks in a row on at least one occasion, virtually the same as in 2014 (18.9%).

Among 9<sup>th</sup> graders (n=2,915), 27.0% reported lifetime experience with alcohol, down from 32.9% in 2014 (Figure 1). About 10% (10.4%) of freshman used alcohol in the last 30 days in 2016, compared to 12% in 2014. About 13% of 9<sup>th</sup> graders reported having been drunk at least once, decreasing from 16.6% in 2014, and 16.5% of these 9<sup>th</sup> graders reported doing so 10 or more times (essentially unchanged from 15.9% in 2014). Having five or more drinks in a row in the two weeks before the survey was reported by 4.0% of 9<sup>th</sup> graders, compared to 4.7% in 2014.

Among 7<sup>th</sup> graders (n=2,678), lifetime experience with alcohol remained the same at 13.5% in 2014 and 2016. About 3% (2.6%) reported having been drunk at least once, compared to 3.3% in 2014. Having five or more drinks in a row in the two weeks prior to

the survey was reported by 1.0% of 7th graders, the same in 2014 (1.2%). (Data for 8<sup>th</sup> (n=1,068), 10<sup>th</sup> (n=746), and 11<sup>th</sup> (n=635) graders are not reported in this summary but fit well within the data reported by 7<sup>th</sup>, 9<sup>th</sup>, and 12<sup>th</sup> graders).

We assessed the most common **source** of alcoholic beverages for 10<sup>th</sup> through 12<sup>th</sup> grade high school students when they are drinking to get drunk or high. Half (50.1%) of 12<sup>th</sup> graders said that “parties without parents present” was the most common source, followed by: 2) Adult siblings (22.1%); 3) Stores (10.3%); 4) Bars (8.5%); 5) Parents (5.4%); and 6) “Parties with parents present” (3.6%). The rank order was virtually the same in 2014.

## **Marijuana**

**Marijuana** (leaves, bud/flowers) remains the second most widely used drug by school-aged students. Among 12<sup>th</sup> grade students, 41.0% reported having used marijuana at least once in their lifetime which is unchanged from 2014 (41.4%) (see Figure 2). Marijuana use in the past 30 days remained stable at 22.9% in 2016 and 22.4% in 2014. Over 83% of 12<sup>th</sup> graders who have used marijuana initiated use after entering high school grades. The percentage of 12<sup>th</sup> graders reporting daily use, defined as having used a drug 20 or more times in the 30 days prior to the survey, remained fairly stable (5.3% in 2014, compared to 6.3% in 2016).

Among 9<sup>th</sup> grade students, 14.0% reported lifetime marijuana use in 2016, compared to 17.4% in 2014. Past 30-day use of marijuana decreased from 9.8% in 2014 to 7.2% in 2016. The percentage of 9<sup>th</sup> graders reporting daily use, defined as having used a drug 20 or more times in the 30 days prior to the survey, was 1.2%, compared to 1.7% in 2014.

Among 7<sup>th</sup> grade students, lifetime marijuana use decreased from 4.7% in 2014 to 3.4% in 2016.

## **Marijuana Concentrates**

For the first time, the DADS assessed lifetime use of **marijuana concentrates** among 10<sup>th</sup>-12<sup>th</sup> graders. Marijuana concentrates have very high THC levels, ranging from 40% to 80%, and are referred to as “dabs,” “shatter,” “honey oil,” “wax,” or “budder,” depending on the form. Among 12<sup>th</sup> graders, 16.6% reported lifetime use of marijuana concentrates, and 14.2% reported their use in the past 12 months. Among the 12<sup>th</sup> graders who used marijuana concentrates in the past 12 months, 25.9% reported using them 20 or more times. Among 12<sup>th</sup> grade students who reported lifetime use of marijuana (leaves, bud/flowers), 32.9% also had used marijuana concentrates.

## **Marijuana Legalization**

We assessed attitudes toward marijuana use if recreational use was made legal in Ohio among 10<sup>th</sup> – 12<sup>th</sup> grade students. Among 12<sup>th</sup> grade students who had *never* used

marijuana and marijuana concentrates, 72.6% said they would not use marijuana, even if it was legal and available, 21.1% said they would try it, and 6.4% said they don't know.

### **E--Cigarettes**

The DADs survey assessed lifetime use of **electronic cigarettes** (“e-cigarettes”) among 10<sup>th</sup> through 12<sup>th</sup> graders for the first time in 2016. Lifetime prevalence of e-cigarette use ranked the third most commonly used drug among 12<sup>th</sup> grade students. Among 12<sup>th</sup> graders, 31.6% reported lifetime use of e-cigarettes, and 11.2% reported use in the past 30 days. Among e-cigarette users, 14.7% reported no lifetime use of tobacco cigarettes.

### **Tobacco Cigarettes**

Lifetime use of **tobacco cigarettes** among 12<sup>th</sup> graders declined from 29.1% in 2014 to 23.5% in 2016 (Figure 3). The percentage of 12<sup>th</sup> graders reporting smoking at least one or more cigarettes a day in the past 30 days declined from 5.1% in 2014 to 2.8% in 2016. Among 9<sup>th</sup> graders, lifetime cigarette use also continued to decline from 14.8% in 2014 to 9.8% in 2016. In 2016, 4.1% of 7<sup>th</sup> graders reported having smoked a cigarette at least once in their lifetime, down from 6.1% in 2014.

### **Rank Order of Lifetime Drug Use Prevalence among 12<sup>th</sup> Graders: Other Drugs**

Table 1 shows the rank order of lifetime drug use prevalence among 12<sup>th</sup> grade students. The top five ranking drugs (alcohol, marijuana, electronic cigarettes, tobacco cigarettes, and marijuana concentrates) were discussed above.

The prevalence of lifetime use of other drug categories also decreased or remained stable in 2016. The sixth most common drug was smokeless tobacco, with 12.6% of 12<sup>th</sup> grade students reporting lifetime use in 2016, compared to 15.7% in 2014. Among 12<sup>th</sup> grade students, the rank order of lifetime prevalence of use of other drugs was: **7**) 10.1% used stimulants (e.g., amphetamine, Adderall), compared to 11.5% in 2014; **8**) 9.2% used tranquilizers (e.g., Xanax, Valium), compared to 11.3% in 2014; **9**) 8.5% used hallucinogens (e.g., LSD, psilocybin), compared to 10.7% in 2014; **10**) 8.0% used non-prescribed opioids, compared to 12.0% in 2014; and **11**) 6.0% used non-prescription diet or “stay awake” pills, compared to 7.8% in 2014 (see Figures 4 through 14).

As shown in Table 1, the lifetime prevalence of use of ecstasy decreased from 6.9% in 2014 to 4.2% in 2016, and the use of synthetic cannabinoids decreased from 8.0% in 2014 to 4.1% in 2016. Lifetime use of cocaine HCl, methamphetamine, Ritalin, crack, inhalants, heroin, and nitrous oxide also declined to varying degrees in 2016, compared to 2014. The directions of the 9<sup>th</sup> and 7<sup>th</sup> grade prevalence rates are virtually the same as those for the 12<sup>th</sup> grade, with the use of most drugs declining or remaining essentially the same as in 2014.

<b>Table 1. Lifetime Drug Use Prevalence Rank Order among 12<sup>th</sup> Graders</b>		
	<b>2016 (%)</b>	<b>2014 (%)</b>
1. Alcohol	61.6	62.0
2. Marijuana	41.0	41.4
3. E-Cigarettes	31.6	-
4. Cigarettes	23.5	29.1
5. Marijuana Concentrates	16.6	-
6. Smokeless Tobacco	12.6	15.7
7. Stimulants (e.g., Adderall)	10.1	11.5
8. Tranquilizers (e.g., Xanax)	9.2	11.3
9. Hallucinogens (e.g., LSD)	8.5	10.7
10. Non Rx pharmaceutical opioids	8.0	12.0
11. Non Rx Diet/SA Pills	6.0	7.8
12. Ecstasy	4.2	6.9
13. Synthetic Cannabinoids	4.1	8.0
14. Cocaine HCL	3.6	4.8
15. Methamphetamine	3.3	4.7
16. Ritalin	2.9	6.0
17. Crack	2.5	3.0
18. Inhalants	2.2	3.4
19. Heroin	2.1	3.6
20. Nitrous Oxide	2.0	2.8

### **Perceived Harmfulness of Drugs**

Students responded to the question, “How much do people hurt themselves when they use [Drug]?” The response options were: “Not at all;” “A little;” “Some;” “A lot;” and “Don’t Know.” In 2016, 68.4% of 7<sup>th</sup> graders felt that people who use **tobacco** hurt themselves “A lot,” compared to 65.1% of 9<sup>th</sup> graders, and 65.1% of 12<sup>th</sup> graders. Corresponding percentages for 2014 by grade were: 62.1%, 66.9%, and 64.8%.

In 2016, 36.7% of 7<sup>th</sup> graders felt people who use **alcohol** harm themselves “A lot,” compared to 34.2% of 9<sup>th</sup> graders, and 24.3% of 12<sup>th</sup> graders. These percentages are similar to corresponding percentages by grade in 2014: 36.4%; 36.6%; and 26.8%.

In 2016, 59.4% of 7<sup>th</sup> graders, 43.3% of 9<sup>th</sup> graders, and 21.1% of 12<sup>th</sup> graders felt that people who use **marijuana** harm themselves “A lot.” Corresponding percentages for 2014 by grade were similar: 57.0%, 44.2%, and 24.5%.

### **Motor Vehicle Behaviors**

High school seniors were queried about drug use and motor vehicle behaviors. When asked if they had ever ridden in a motor vehicle when they believed the driver was under the influence of alcohol or other non-medical drugs (other than caffeine or tobacco),

32.8% of 12<sup>th</sup> graders said they had. In comparison, in 2014, 35.3% of 12<sup>th</sup> graders said they had ever ridden in a motor vehicle when they believed the driver was under the influence. When asked if they had ever driven a motor vehicle while under the influence of alcohol or other non-prescribed drugs, 17.0% of 12<sup>th</sup> graders reported they had; this was essentially the same percentage (17.7%) in 2014. Of those who reported having driven under the influence, 51.8% said that had done so more than once or twice, compared to 56.0% in 2014.

### **Problematic Drug Use**

The DADS survey for 11<sup>th</sup> and 12<sup>th</sup> graders included a 6-item screening test for clinically-defined problematic drug use, called CRAFFT (Knight et al., 1999; Knight et al., 2007; Falck et al., 2012.) The following questions are included in the CRAFFT: (1) Have you ever ridden in a *Car* driven by someone (including yourself) who was 'high' or had been using alcohol or drugs?; (2) Do you ever use alcohol or drugs to *Relax*, feel better about yourself?; (3) Do you ever use alcohol or drugs while you are by yourself, *Alone*? (4) Do you ever *Forget* things you did while you were using alcohol or drugs?; (5) Do your *Family* or *Friends* ever tell you that you should cut down on your drinking or drug use?; and (6) Have you ever gotten into *Trouble* while you were using alcohol or drugs? CRAFFT is an acronym of key concepts. The response option is yes/no for all CRAFFT items. CRAFFT scores are the sum of affirmative responses to the 6 questions, ranging from 0 to 6. Scores of 0-1 are not considered to be associated with problematic drug use. Values  $\geq 2$  suggest problematic drug use and the need for further assessment, and scores  $\geq 4$  are indicative of DSM-IV drug dependence and need for further assessment (Knight et al., 2002).

Among 12<sup>th</sup> graders, 34.4% had CRAFFT scores  $\geq 2$  indicating problematic substance abuse. This percentage has decreased from 36.2% in 2014 and 39.9% in 2012. Data from 12<sup>th</sup> grade students responding to CRAFFT suggest that 13.3% of them (with scores  $\geq 4$ ) have had, or currently engage in, substance abuse practices indicative of drug dependence, the lowest percentage since the CRAFFT was used in DADS. This is a promising result representing a decrease in prevalence from 15.9% in 2014 and 17.6% in 2012. (More information about CRAFFT scores and the DADS is available at: [www.ncbi.nlm.nih.gov/pubmed/22494092](http://www.ncbi.nlm.nih.gov/pubmed/22494092)).

### **Non-Drug Issues**

The DADS also covered some non-drug issues. Some of the findings reveal:

- **Being “Bullied.”** In 2016, 20.1% of 7<sup>th</sup> graders felt bullied, compared to 24.2% in 2014. Among 9<sup>th</sup> graders, 20.4% felt bullied, compared to 22.3% in 2014. About 15 percent (15.5%) of 12<sup>th</sup> graders felt bullied in 2016, compared to 14.9% in 2014.
- **Physical Fights.** In 2016, 9.8% of 7<sup>th</sup> graders, 7.8% of 9<sup>th</sup> graders, and 6.1% of 12<sup>th</sup> graders got into a physical fight with someone in the 30 days before the survey. These percentages are quite similar to those in 2014 results with 11.0% of 7<sup>th</sup>

graders, 7.5% of 9<sup>th</sup> graders, and 6.7% of 12<sup>th</sup> graders reporting a physical fight with someone in the 30 days before the survey.

- **Carried a Weapon to School.** In 2016, 4.7% of seniors said they carried a weapon to school in the past 30 days, virtually the same as in 2014, 4.9%.
- **Missed School.** In 2016, 3.7% of 7<sup>th</sup> graders, 4.7% of 9<sup>th</sup> graders, and 8.5% of seniors, missed school without permission of a parent or guardian in the 30 days before the survey. Again, these results are fairly similar to those in 2014 where 4.5% of seventh graders, 3.8% of ninth graders, and 10.8% of 12<sup>th</sup> graders missed school without permission.
- **Employment.** Among 12<sup>th</sup> graders, 58.3% reported of 12<sup>th</sup> graders reported being employed outside of the home or school in 2016, compared to 52.1% in 2014.
- **Happiness.** About 84% of 7<sup>th</sup> graders, 84% of 9<sup>th</sup> graders, and 85% of 12<sup>th</sup> graders considered themselves to be happy or very happy with their lives, while the remainder considered themselves to be unhappy or very unhappy. These results are virtually unchanged from 2014.

## **Conclusion**

It is important to note that the DADS was administered in late winter and early spring of 2016, so the prevalence data may have changed by the end of the school year in June. It is also important to note that the schools participating in the DADS were not randomly selected, since they selected themselves. This limits the generalizability of the results. Nevertheless, given the level of student participation, the number of school districts participating, and the geographic distribution of the participating districts in Montgomery and Greene Counties, there is good reason to think the DADS results are reasonable reflections of drug use practices among suburban young people in the Dayton area. Lastly, aside from tobacco, alcohol, marijuana and some pills and products, i.e., those pills whose identity is readily apparent, such as brand name DXM or methylphenidate or products that come in labeled packages, students' self-reports of use of less easily identifiable drugs, like cocaine and heroin, should be viewed with at least some skepticism, since young people may well not know what they actually used.

Since the DADS was first administered in 1990, several trends can be identified. First, alcohol and tobacco use have decreased substantially. Among 12<sup>th</sup> grade students, lifetime use of alcohol has declined over time from 86.3% in 1990 to 61.6% in 2016. Use of tobacco cigarettes declined from 61.7% in 1990 to 23.5% in 2016. Second, even though marijuana use has increased and decreased, its lifetime use prevalence is essentially the same now as it was in 1990 (43.2%); 2016 (41.0%). Third, the non-prescribed use of tranquilizers increased dramatically from about 10% in 1990 nearly doubling to 19% in 2000, but has decreased to near its 1990 levels at 9.2% in 2016. A remarkably similar pattern is found with illicit use of prescription opioids which jumped from 3% in 1990 to about 18% in 2000, then decreased over time to 8% in 2016.



All things considered (see some of our previous relevant research at: [www.ncbi.nlm.nih.gov/pubmed/12357910?dopt=Abstract](http://www.ncbi.nlm.nih.gov/pubmed/12357910?dopt=Abstract)), the data suggest that efforts to prevent teen drug use have met with mixed success. *Thus, we again point out the need to implement on-going drug abuse prevention programs in the schools that extend beyond the ninth grade. The rationale for such a recommendation is based on the fact that school is the place where large numbers of young people congregate and the strong evidence that initiation of drug use continues throughout the high school years.* DADS data have repeatedly shown that the percentage of teens who will get drunk for the first time will at least double between the ninth and 12th grades. In 2016, 13% of 9<sup>th</sup> grade students reported getting drunk at least once in his/her lifetime, compared to 45% of 12<sup>th</sup> graders. Marijuana use also doubles, at least. Among 12<sup>th</sup> grade students, 41.0% reported having used marijuana at least once in their lifetime, compared to 14% of 9<sup>th</sup> graders in 2016. Over 83% of 12<sup>th</sup> graders who have used marijuana initiated use after entering high school grades. Implementing and sustaining evidence-based, public health-oriented prevention programs can help reduce the rate of erosion of abstinence as well as decrease drug-related problems among young people.

Figure 1. Dayton Area Drug Survey  
Lifetime Alcohol Use (1996-2016)

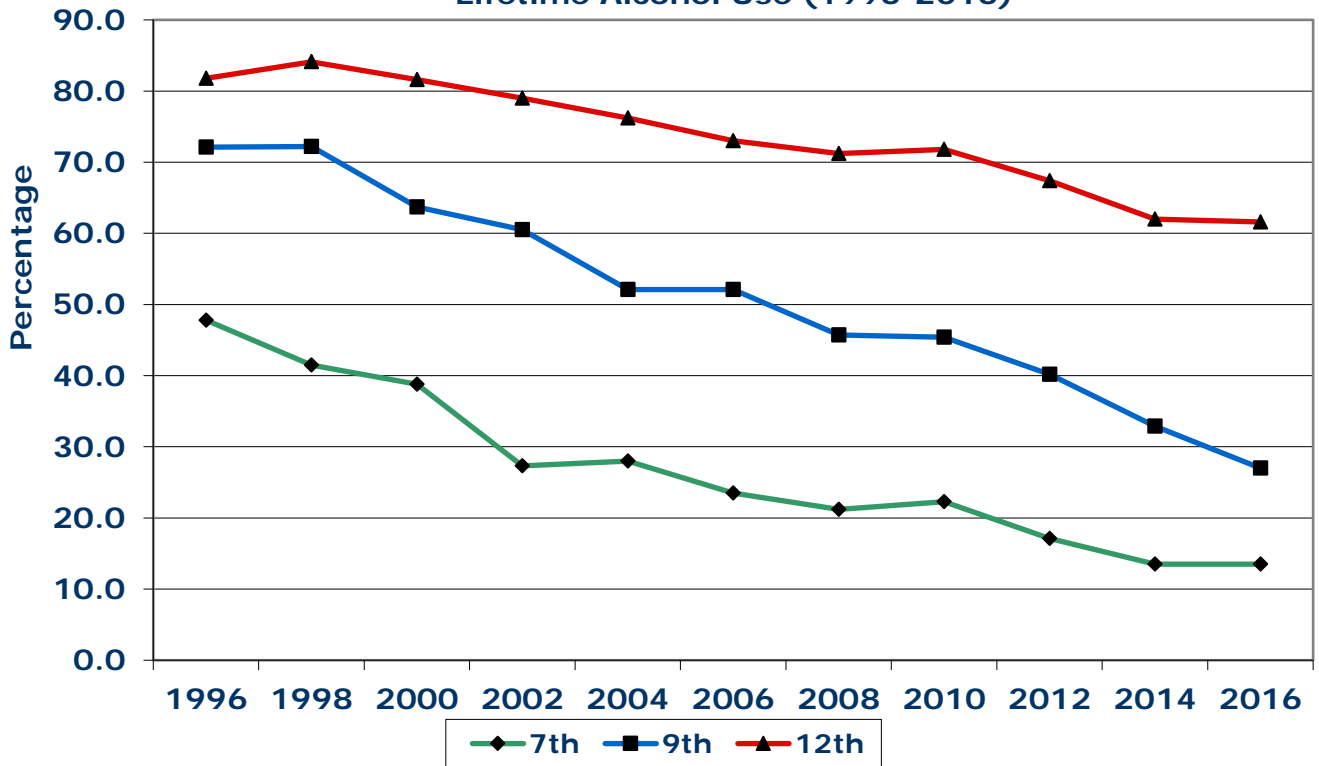


Figure 2. Dayton Area Drug Survey  
Lifetime Marijuana Use (1996-2016)

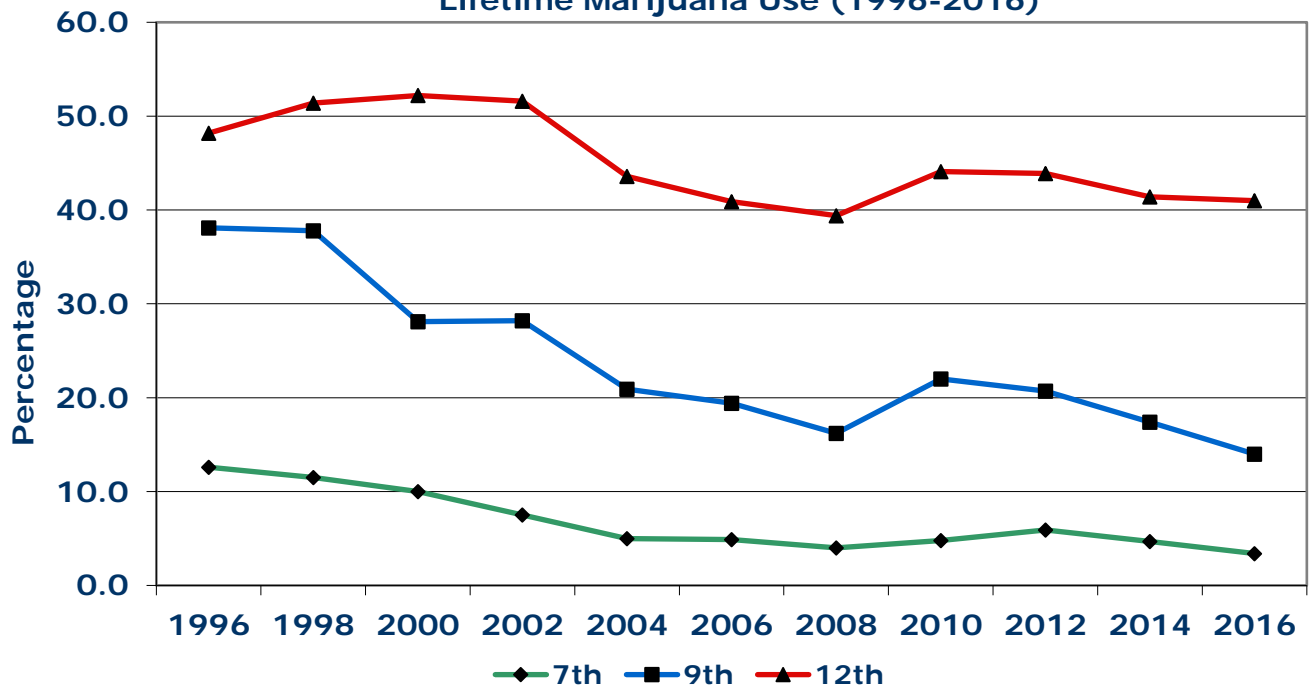


Figure 3. Dayton Area Drug Survey  
Lifetime Cigarette Use (1996-2016)

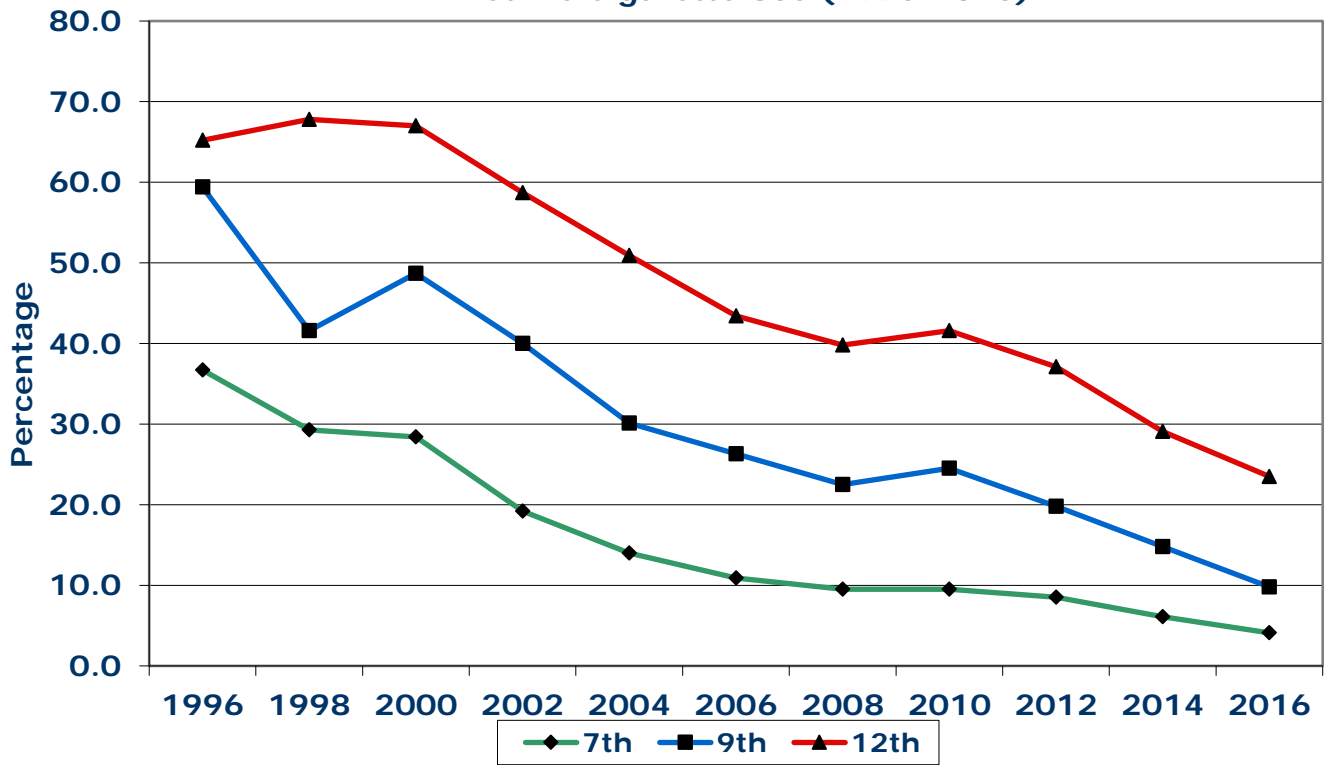


Figure 4. Dayton Area Drug Survey  
Lifetime Smokeless Tobacco Use (1996-2016)

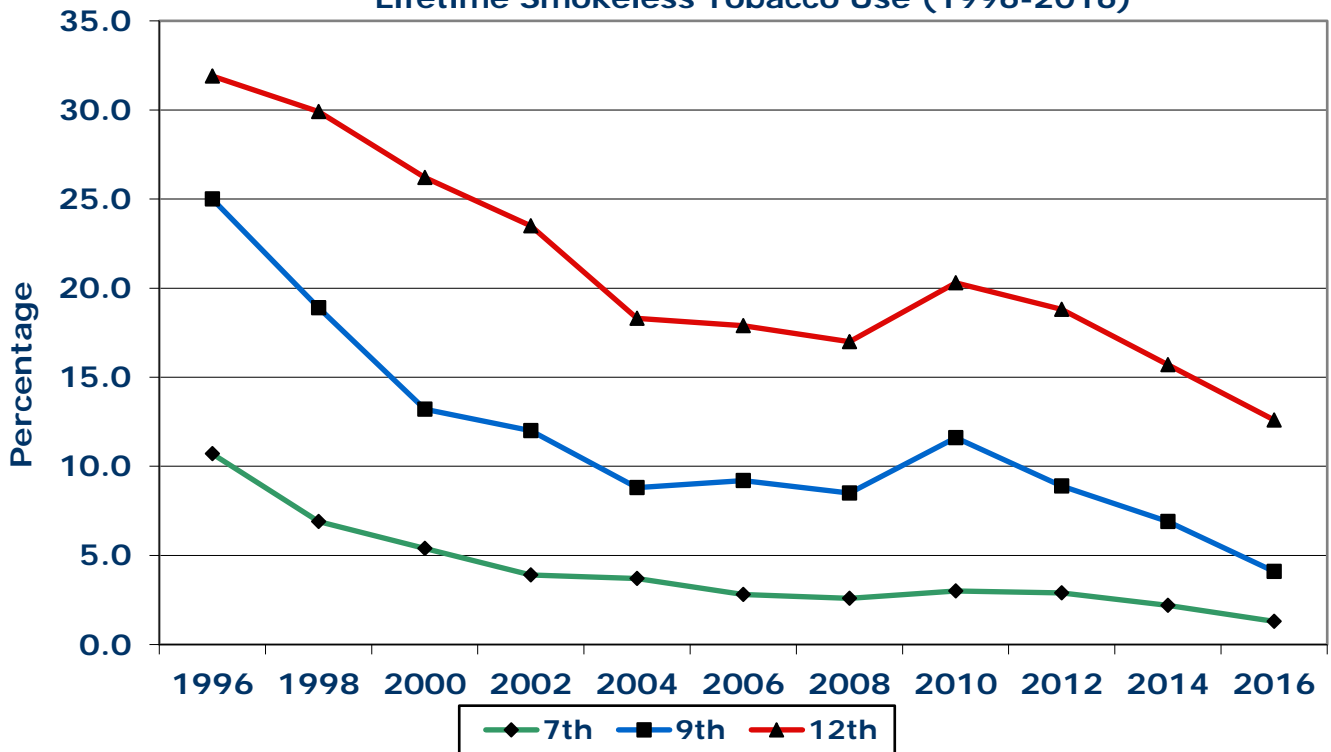


Figure 5. Dayton Area Drug Survey  
Lifetime Stimulant Use (1996-2016)

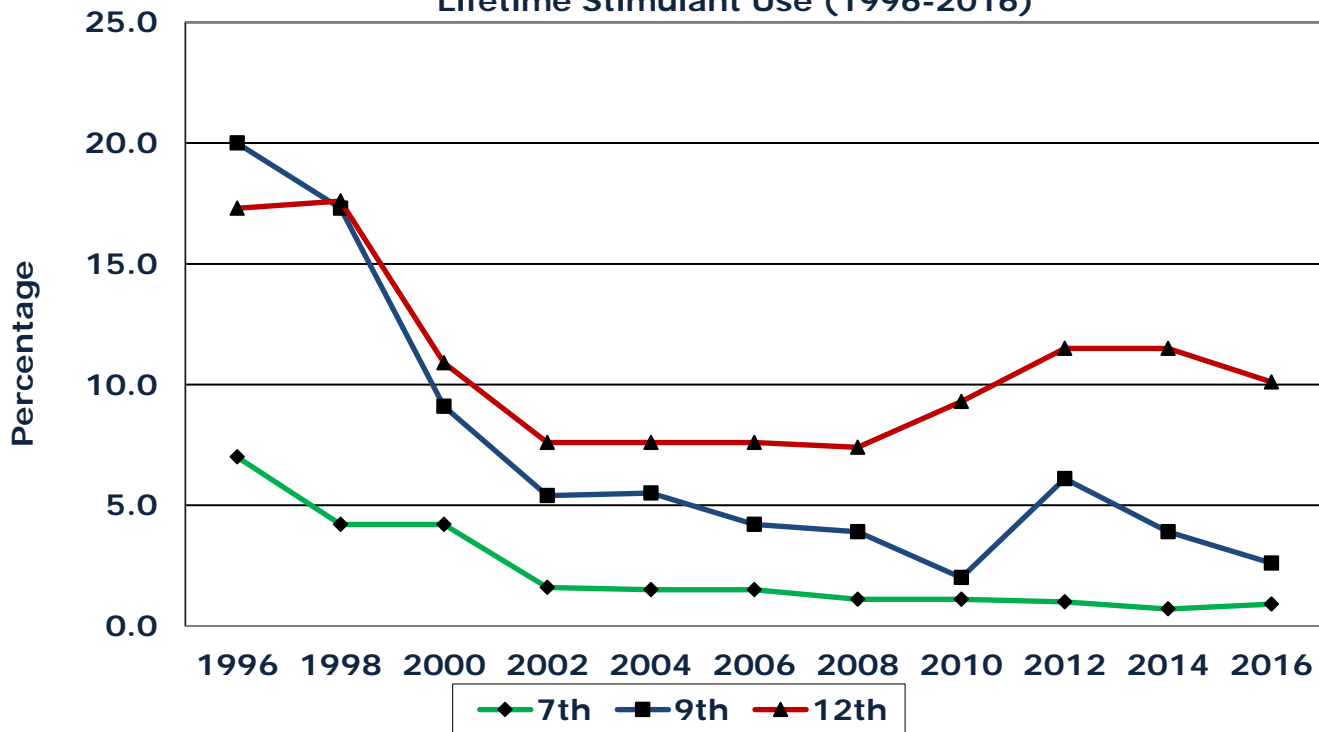


Figure 6. Dayton Area Drug Survey  
Lifetime Tranquilizer Use (1996-2016)

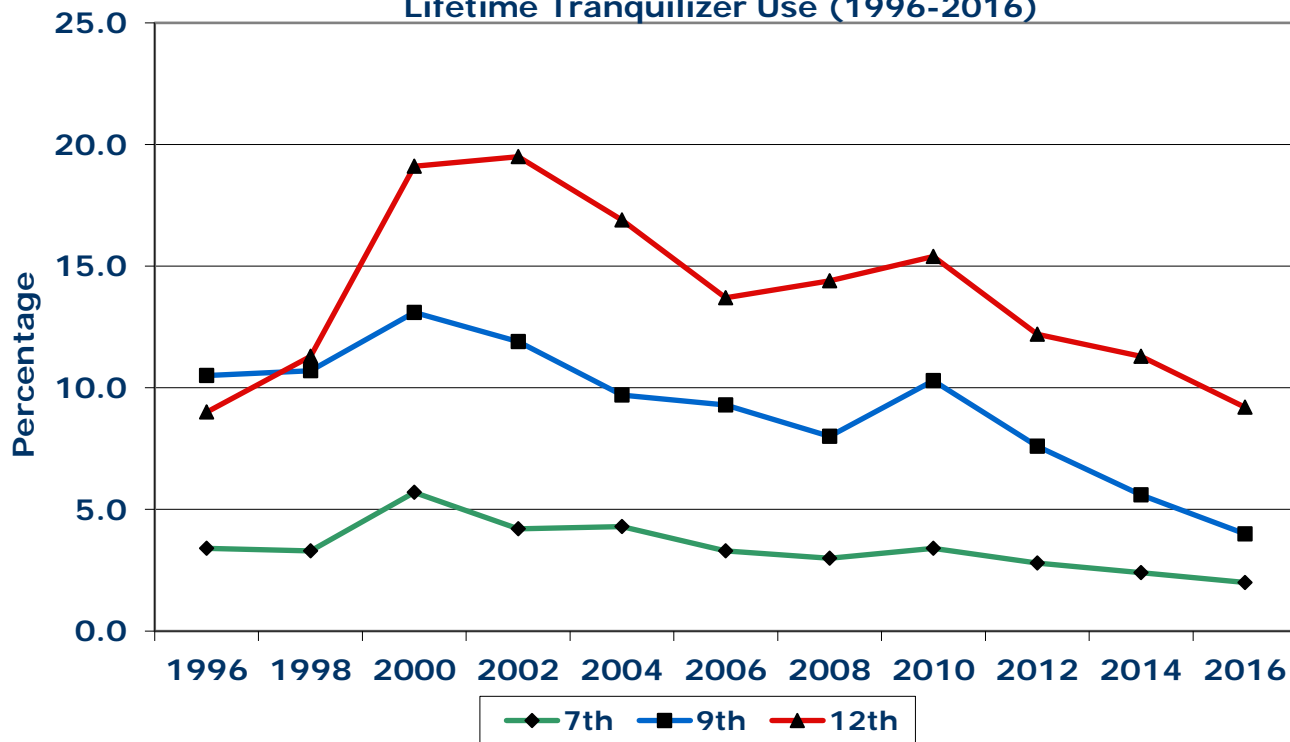


Figure 7. Dayton Area Drug Survey  
Lifetime Hallucinogen Use (1996-2016)

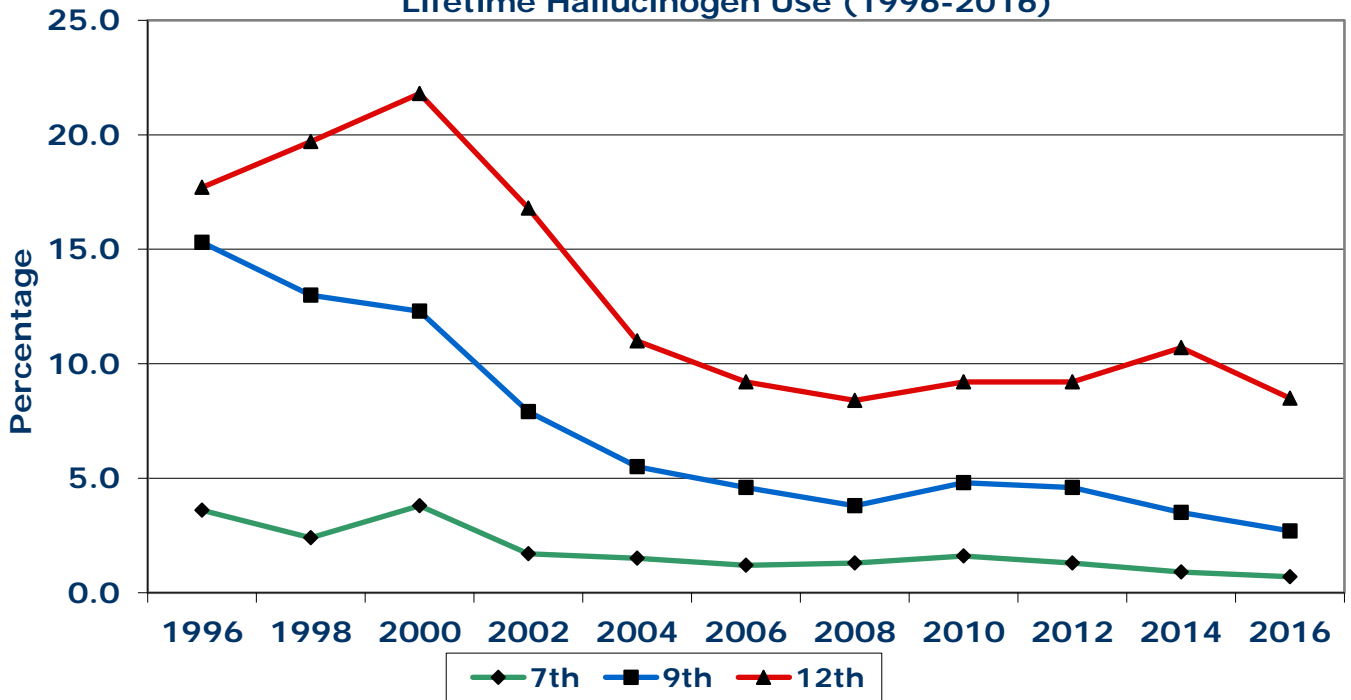


Figure 8. Dayton Area Drug Survey  
Lifetime Non-Prescribed Use of Opiate Medications (1996-2016)

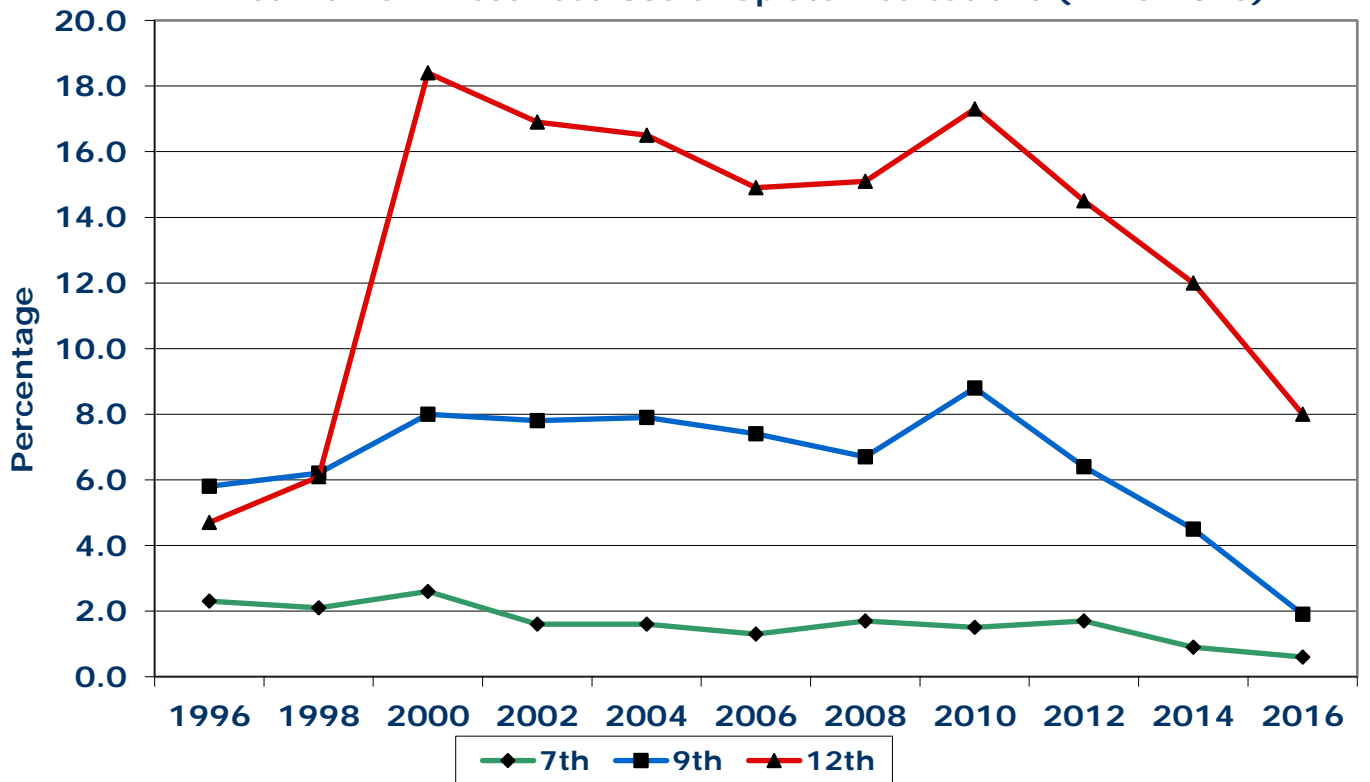


Figure 9. Dayton Area Drug Survey  
Lifetime Use of OTC Diet Pills (2000-2016)

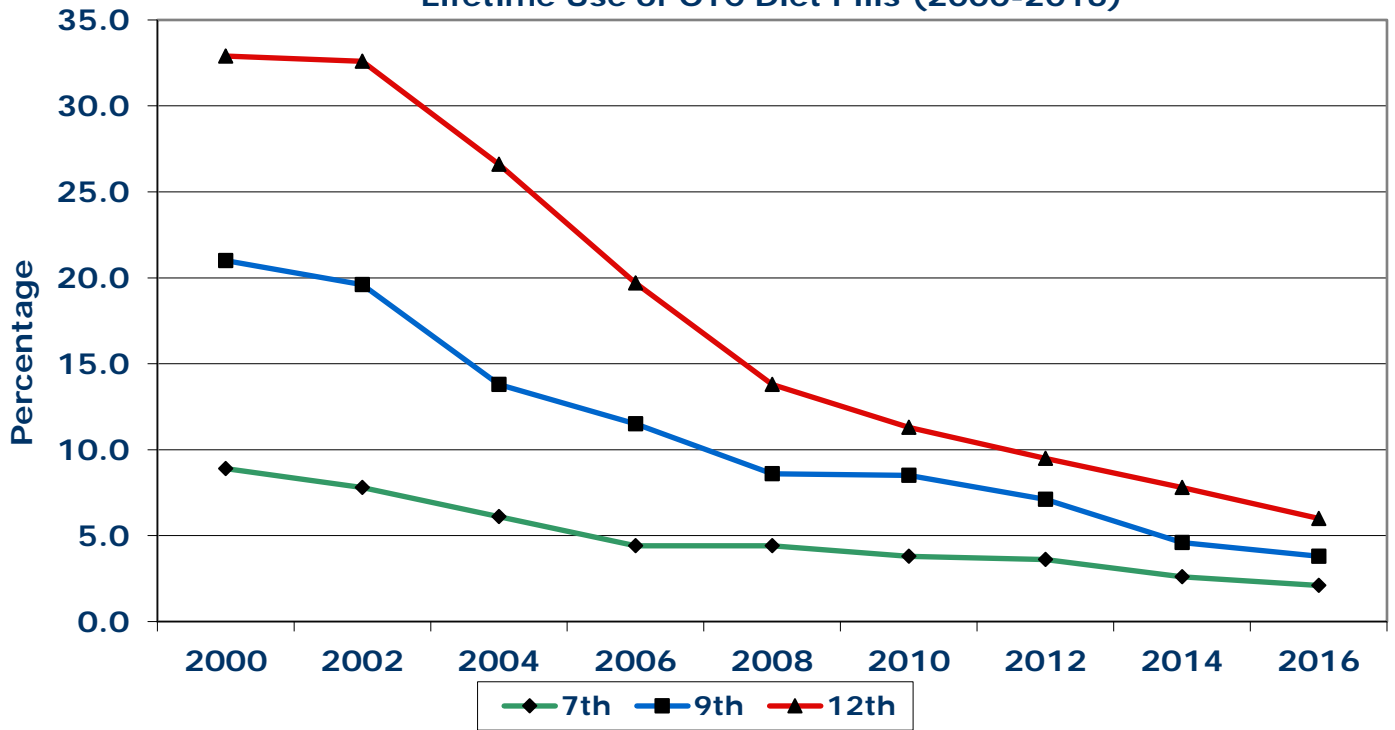


Figure 10. Dayton Area Drug Survey  
Lifetime Cocaine HCl Use (1996-2016)

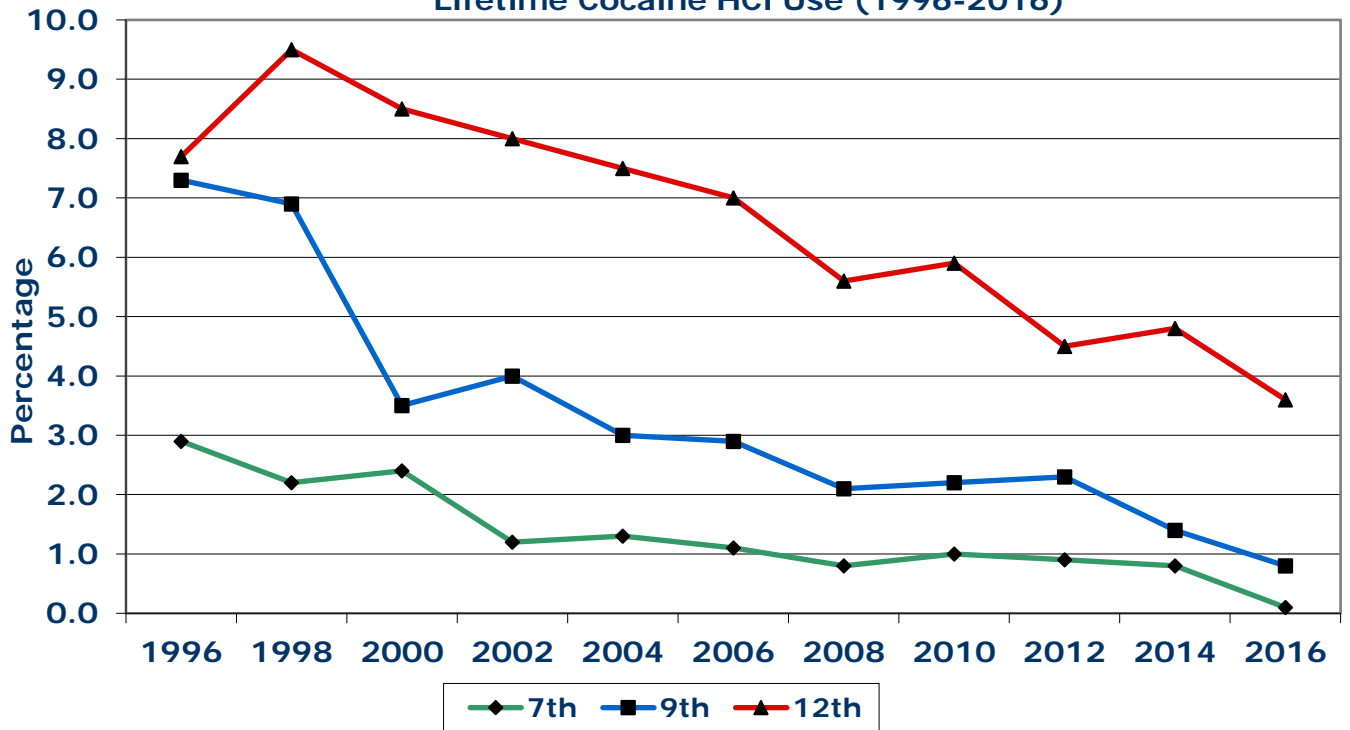


Figure 11. Dayton Area Drug Survey  
Lifetime Non-Prescribed Use of Ritalin (2002-2016)

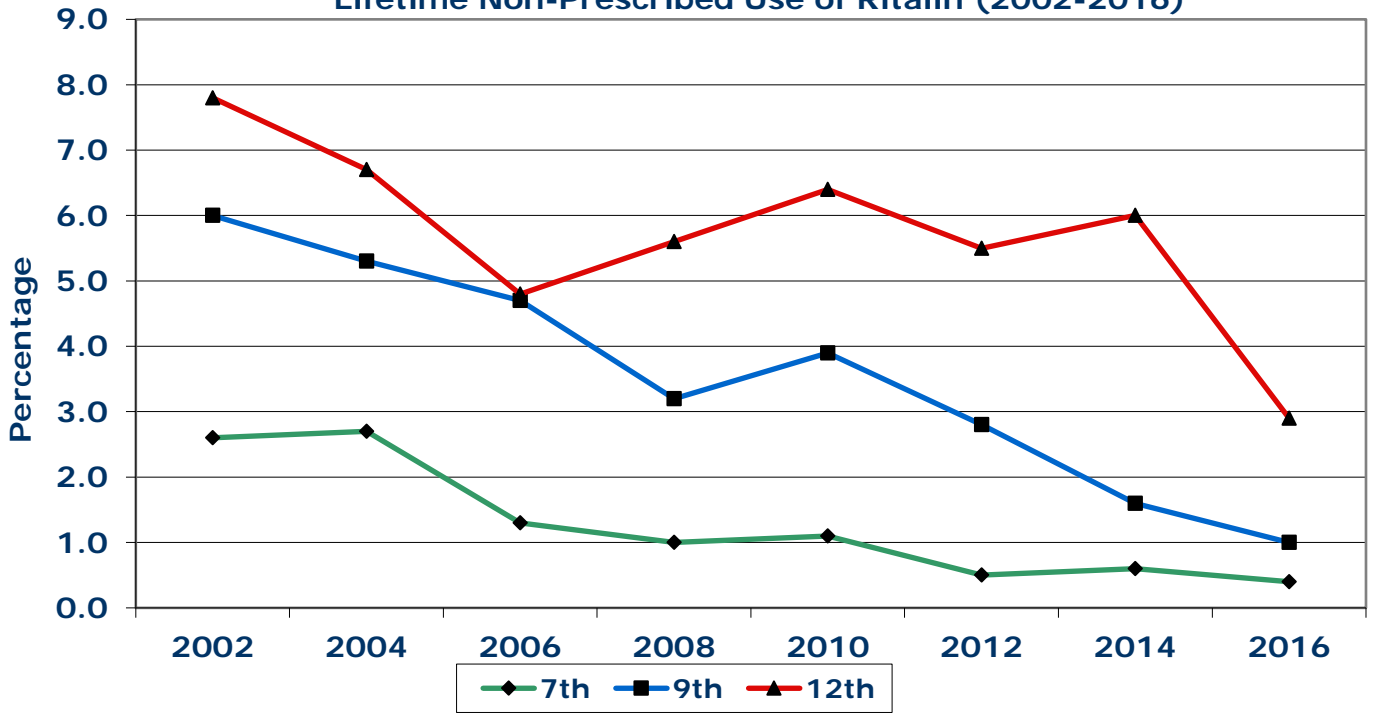


Figure 12. Dayton Area Drug Survey  
Lifetime Crack-Cocaine Use (1996-2016)

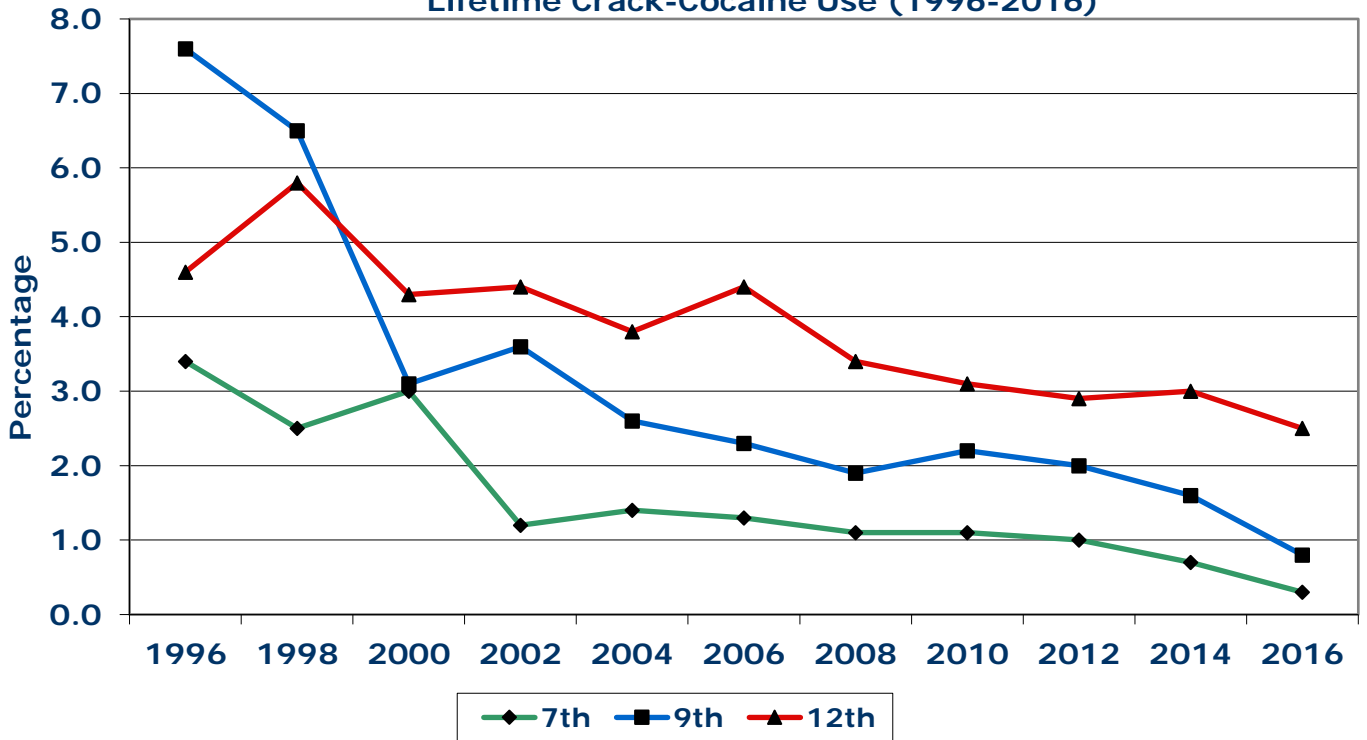


Figure 13. Dayton Area Drug Survey  
Lifetime Inhalant Use (1996-2016)

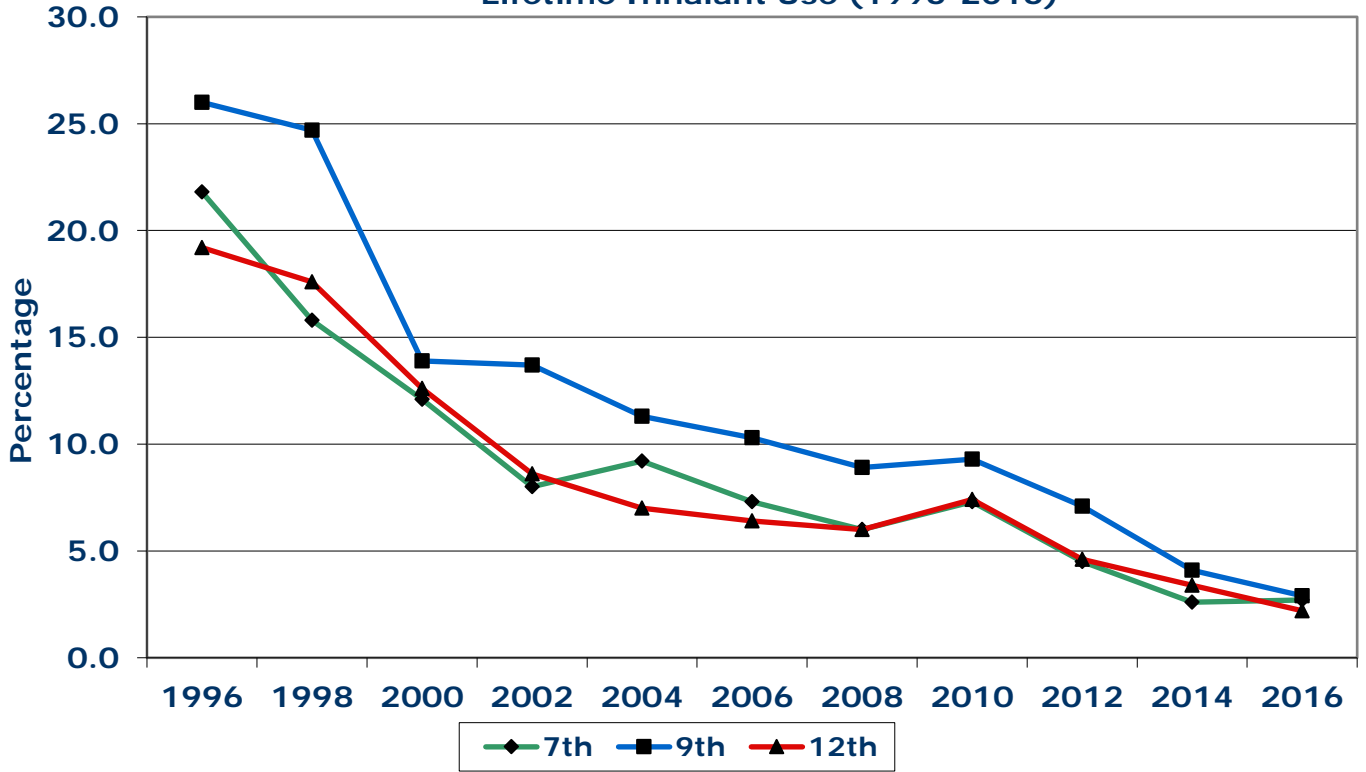
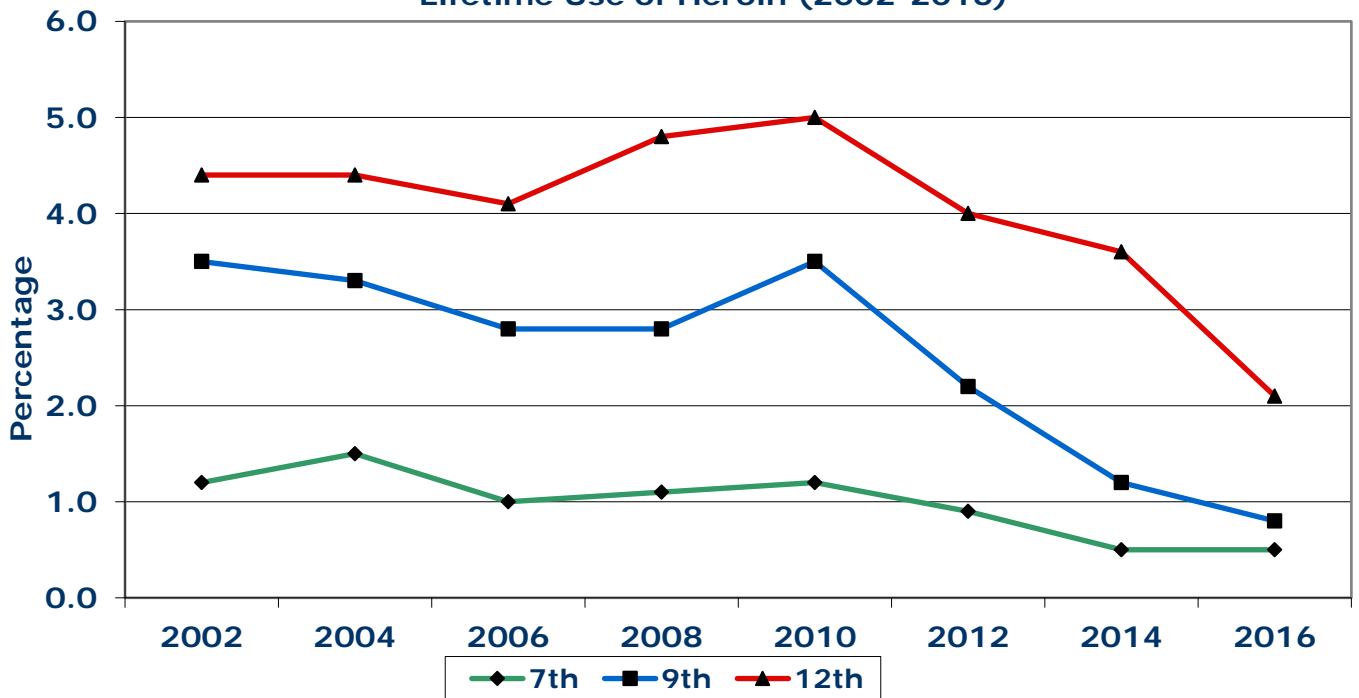


Figure 14. Dayton Area Drug Survey  
Lifetime Use of Heroin (2002-2016)





## References

Falck, R, Nahhas, RW, Carlson, RG. 2012. Surveying teens in school to assess the prevalence of problematic drug use. *J Sch Health* 82: 217-224.

Knight JR, Shrier LA, Bravender TD, Farrell M, Vander Bilt J, Shaffer HJ. 1999. A new brief screen for adolescent substance abuse. *Arch Pediatr Adolesc Med.*153:591-596.

Knight JR, Sherritt L, Shrier LA, Harris SK, Chang G. 2002. Validity of the CRAFFT substance abuse screening test among adolescent clinic patients. *Arch Pediatr Adolesc Med.*156: 607-614.

Knight JR, Harris SK, Sherritt L, et al. 2007. Prevalence of positive substance abuse screen results among adolescent primary care patients. *Arch Pediatr Adolesc Med.*161:1035-1041.