



**Impact of COVID-19 pandemic on
behavioral health and substance use in Indiana:
Youth population**



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Introduction

During the COVID-19 pandemic, when much of the country had shut down schools to maintain social distancing, many students were spending greater time at home than they have in the past, away from friends and other social interactions. They faced severe disruptions in their daily lives and were forced into isolation. Disturbances in this crucial time of social and emotional development may have led to changes in both mental health and substance use rates. Children and youth are particularly vulnerable to events like this pandemic since they have a limited understanding of the situation with few coping mechanisms. This would cause them to feel trapped without reliable methods of communication leading to unfortunate paths of substance use or mental illness (Imran, Zeshan & Pervaiz, 2020).

Substance abuse among youth during the pandemic held steady, despite a perceived decrease in the availability of substances during a time of social distancing (NIH, 2021a). Before the pandemic, 23% of students in U.S., reported that they had used marijuana in the past 30 days; this number dropped only slightly to 20% during

the pandemic. Vaped nicotine usage had dropped from 24% among students before the pandemic to 17% during the pandemic. The U.S. data from 2021 show significant drops in the use of alcohol, marijuana, and vaped nicotine among students in grades 8-12, compared to data collected in 2020 (NIH, 2021b).

In 2020, the number of mental health related emergency department visits for youth aged 12-17 years increased by 31% compared to that in 2019 (Yard et al., 2021). The study also found that among boys aged 12-17, suspected suicide-related visits to ED rose by 3.7%. During the summer of 2020, it was reported that adolescent girls visiting the ED for a suicide attempt increased by about 26% compared to the year before and jumped up to 50.6% higher in the winter of 2021 (Yard et al., 2021).

This report compiles behavioral health and birth data from various Federal and State sources to identify the impact of the COVID-19 pandemic on the behavior and mental health of the youth population in Indiana.



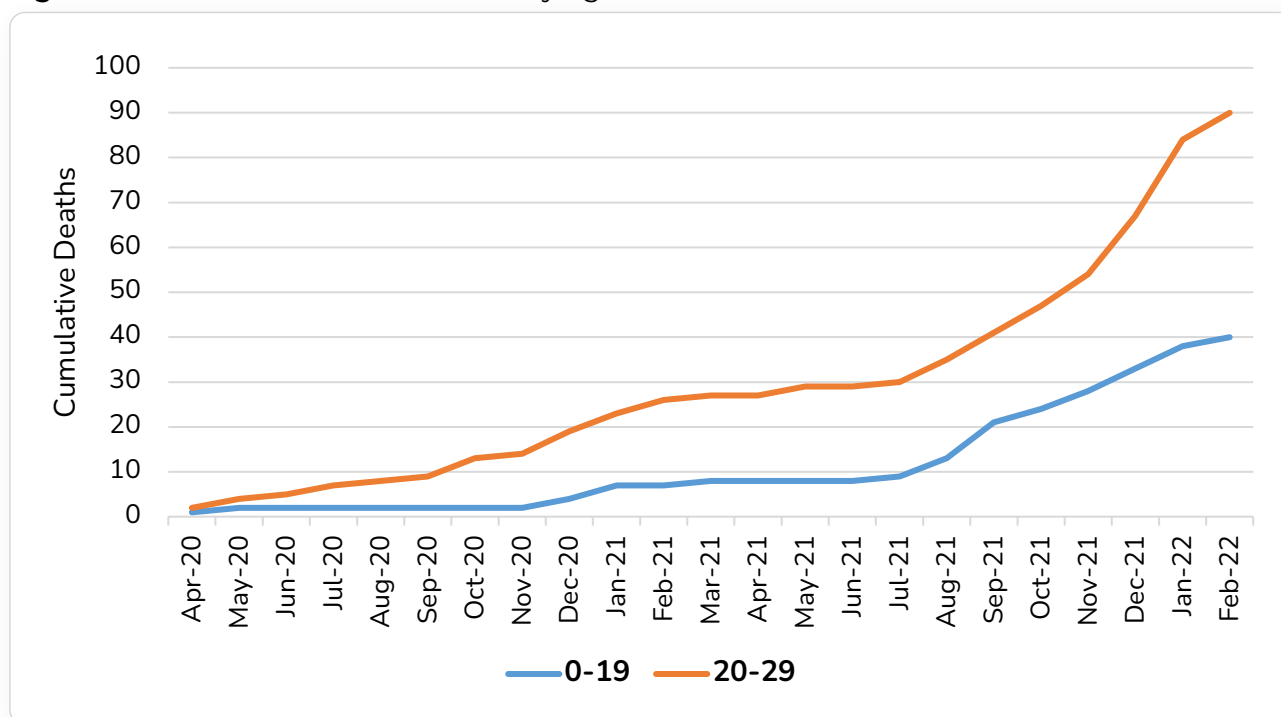
COVID-19 Statistics and Impact

COVID-19 DEATHS

According to Indiana data from the Centers for Disease Control and Prevention (CDC), as of mid-April 2022, about 32 kids (under 18 years) and 106 young adults (18 to 29 years) died due to COVID-19 (CDC, 2022). Further, in Indiana, 17 boys and 15 girls have died from COVID-19 in the 0- to 17-year-old age group. Also, 59 young men

and 47 young women died due to COVID-19 in the 18- to 29-year-old age group. The cumulative deaths from COVID-19 among the 0- to 19-year-old age group and the 20- to 29-year-old age group seem to rise and steady in unison, with higher increases since August 2021 (IDOH-MPH, 2022). See Figure 1 for the cumulative death trends for 0-19-year and 20-to-29-year age group.

Figure 1: Cumulative COVID-19 Deaths by Age in Indiana



Source: IDOH-MPH, 2022

Behavioral Health Prevalence

COVID-19 AND SUBSTANCE USE

The evidence on youth substance use during the pandemic has been mixed. Since the beginning of the pandemic, there have been higher rates of substance use (Horigian et al., 2020). A Canadian survey on adolescents found higher than expected rates of substance use with almost “20% engaging in substance use at least once a week” (Craig et al., 2022). Another study on adolescents found social standing and popularity to be a predictor of solitary versus non-solitary substance use: 49.3% of adolescents engaged in solitary substance use which was associated with poor mental health and coping strategies; 23.6% of youth engaged in substance use with peers

which put them at a higher risk of contracting COVID-19 (Dumas et al., 2020). Further, youth who used cigarettes or e-cigarettes were more likely to develop COVID-19 symptoms (Gaiha et al., 2020). This could be attributed to the respiratory impacts of smoking and the specific nature of the COVID-19 illness. Alcohol use also increased among college students (Charles et al., 2021).

On the other hand, some studies have found that youth substance use rates have decreased or not changed during the pandemic. A study conducted in Canada found that rates of substance use decreased while mental health rates increased

(Hawke, Barbic, et al., 2020). Graupensperger et al. (2021) and Dumas et al. (2020) found that the majority of the study sample experienced reduced alcohol and cannabis use. Although alcohol and marijuana availability declined, prevalence levels did not significantly change in the US (Miech et al., 2020). This finding was corroborated by another study which find that the overall rates of substance use did not significantly change during the pandemic (Chaffee et al., 2021).

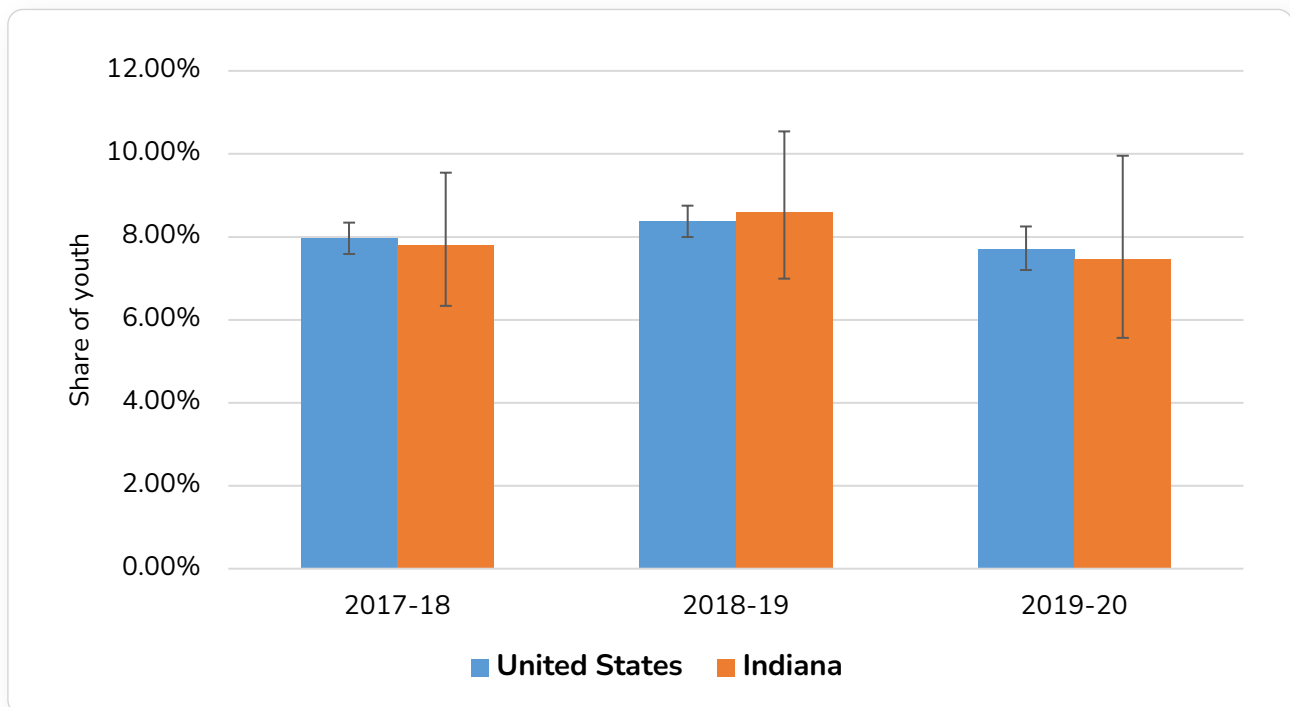
Lundahl and Cannoy (2021) compared substance use rates amongst youth before and after the start of the pandemic. They found that there were increases (but statistically insignificant) in substances such as alcohol, Lysergic Acid Diethylamide (LSD), and cold and cough medications use among twelfth graders. Substances such as cocaine, MDMA (Ecstasy), and heroin had low levels of use and were similar to the previous year. They conclude that for ages 18 - 24, the rates of substance use

increased, while for ages 14 - 18, the rates of vaping and cannabis decreased, and alcohol use remained the same.

ILLICIT DRUG USE

The National Survey on Drug Use and Health (NSDUH) collects data on the percentage of respondents who reported illicit drug use in the past month by age group. The misuse of prescription psychotherapeutics or use of cocaine, heroin, methamphetamine, marijuana, hallucinogens, or inhalants is considered to be illicit drug use by NSDUH. For the age group of 12 to 17 years, there was an increase in illicit drug use from 2018 to 2019, but the rates declined in 2020. For the group of 18 to 25 years of age, there was a slight increase for years ending 2018 to 2019, followed by statistically no changes in 2020. Figures 2A and 2B represent current illicit drug use for youth (12 to 17 years) and young adults (18 to 25 years), respectively.

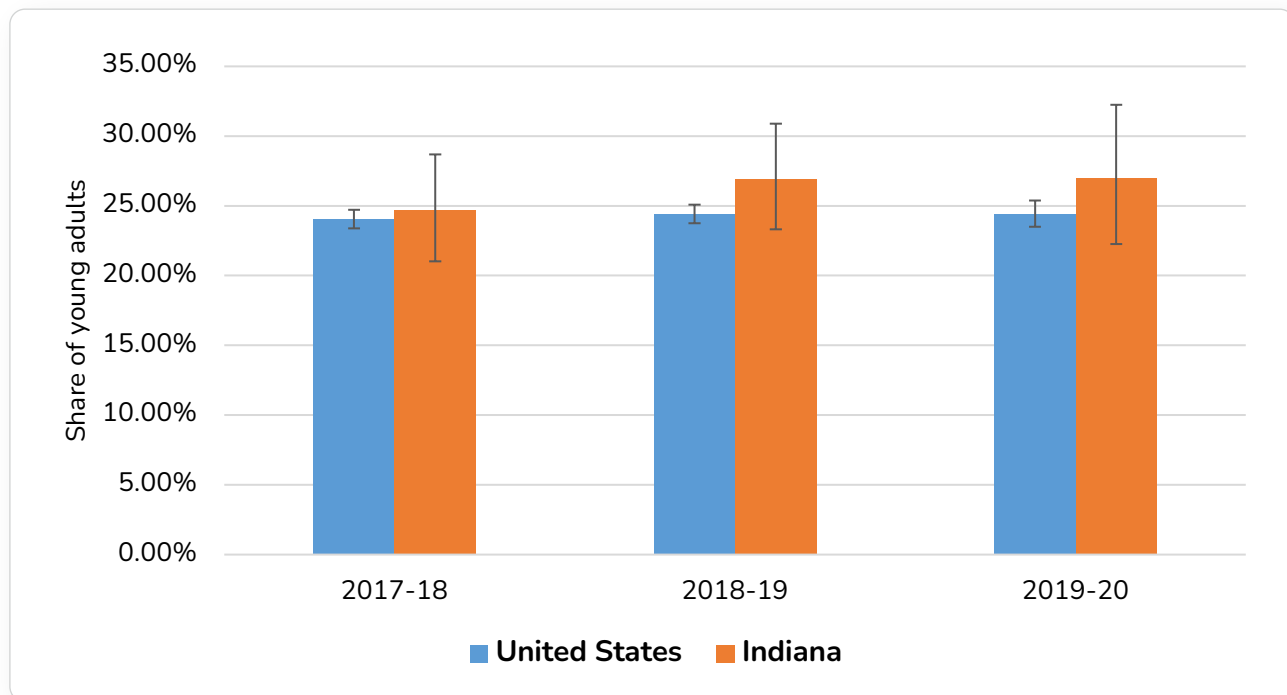
Figure 2A: Illicit Drug Use in the Past Month (12 – 17 Years of Age)



Source: NSDUH, 2017 - 2020

AGE - 12-17 ESTIMATES (95% CI)			
	2017-2018	2018-2019	2019-2020
United States	7.96% (7.59% - 8.34%)	8.37% (8.00% - 8.75%)	7.71% (7.20% - 8.25%)
Indiana	7.79% (6.34% - 9.55%)	8.60% (6.99% - 10.54%)	7.47% (5.57% - 9.95%)

Figure 2B: Illicit Drug Use in the Past Month (18 – 25 Years of Age)



AGE - 18-25 ESTIMATES (95% CI)			
	2017-2018	2018-2019	2019-2020
United States	24.04% (23.38% - 24.72%)	24.40% (23.74% - 25.07%)	24.43% (23.50% - 25.37%)
Indiana	24.66% (21.03% - 28.69%)	26.93% (23.31% - 30.89%)	26.96% (22.25% - 32.24%)

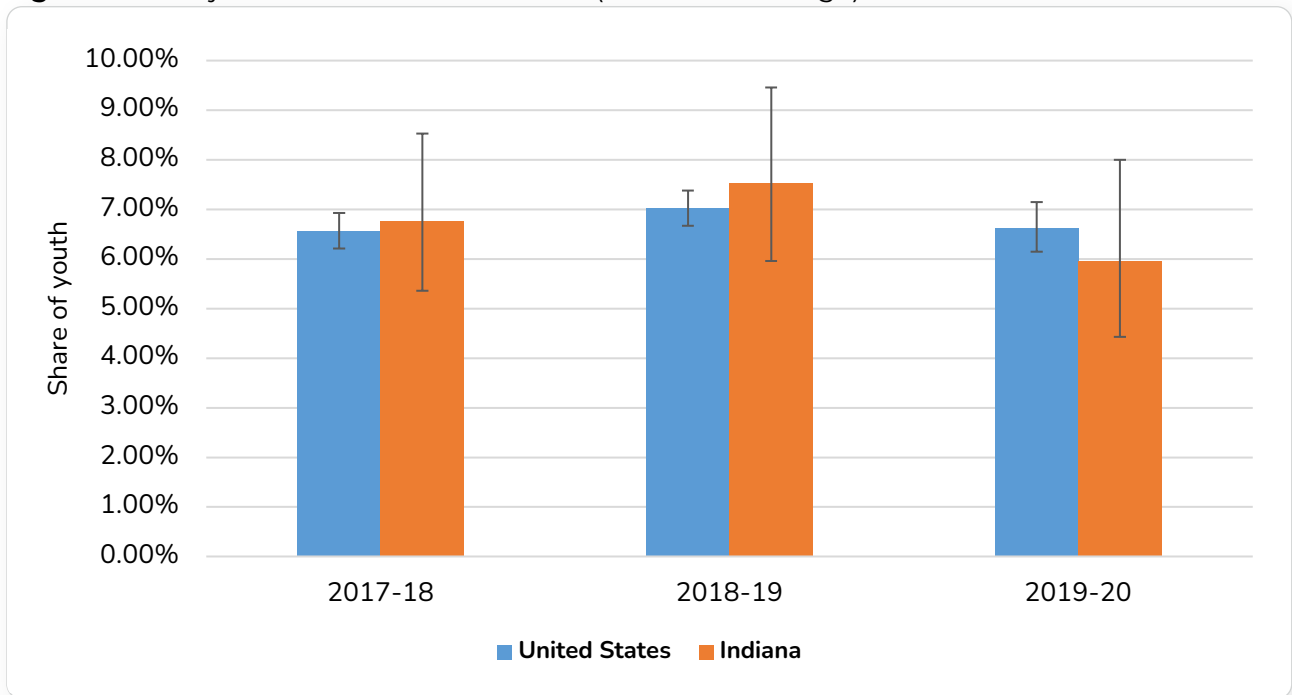
Source: NSDUH, 2017 - 2020

MARIJUANA USE

From the National Survey on Drug Use and Health (NSDUH), the estimated percentage of those aged 12 to 17 who used marijuana in the past month in Indiana increased from surveys ending 2018 (6.77%) to 2019 (7.52%). Similarly, the United States estimate increased from 6.56% to 7.02%, for surveys ending in 2018 and 2019, respectively. Then, in the 2020 data, both Indiana (5.97%) and United States (6.63%) estimates

decreased. Meanwhile, the estimate for those aged 18 to 25 increased for both Indiana and the United States from 2018 (IN: 22.85%, US: 22.12%) to 2019 (IN: 25.63%, US: 22.54%) to 2020 (IN: 26.67%, US: 23.02%), but the level of increases in Indiana was higher than the nation among young adults. Figures 3A and 3B represent current marijuana use for youth (12 to 17 years) and young adults (18 to 25 years), respectively.

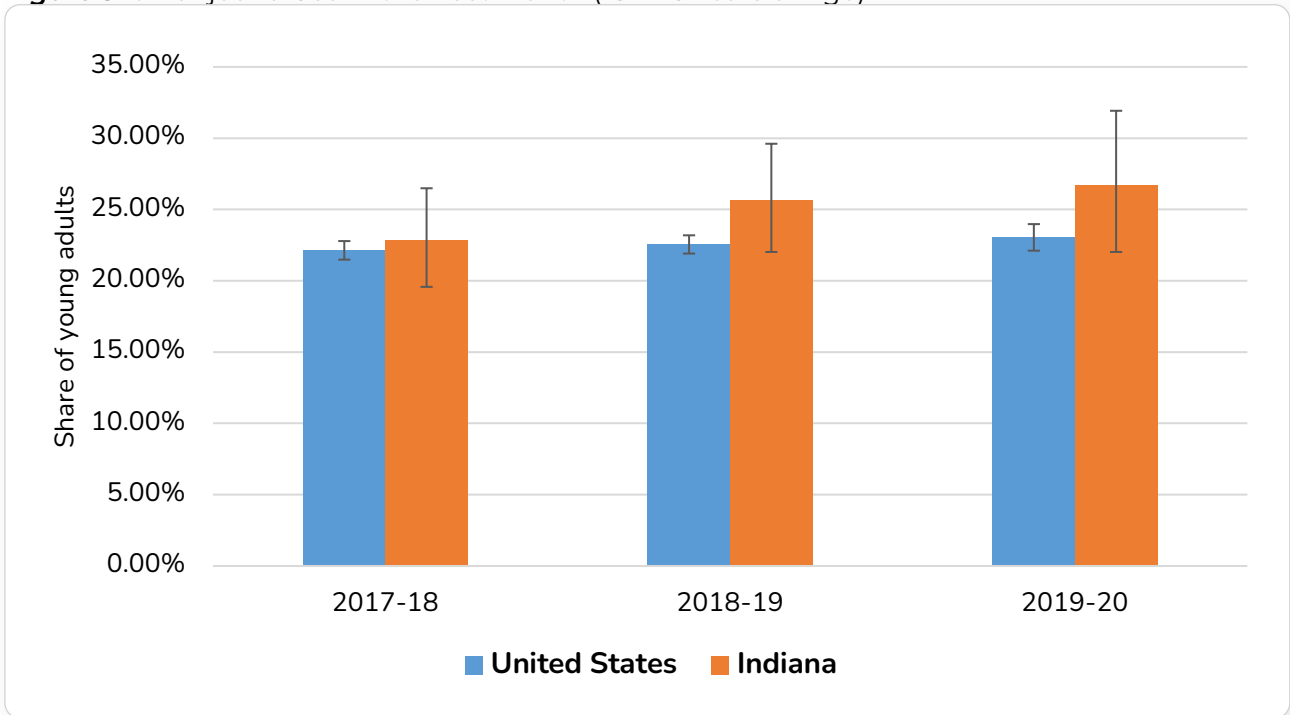
Figure 3A: Marijuana Use in the Past Month (12 – 17 Years of Age)



AGE - 12-17 ESTIMATES (95% CI)			
	2017-2018	2018-2019	2019-2020
United States	6.56% (6.21% - 6.93%)	7.02% (6.67% - 7.38%)	6.63% (6.15% - 7.15%)
Indiana	6.77% (5.36% - 8.53%)	7.52% (5.96% - 9.46%)	5.97% (4.43% - 8.00%)

Source: NSDUH, 2017 - 2020

Figure 3B: Marijuana Use in the Past Month (18 – 25 Years of Age)



AGE - 18-25 ESTIMATES (95% CI)			
	2017-2018	2018-2019	2019-2020
United States	22.12% (21.48% - 22.78)	22.54% (21.90% - 23.19)	23.02% (22.10% - 23.97)
Indiana	22.85% (19.57% - 26.49)	25.63% (22.02% - 29.61)	26.67% (22.01% - 31.91)

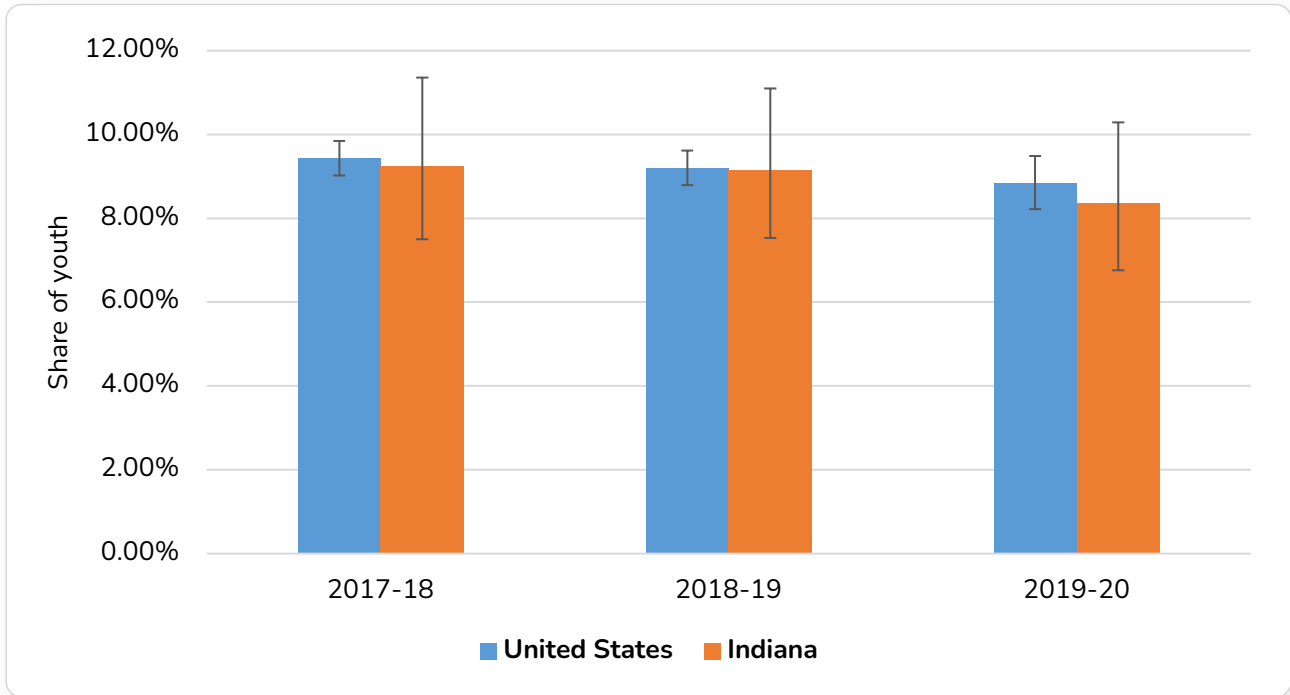
Source: NSDUH, 2017 - 2020

ALCOHOL USE

Data on Indiana and the United States regarding the percent of those aged 12 to 17 years of age who used alcohol in the past month was obtained from the National Survey on Drug Use and Health (NSDUH). Both Indiana and the United States saw steady decreases year over year, from 2018

(IN: 9.25%, US: 9.43%) to 2019 (IN: 9.16%, US: 9.19%) to 2020 (IN: 8.36%, US: 8.83%). Similarly, steady decreases were seen for the 18 to 25 years old age demographic over each of the survey years. Figures 4A and 4B represent current alcohol use for youth (12 to 17 years) and young adults (18 to 25 years), respectively.

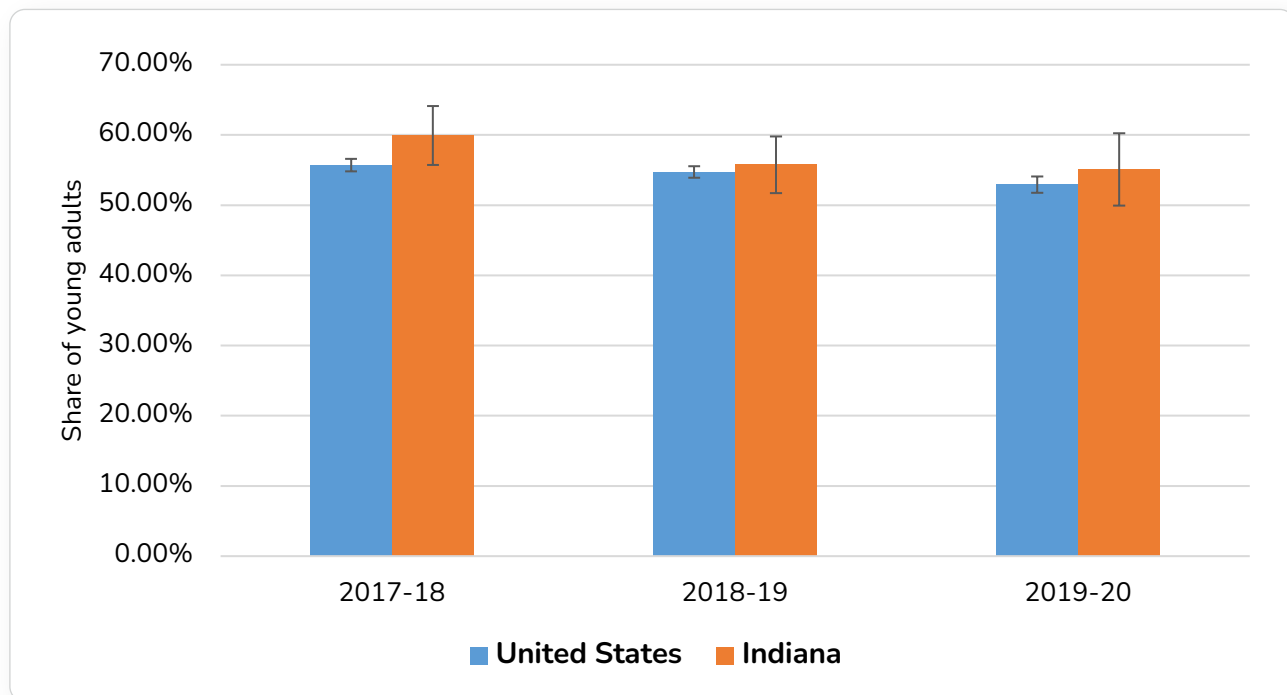
Figure 4A: Alcohol Use in the Past Month (12 – 17 Years of Age)



AGE - 12-17 ESTIMATES (95% CI)			
	2017-2018	2018-2019	2019-2020
United States	9.43% (9.02% - 9.85%)	9.19% (8.79% - 9.62%)	8.83% (8.22% - 9.49%)
Indiana	9.25% (7.50% - 11.36%)	9.16% (7.53% - 11.1%)	8.36% (6.76% - 10.29%)

Source: NSDUH, 2017 - 2020

Figure 4B: Alcohol Use in the Past Month (18 – 25 Years of Age)



AGE - 18-25 ESTIMATES (95% CI)			
	2017-2018	2018-2019	2019-2020
United States	55.73% (54.84% - 56.61%)	54.72% (53.89% - 55.54%)	52.93% (51.78% - 54.07%)
Indiana	59.99% (55.72% - 64.12%)	55.79% (51.70% - 59.81%)	55.14% (49.93% - 60.24%)

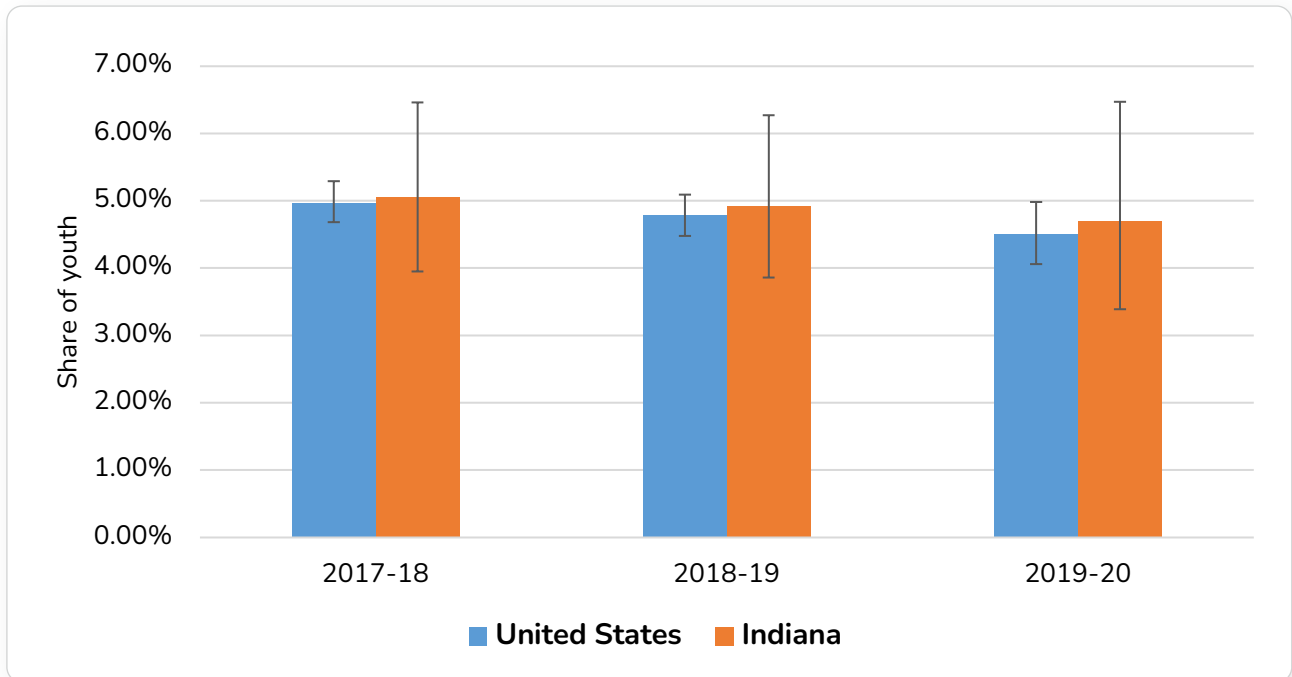
Source: NSDUH, 2017 - 2020

BINGE DRINKING

We obtain a share of youth and young adults who reported binge drinking in the past month (defined as 5 or more drinks for men [4 or more for women] on the same occasion at least one day in the past month) in Indiana and the United States from National Survey on Drug Use and Health (NSDUH). The data from NSDUH shows a steady year-over-year decrease from surveys ending 2018 to 2020

for 12 to 17 years old. Similarly, the United States saw consistent decreases for the 18 to 25 years old demographic from 2018 (35.89%) to 2019 (34.58%) to 2020 (32.82%). Meanwhile, Indiana saw a decrease from 2018 (37.01%) to 2019 (34.56%), followed by an increase in 2020 (35.66%) for young adults. Figures 5A and 5B represent current binge alcohol use for youth (12 to 17 years) and young adults (18 to 25 years), respectively.

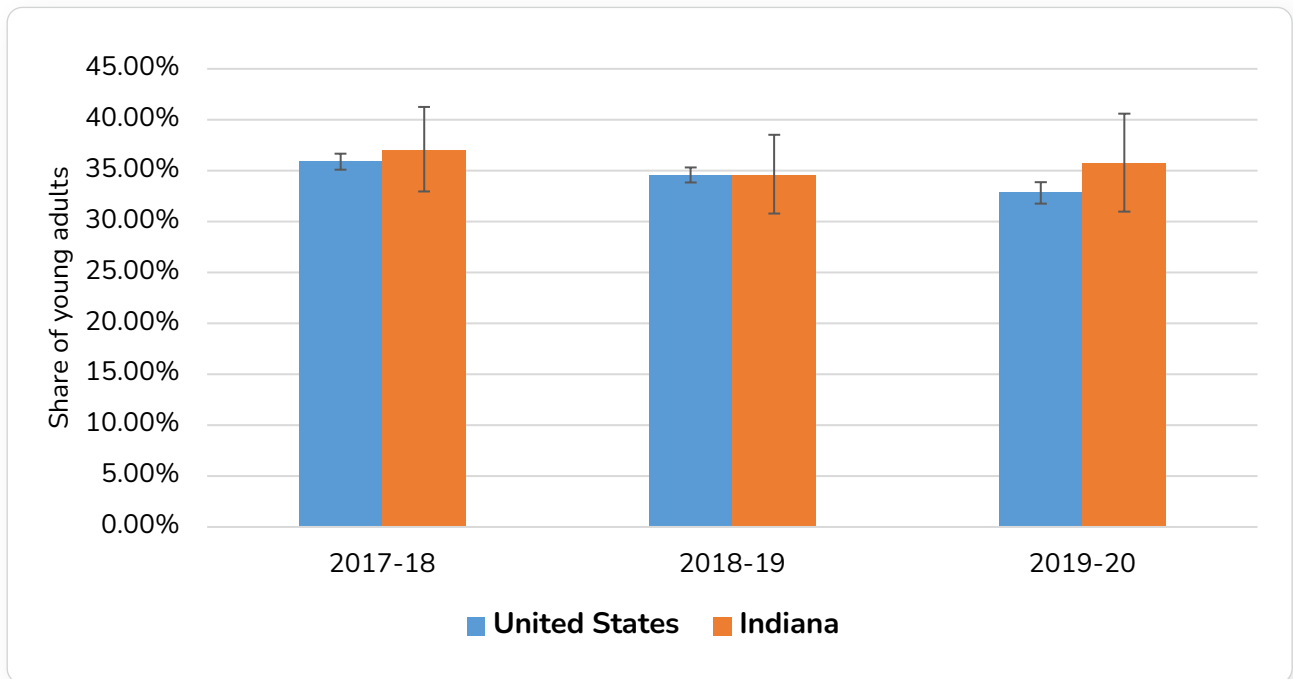
Figure 5A: Binge Alcohol Use in the Past Month (12 – 17 Years of Age)



AGE - 12-17 ESTIMATES (95% CI)			
	2017-2018	2018-2019	2019-2020
United States	4.97% (4.68% - 5.29%)	4.78% (4.48% - 5.09%)	4.50% (4.06% - 4.98%)
Indiana	5.06% (3.95% - 6.46%)	4.93% (3.86% - 6.27%)	4.70% (3.39% - 6.47%)

Source: NSDUH, 2017 - 2020

Figure 5B: Binge Alcohol Use in the Past Month (18 – 25 Years of Age)



AGE - 18-25 ESTIMATES (95% CI)			
	2017-2018	2018-2019	2019-2020
United States	35.89% (35.10% - 36.68%)	34.58% (33.84% - 35.32%)	32.82% (31.78% - 33.87%)
Indiana	37.01% (32.95% - 41.26%)	34.56% (30.78% - 38.54%)	35.66% (30.99% - 40.62%)

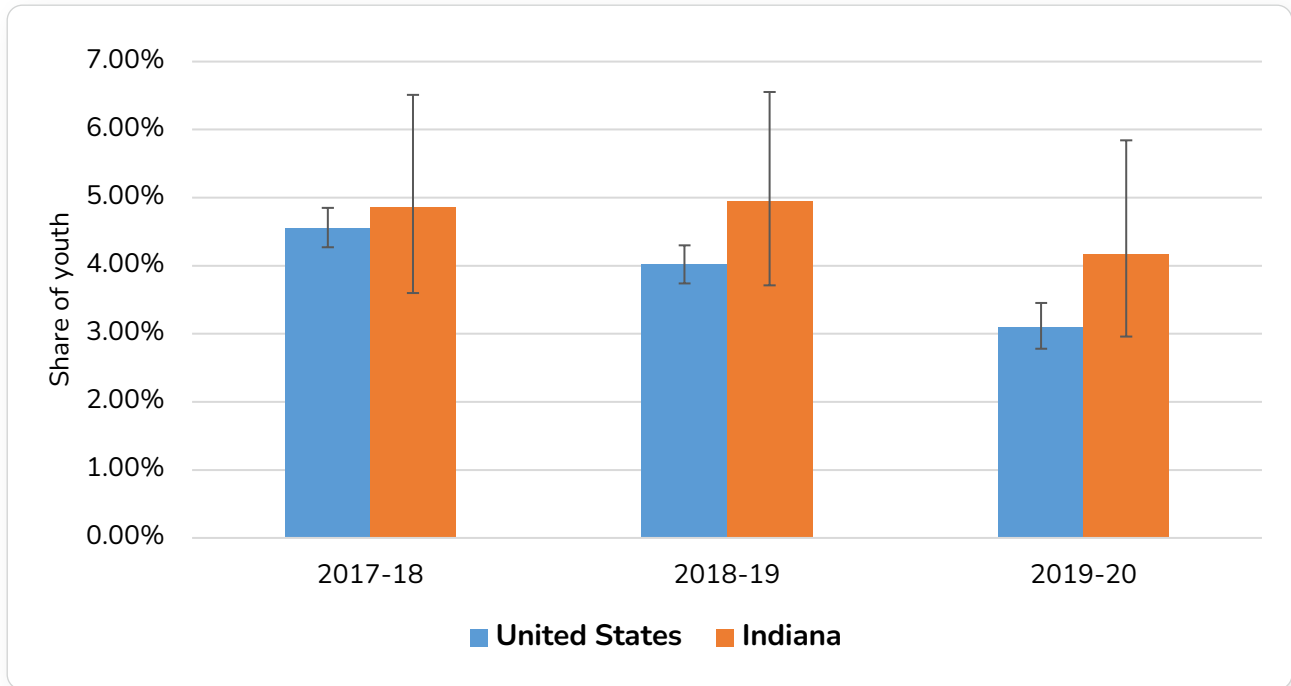
Source: NSDUH, 2017 - 2020

TOBACCO USE

According to the National Survey on Drug Use and Health (NSDUH), tobacco use in the past month among those 12 to 17 years of age increased for Indiana (4.85% in 2018 to 4.94% in 2019) and decreased for the United States (4.55% in 2018

to 4.01% in 2019). Both Indiana (4.16%) and the United States (3.10%) saw decreases in 2020. A similar pattern took place for those aged 18 to 25. Figures 6A and 6B represent current alcohol use for youth (12 to 17 years) and young adults (18 to 25 years), respectively.

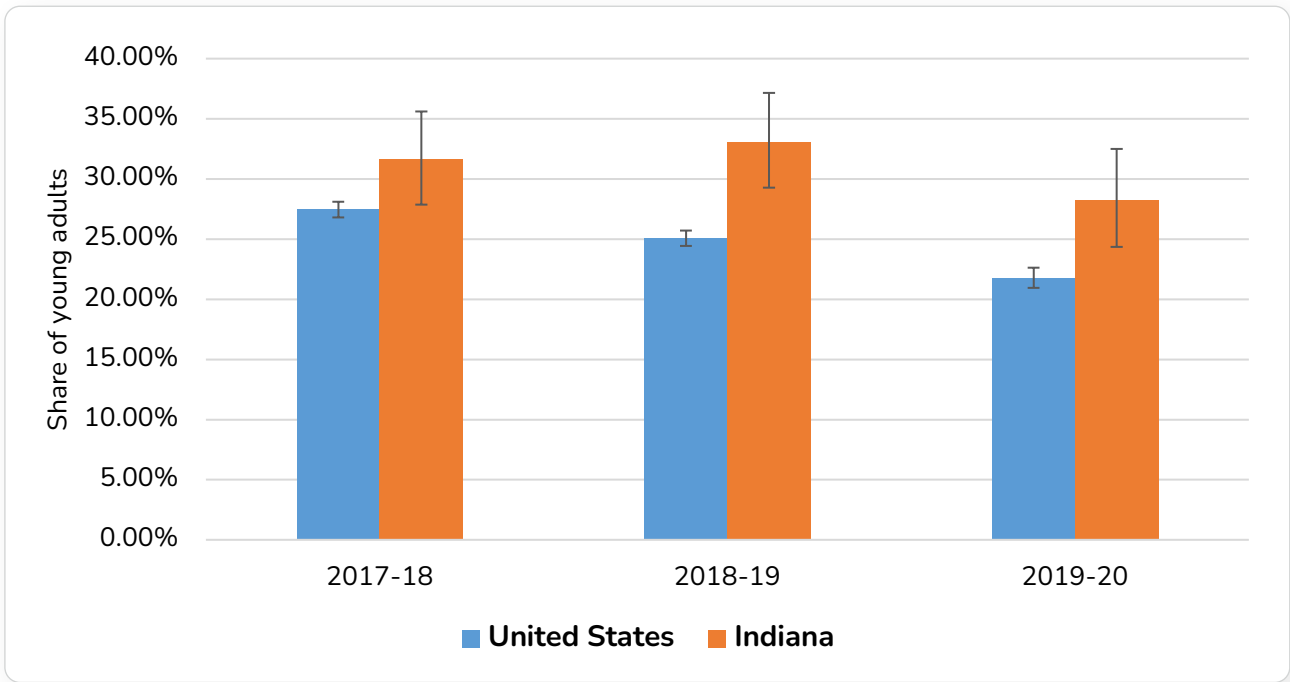
Figure 6A: Tobacco Use in the Past Month (12 – 17 Years of Age)



AGE - 12-17 ESTIMATES (95% CI)			
	2017-2018	2018-2019	2019-2020
United States	4.55% (4.27% - 4.85%)	4.01% (3.74% - 4.30%)	3.10% (2.78% - 3.45%)
Indiana	4.85% (3.60% - 6.51%)	4.94% (3.71% - 6.55%)	4.16% (2.96% - 5.84%)

Source: NSDUH, 2017 - 2020

Figure 6B: Tobacco Use in the Past Month (18 – 25 Years of Age)



AGE - 18-25 ESTIMATES (95% CI)			
	2017-2018	2018-2019	2019-2020
United States	27.46% (26.82% - 28.10%)	25.08% (24.44% - 25.73%)	21.77% (20.94% - 22.63%)
Indiana	31.61% (27.86% - 35.61%)	33.10% (29.28% - 37.17%)	28.25% (24.35% - 32.50%)

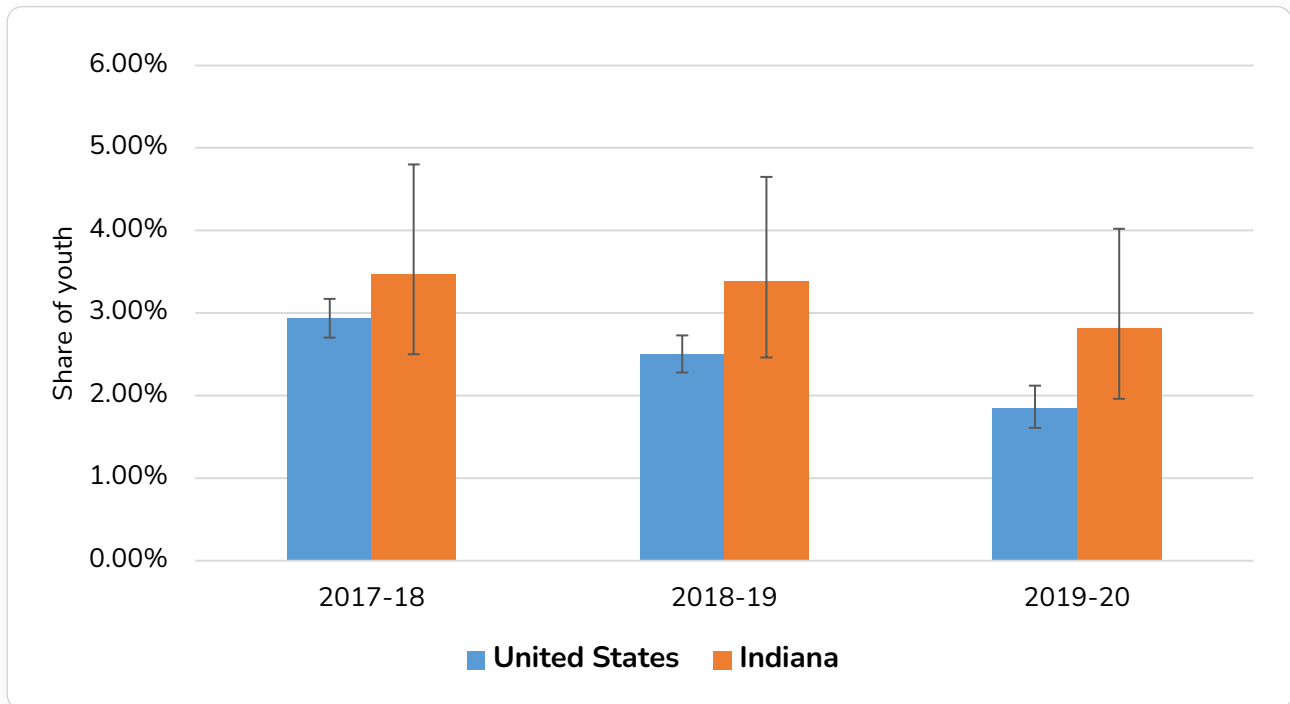
Source: NSDUH, 2017 - 2020

CIGARETTE USE

The National Survey on Drug Use and Health (NSDUH) provides data for the percentage of those aged 12 to 17 who used cigarettes in the past month. Both Indiana and the United States saw decreases from 2018 (IN: 3.47%, US: 2.93%) to 2019 (IN: 3.38%, US: 2.50%) to 2020 (IN: 2.82%, US: 1.85%). Similarly, the United States

saw decreases in cigarette use for the 18- to 25-year-old demographic over the three survey periods. Meanwhile, Indiana saw an increase from 2018 (24.96%) to 2019 (25.12%), followed by a decrease in 2020 (19.70%). Figures 7A and 7B represent current cigarette use for youth (12 to 17 years) and young adults (18 to 25 years), respectively.

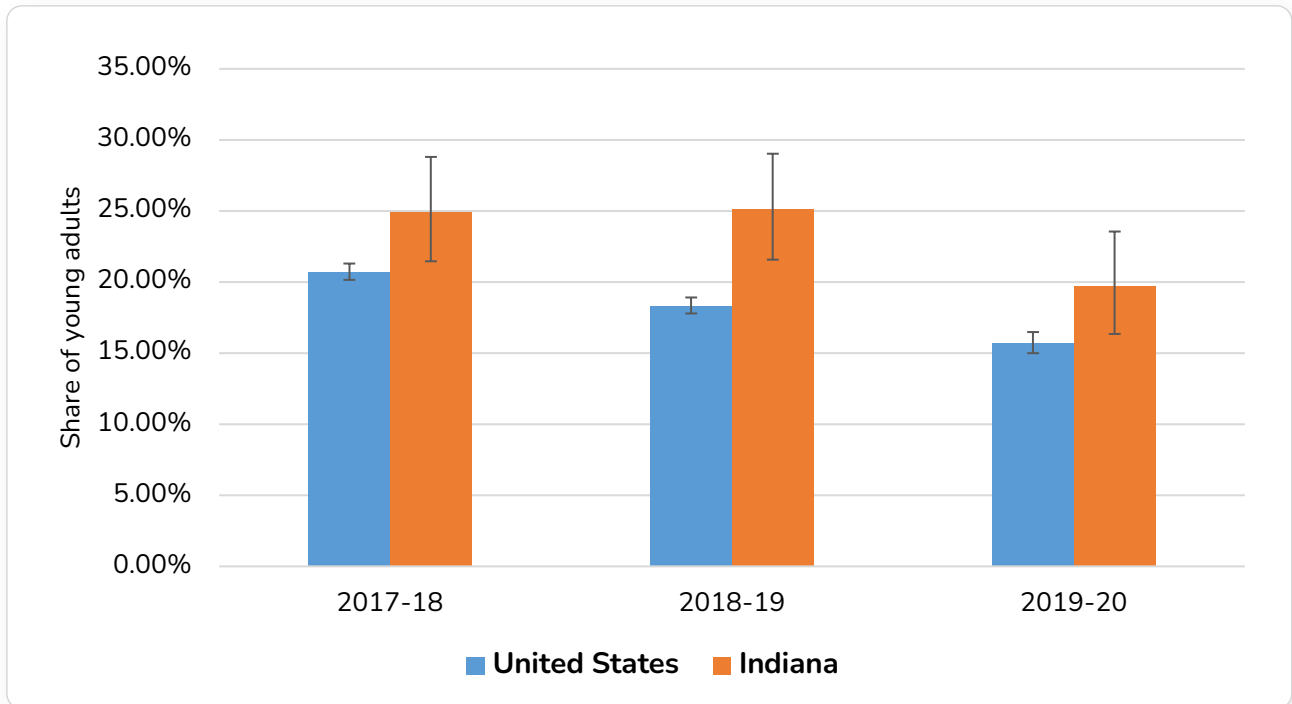
Figure 7A: Cigarette Use in the Past Month (12 – 17 Years of Age)



AGE - 12-17 ESTIMATES (95% CI)			
	2017-2018	2018-2019	2019-2020
United States	2.93% (2.70% - 3.17%)	2.50% (2.28% - 2.73%)	1.85% (1.61% - 2.12%)
Indiana	3.47% (2.50% - 4.80%)	3.38% (2.46% - 4.65%)	2.82% (1.96% - 4.02%)

Source: NSDUH, 2017 - 2020

Figure 7B: Cigarette Use in the Past Month (18 – 25 Years of Age)



AGE - 18-25 ESTIMATES (95% CI)			
	2017-2018	2018-2019	2019-2020
United States	20.73% (20.16% - 21.31%)	18.34% (17.79% - 18.91%)	15.73% (15.01% - 16.49%)
Indiana	24.96% (21.47% - 28.81%)	25.12% (21.58% - 29.03%)	19.70% (16.34% - 23.55%)

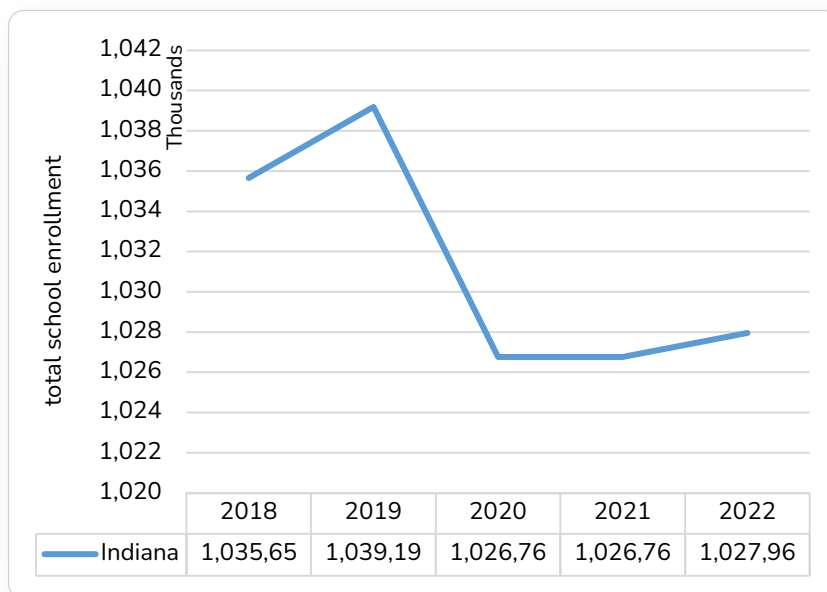
Source: NSDUH, 2017 - 2020

Other Impacts

SCHOOL ENROLLMENT

The Indiana Department of Education (IDOE) reported an increase in public school enrollment from 2018 to 2019, followed by a decrease in 2020 during the pandemic and no significant change in 2021. In 2022, a slight increase in enrollment was reported. Figure 8 shows the trend in school enrollment.

Figure 8: Public School Enrollment (by County [2018 to 2022])



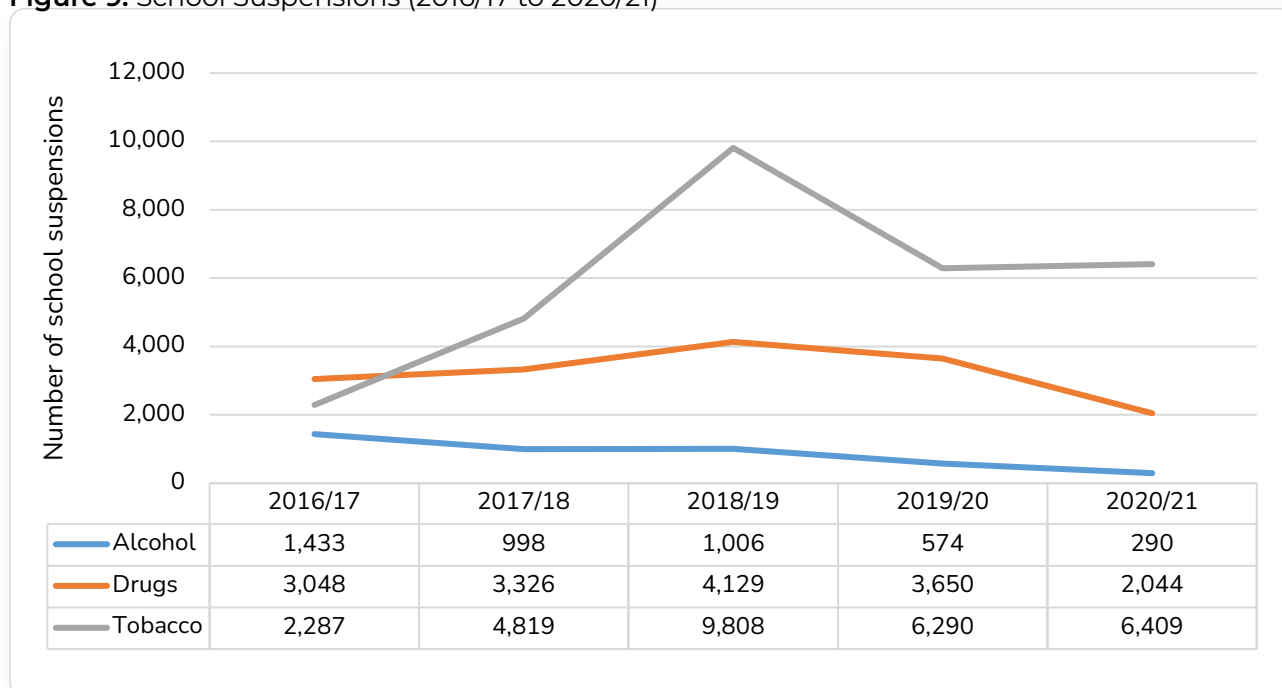
Source: IDOE, 2018 - 2022

SCHOOL SUSPENSIONS

School suspensions involving alcohol, drugs, and/or tobacco were obtained from the Indiana Department of Education (IDOE). The general trend for alcohol and drug-related suspensions has been downward, while the general trend for

tobacco has been upward until 2018 followed by a downward trend. The schools going to virtual mode during the pandemic would have reduced the suspensions in 2020/21. Figure 9 shows the trends in school suspensions over time by substance.

Figure 9: School Suspensions (2016/17 to 2020/21)

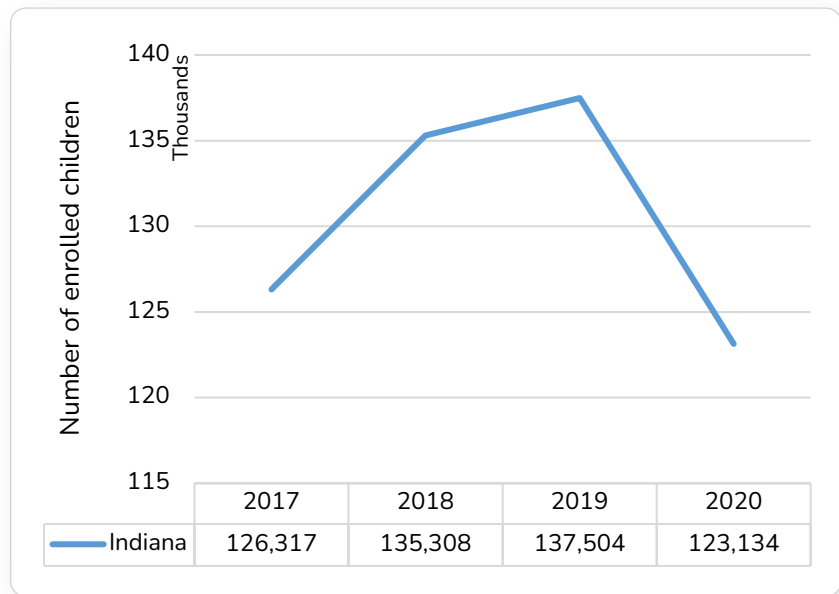


Source: IDOE, 2021

CHIP ENROLLMENT

An analysis on the trends in the total number of Indiana children enrolled in Children's Health Insurance Program (CHIP) was done based on data from the Kaiser Family Foundation (KFF). There has been an increase in the number of Indiana children enrolled from 2017 to 2019. Then, in 2020, the number reduced below the 2017 levels to 123,134 children enrolled in the program. Figure 10 shows the CHIP enrollment trends for Indiana.

Figure 10: Total Number of Children Enrolled in CHIP Annually in Indiana (1998 to 2020)



Source: KFF, 2021

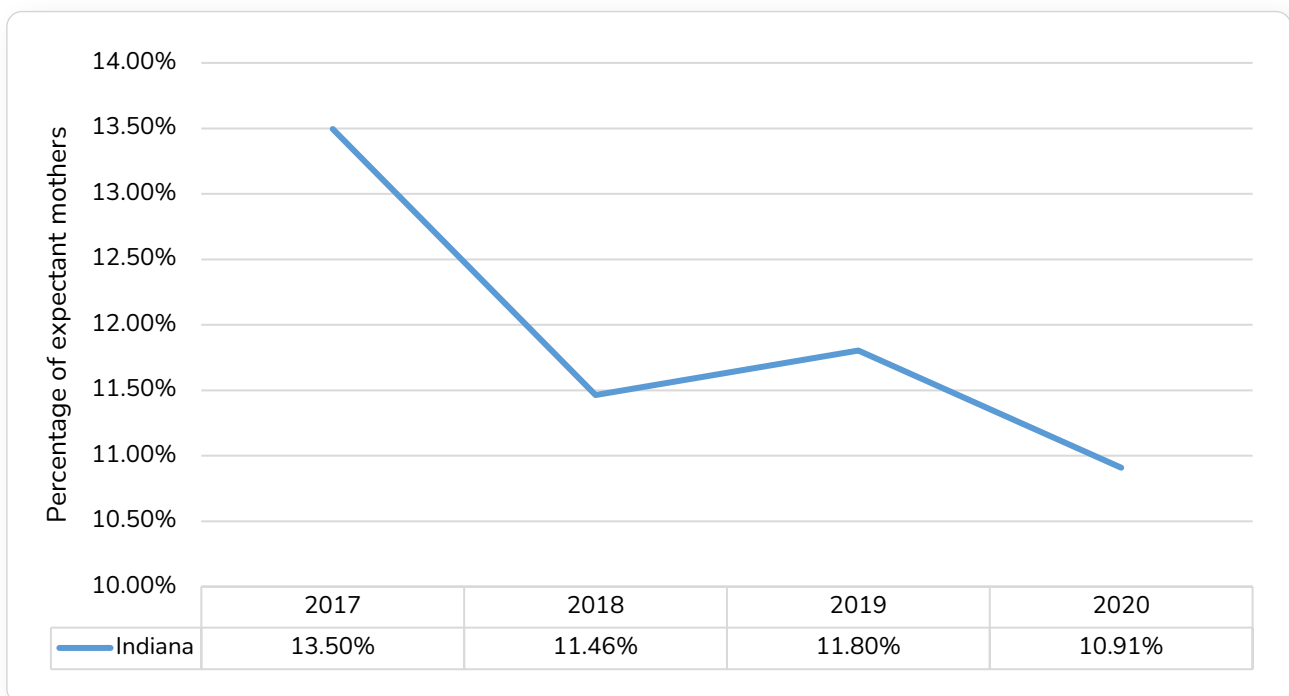
Birth outcomes

SMOKING DURING PREGNANCY

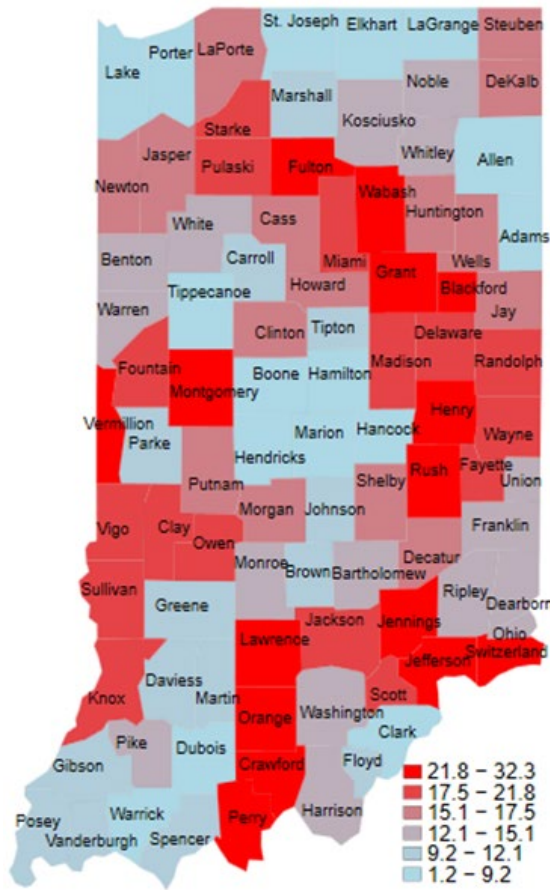
The Indiana Department of Health (IDOH) provides data on the percentage of expectant mothers who smoke during pregnancy (defined as

the number of mothers who smoked by total live births). There was a decrease from 2017 to 2018, followed by slight increase in 2019 and then a decrease in 2020 to 10.9% (See Figure 11).

Figure 11: Percentage of Expectant Mothers who Smoke (by County [2017 to 2020])



Source: IDOH (2017-2020)



Map 1: Regional Distribution of Smoking During Pregnancy, 2020

The Indiana Department of Health (IDOH) also provides 2020 data on the percentage of mothers who smoked during pregnancy by county. During the pandemic year, the western, eastern, and southeastern parts of the state had relatively higher frequencies of mothers who smoked while pregnant. Map 1 shows the distribution of smoking during pregnancy by county in 2020.

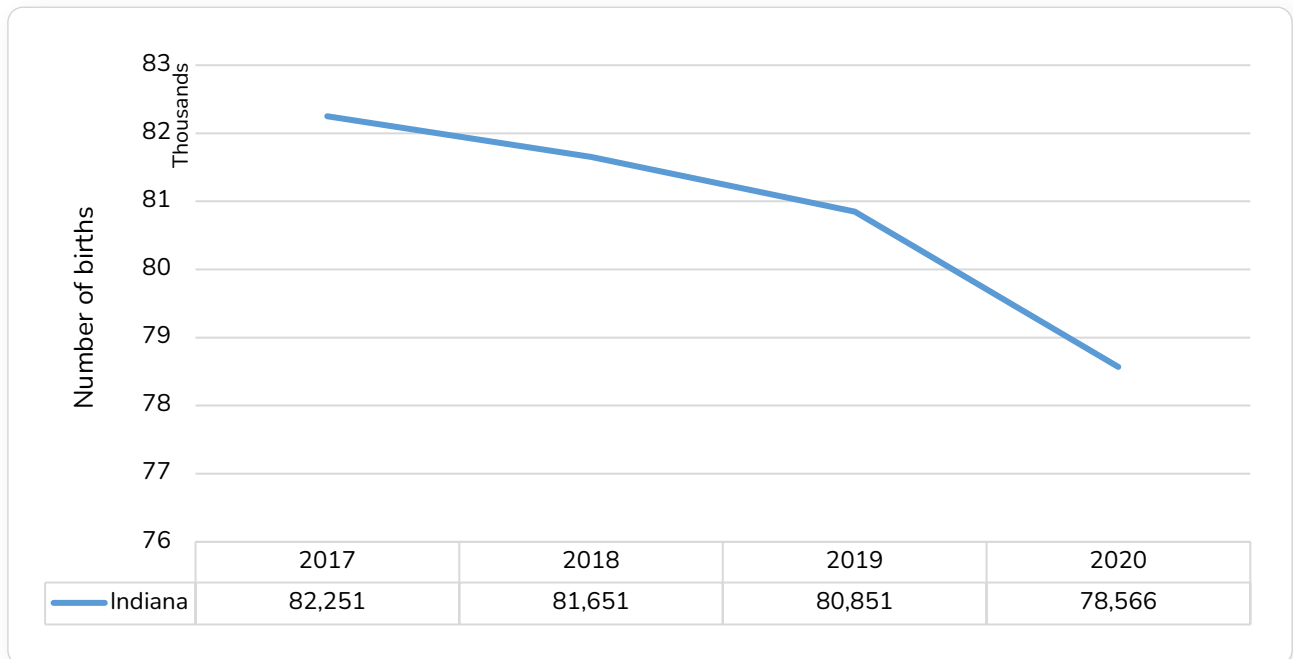
Source: IDOH, 2017-2020

BIRTH OUTCOMES

According to data from the Indiana Department of Health (IDOH), the number of births in Indiana

decreased steadily from 2017 to 2019, followed by a larger drop in 2020 to 78,566 births. Figure 12 shows the birth trends in Indiana.

Figure 12: Number of Births in Indiana from 2017 to 2020



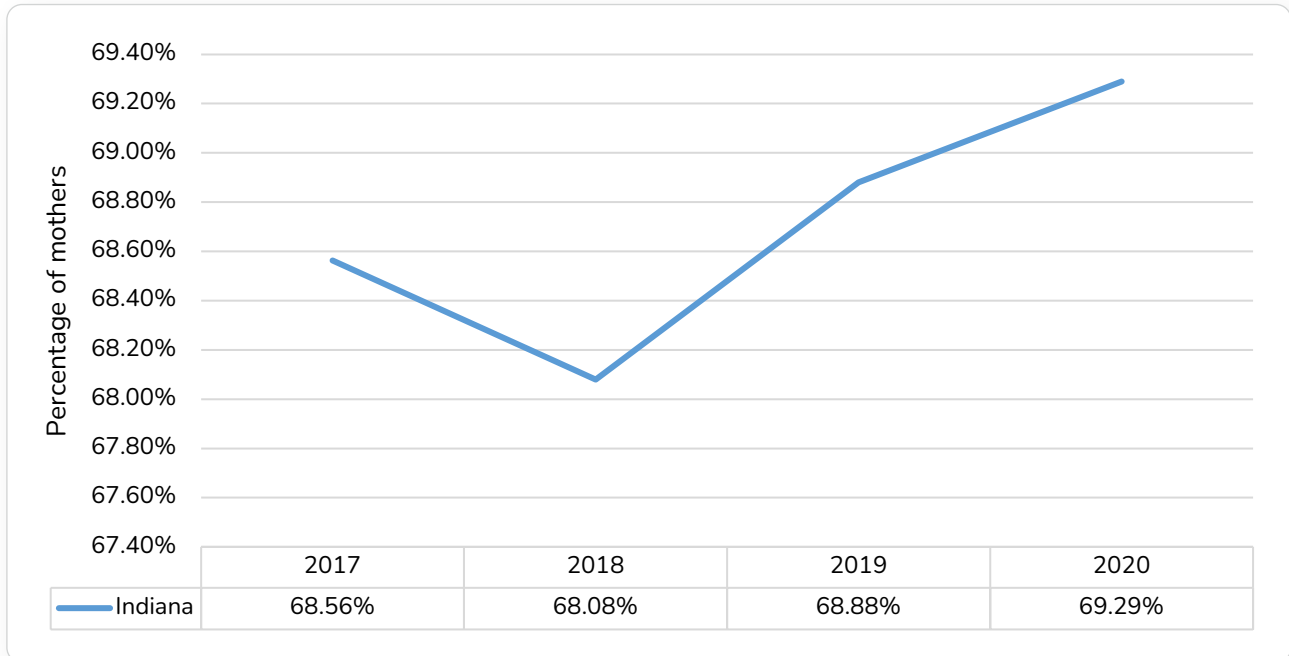
Source: IDOH (2017-2020)

FIRST-TRIMESTER CARE

The data for share of mothers who received prenatal care during the first trimester was obtained by the Indiana Department of Health

(IDOH). Those who received care decreased slightly from 2017 to 2018, followed by an increase in 2019 (68.88%) and a further increase in 2020 (69.29%) (See Figure 13).

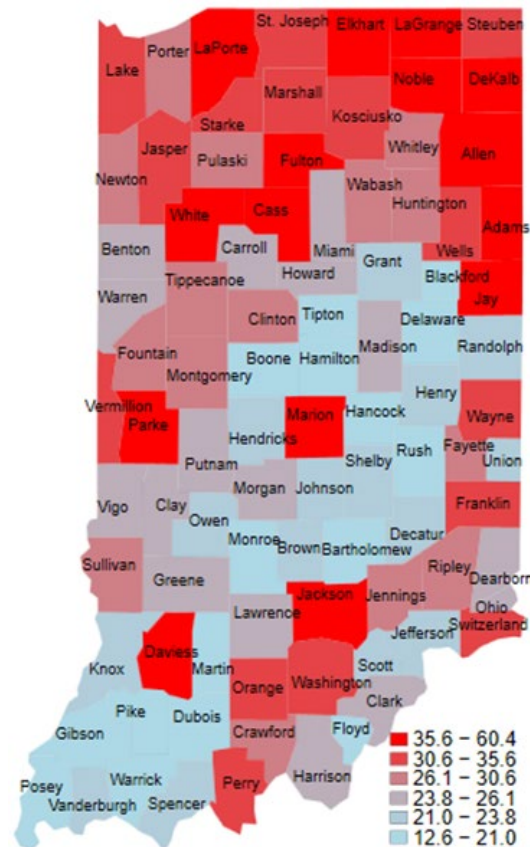
Figure 13: Percentage of Mothers who Received First-Trimester Care (2017 to 2020)



Source: IDOH, 2017-2020

Analysis of the regional distribution of the share of mothers who did not receive prenatal care during the first -by county from IDOH data. Map 2 shows the distribution by county. The percentage of mothers who did not receive first-trimester prenatal care appears to be relatively higher in the northwestern, north-central, and northeastern parts of the state. The central and southwestern parts of the state appear to have relatively higher frequencies of mothers who did receive prenatal care in comparison to the rest of the state.

Map 2: Regional Distribution of Share of Pregnant Women Who did not Receive 1st Trimester Prenatal Care in 2020



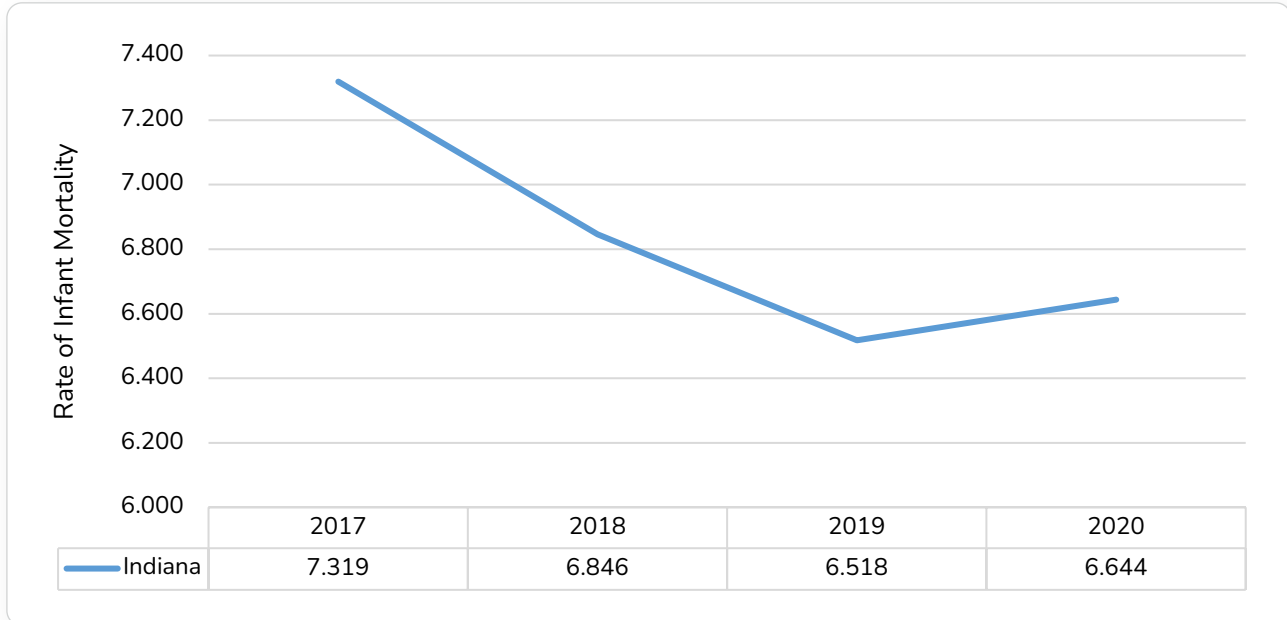
Source: IDOH, 2017-2020

INFANT MORTALITY RATE

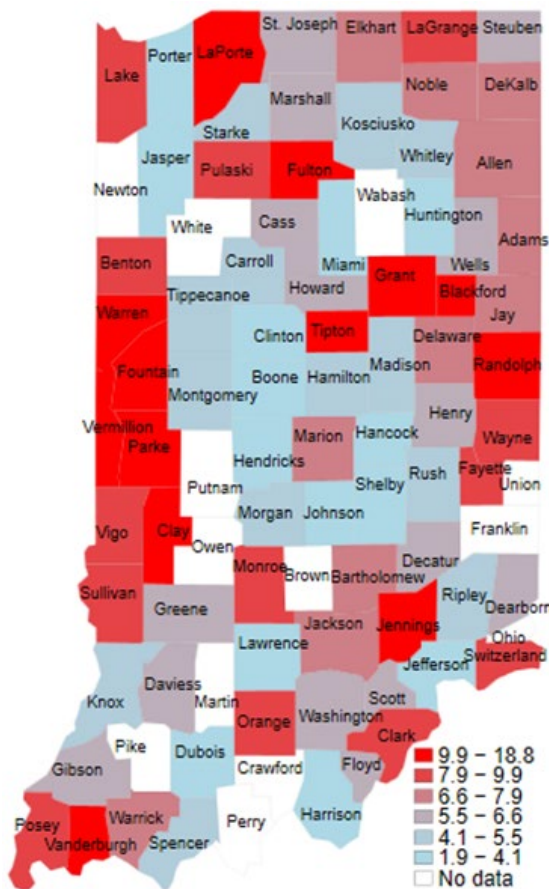
The Indiana Department of Health (IDOH) provides infant mortality rate (IMR) data per 1,000 births (defined as the number of infant

deaths per 1,000 live births). The IMR decreased steadily from 2017 to 2019, before slightly increasing to 6.64 in 2020 (See Figure 14 for the trends).

Figure 14: Infant Mortality Rate (2017 to 2020)



Source: IDOH, 2017-2020



Map 3 shows the distribution of infant mortality rate by county. The western, eastern, and north-central parts of the state have relatively higher infant mortality rates than the rest of the state. The central region of the state appears to have the relatively lowest counts of infant mortality per capita in comparison to other regions of the state.

Map 3: Regional Distribution of IMR per 1,000 Births, 2020

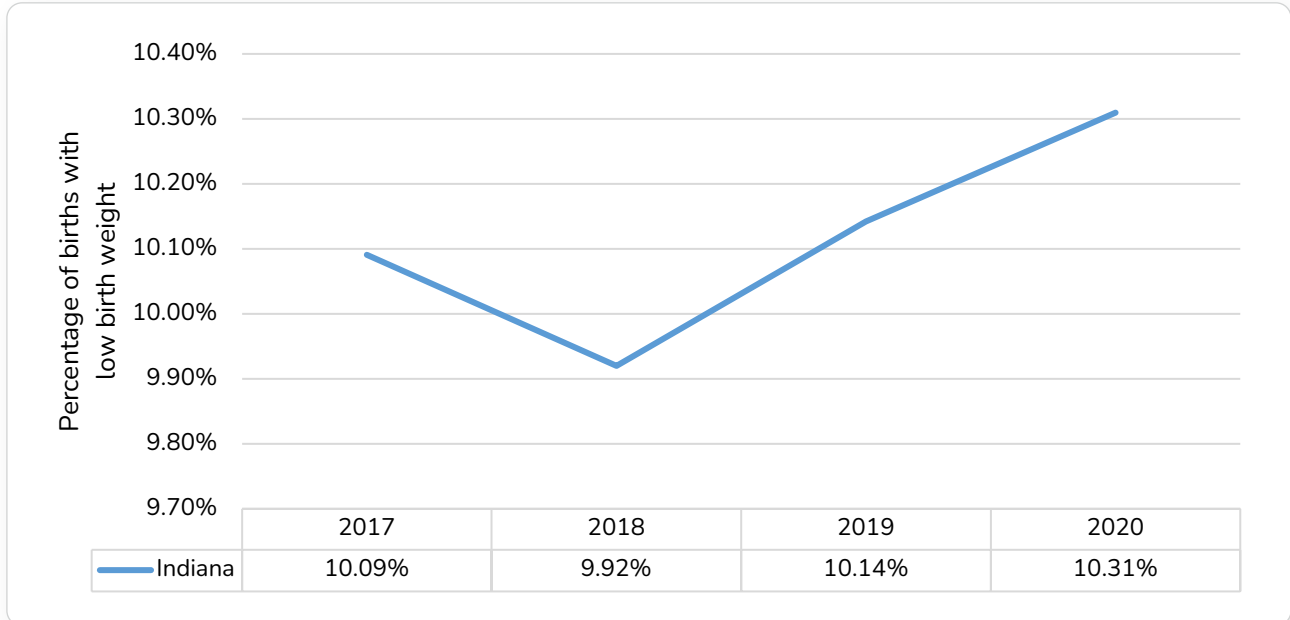
Source: IDOH, 2017-2020

LOW BIRTHWEIGHT

The percentage of births in Indiana characterized by low birth weight is reported by the Indiana Department of Health (IDOH). Low birth weight

births decreased slightly from 2017 to 2018, followed by increasing consecutively to 10.14% in 2019 and then to 10.3% in 2020. Figure 15 shows the trends of births with low birth weight.

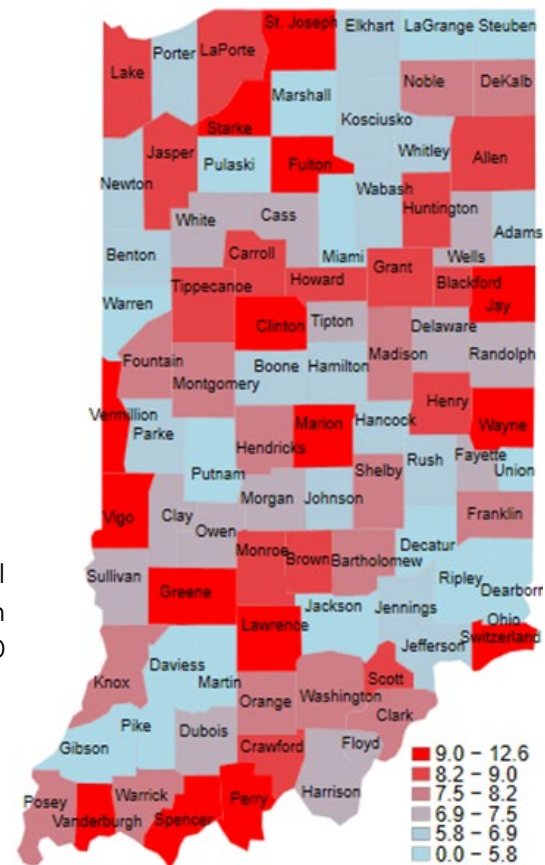
Figure 15: Percentage of Births – Low Birth Weight (2017 to 2020)



Source: IDOH, 2017-2020

Map 4 shows the percentage of low-weight births by county for 2020. The central, western, eastern, northwestern, and southwestern regions of the state appear to have relatively higher frequencies of low-weight births. The southeastern and northeastern regions of the state appear to have relatively lower frequencies of low-weight births in comparison to the other regions in the state.

Map 4: Regional Distribution of Low Birth Weights, 2020



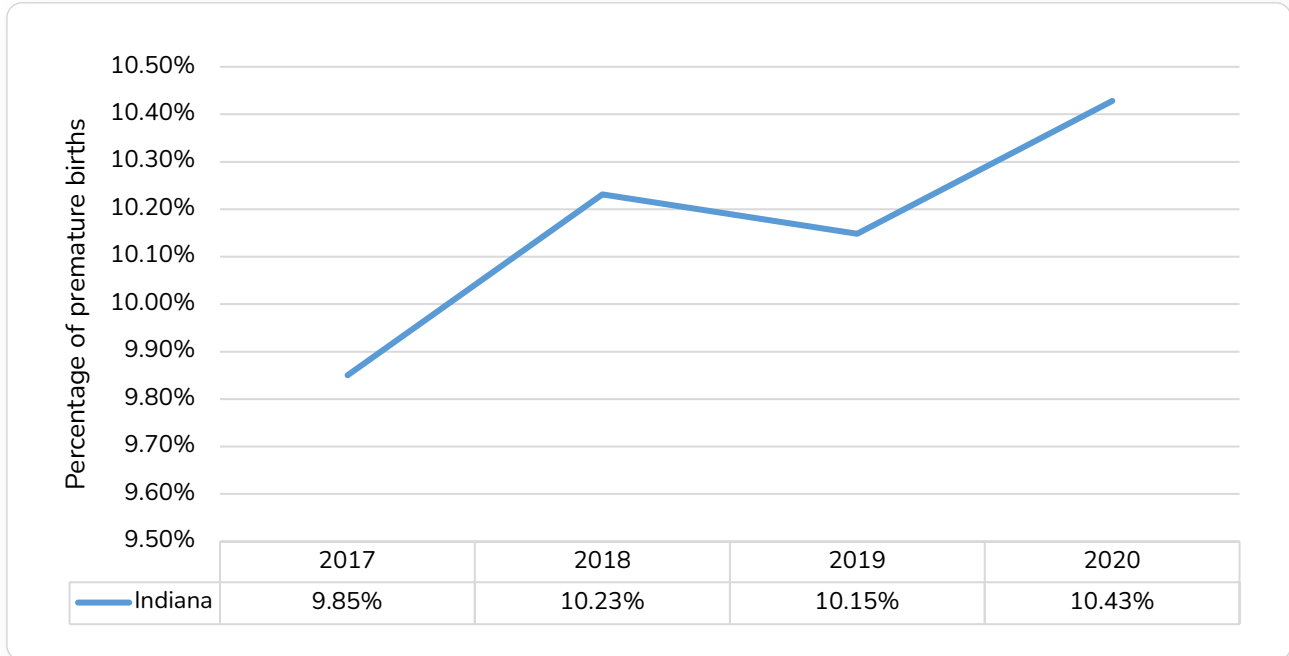
Source: IDOH, 2017-2020

SHARE OF PREMATURE BIRTHS

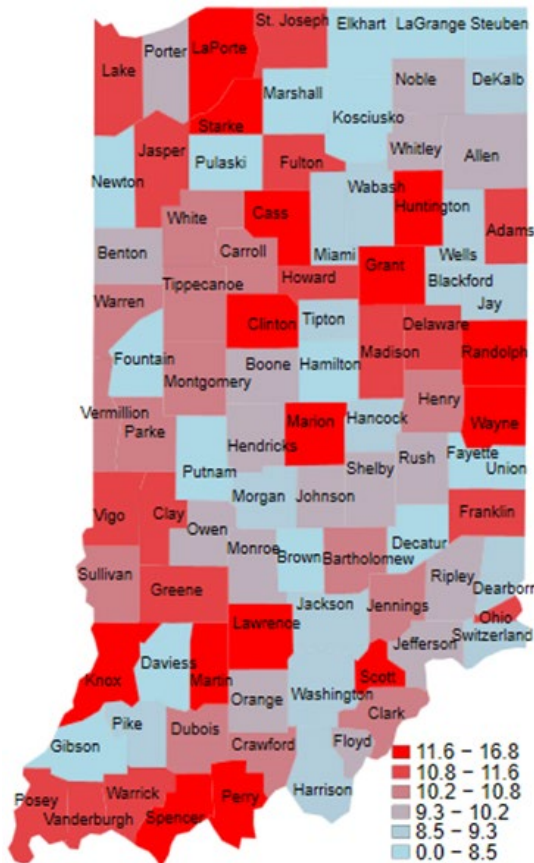
The Indiana Department of Health (IDOH) tracks the percentage of premature births. From 2017 to 2018, there was an increase in Indiana for

premature births, followed by a slight decrease in 2019, and then a slight increase to 10.43% in 2020. See Figure 16 for the trends in premature births.

Figure 16: Percentage of Births – Born Prematurely (2017 to 2020)



Source: IDOH, 2017-2020



Map 5 shows the percentage of pre-term births by county in 2020. The central, northwestern, eastern, and southeastern regions of the state appear to have relatively higher frequencies of pre-term births in comparison to the rest of the state. Additionally, the northeastern and southwestern regions of the state appear to have relatively lower frequencies of pre-term births compared to the other regions.

Map 5: Regional Distribution of Pre-Term Births, 2020

Source: IDOH, 2017-2020

Mental Health

During the beginning of the COVID-19 pandemic, youth populations had to move towards online learning and were unable to continue in their daily routines including social life and outdoor physical activity. These children subsequently faced many effects on their mental health including increased anxiety, diet changes, and fear (de Figueiredo et al., 2020). In the US, approximately 50% of youth reported that they felt lonelier due to the pandemic (Cohen et al., 2020). Factors such as gender, age, education level, and more are associated with depression (Chen et al., 2020). Trans, non-binary, and female adolescents had higher rates of psychological distress compared to males due to isolation and violence at home (Craig et al., 2022). The same study found that 51% of adolescents reported depression, 39% reported anxiety, and 45% reported PTSD during the pandemic (Craig et al., 2022). Many of these conditions were due to stressors related to the health of family members and concern for other certain populations. These large proportions suggest that mental health was a significant issue during the pandemic and indicate a need for better coping strategies targeted at specific youth populations.

In young children, social distancing and isolation measures can cause feelings of fear, boredom, confusion, and more. Data from past global events such as natural disasters and outbreaks have found that these situations lead to greater child neglect and abuse. This can lead to trauma and mental or physical health problems which can manifest through misbehavior and temper

tantrums. Children with special needs are more vulnerable to these impacts and may show more frequent problematic behaviors (Imran, Zeshan & Pervaiz, 2020). In a study by the Jed Foundation and Fluent Research, 31% of parents of children under 18 reported that their children's mental or emotional health was worse than before the pandemic (JED, 2021). In the same study, almost half of all teens reported having experienced some type of mental or emotional challenge in the past month. Some of the factors contributing to poor mental health among children were reported as loneliness and isolation.

Depression rates have also increased during the pandemic (Al Omari et al., 2020; Kecojevic et al., 2020). Older adolescents are more depressed than younger ones, however, there was no correlation found between specifically anxiety and age (Chen et al., 2020). There was an increase in suicided-related encounters at the emergency department during the start of the pandemic indicating an increase in suicidal thoughts and attempt rates (Ridout et al., 2021).

From the Center for Disease Control and Prevention's Behavioral Risk Factor Surveillance System (BRFSS), the respondents were asked if they have been told by a medical professional that they have depression. We find that in 2019, about 23.6% (95% CI: 19.2-27.9) of young adults (18 to 24 years) in Indiana had reported having depression, but in 2020, about 25% (95% CI: 20.8-29.1) of young adults reported having depression (BRFSS, 2020).

Conclusion

The existing literature shows mixed evidence in the rates of substance abuse among youth and adolescents during the COVID-19 pandemic. Overall, there is evidence of an increase in marijuana use among young adults in Indiana during the pandemic. Binge drinking rates slightly increased for young adults. Additionally, rates of tobacco use dropped while depression rates

increased among the youth during the pandemic. Due to lagged nature of established surveys and difficulty in obtaining appropriate sample sizes to compute estimates during the pandemic, monitoring data trends on youth would be necessary to identify if the trends are back to pre-pandemic levels.

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