

Analyzing Drug-Use Data from Monitoring the Future

TEACHER'S GUIDE



Background and Objectives for Educators:

This activity is designed to help students in grades 7 through 12 understand how to obtain, analyze, and interpret data, and to argue from evidence, using data from the 2019 [Monitoring the Future](#) (MTF) survey on teens' self-reported use of drugs.

MTF is an annual survey that measures self-reported drug and alcohol use and related attitudes among adolescent students nationwide. The survey is funded by the National Institute on Drug Abuse (NIDA), a component of the National Institutes of Health, and is conducted by the University of Michigan.

MTF measures drug use in percentages, with changes recorded year to year. Teen participants are asked to report "lifetime" use, "past-year" use, and "past-month" use.

For tobacco and marijuana, the survey also asks for "daily" use. For alcohol, it asks for drinking behaviors, such as binge drinking or getting drunk.

By the end of the activity, students should know:

- How to read and understand a survey that measures teen drug use in percentages for specific time periods.
- That drug use among teens is generally on the decline—except for vaping, which saw a sharp increase in 2019, and marijuana use in one group.
- Specific changes (measured in percentages) in teens' use of vaping devices, alcohol, and marijuana over the past several years.
- Some of the risks of vaping, and of using alcohol or marijuana, to the developing teen brain and body.

Students will also be asked to reflect on:

- The influence of various factors on health behaviors.
- How to assess the reliability and credibility of health information.

Answers to questions are located below each question.

Instructions for Students:

1. Using the interactive chart on [this page](#):

- In the “Drug” field, select “Any Vaping.”
- For “Year,” select “All”; then select “Apply.”
- For “Duration,” select “Past year.” (Uncheck any other boxes that are checked and select “Apply.”)
- For “Grade,” select “All”; then select “Apply.”
- Answer the following question: Overall, the use of any vaping products in the past year by 8th, 10th, and 12th graders _____ in 2019.
 - a. Increased
 - b. Decreased
 - c. Stayed the same(Answer: a.)

Calculating Percent Change

$$\text{Percent Change} = \frac{\text{New Value} - \text{Old Value}}{\text{Old Value}} \times 100$$

If the result is positive, it’s an increase.
If the result is negative, it’s a decrease.

- **Use the percent change formula above to calculate the answers to the next four questions related to teens’ drug use in the past year.**
 - How did the percentage of 8th graders who did any vaping in the past year change from 2017 to 2019? What was the percentage change between these two rates of any vaping?
(A: increased from 13.3% to 20.1%—an increase of 46%)
 - How did the percentage of 10th graders who did any vaping in the past year change in those years? What was the percentage change between these two rates?
(A: increased from 23.9% to 35.7%—an increase of 49.4%)
 - How about the percentage of 12th graders who did any past-year vaping in those years? What was the percentage change between these two rates?
(A: increased from 27.8% to 40.6%—an increase of 51.5%)
 - Which grade level had the largest percentage change in any past-year vaping from 2017 to 2019?
(A: 12th grade had the largest increase, 51.1%; 10th grade had the second largest increase, 49.4%; 8th grade had the third largest increase, 46%)
- **Now, return to the interactive chart on [this page](#).**
 - In the “Drug” field, select “Any Vaping.”
 - For “Year,” select “All.”
 - For “Duration,” select “Past year” and “Past month.”
 - For “Grade,” select “All.”

- Select “Apply.”
- Answer the following questions:
 - How do the rates of vaping product use vary between “past month” and “past year”?
 - Which period of time has greater rates of vaping-product use: the past month, past year, or lifetime?
 - What do you think the reason for that could be?
- Using the information on [this page](#), describe three effects of vaping on the teen brain.
- Using the information you just reviewed, describe three factors you think might be causing the increase or decrease in vaping among teens. (A: Students might include answers like peer pressure, seeing vaping in the media, or stress. To discuss these topics in more detail with students, you might use NIDA Drugs & Health Blog posts on [peer pressure](#), [stress](#), and the [effects of movies](#) and [TV](#) on teens’ decisions to try drugs.)

2. Using the interactive chart on [this page](#):

- In the “Drug” field, select “Alcohol.” (Uncheck any other boxes that are checked and select “Apply.”)
- For “Year,” select “All”; then select “Apply.”)
- For “Duration,” select “Past year.” (Uncheck any other boxes that are checked and select “Apply.”)
- For “Grade,” select “All”; then select “Apply.”
- **Answer the following questions:**
 - How did the percentage of 8th graders who used alcohol in the past year change from 2017 to 2019?
(A: Increased 17.6% to 19.3%—an increase of 9.6%)
 - How did the percentage of 10th graders with past-year alcohol use change in those years?
(A: Decreased 38.3% to 37.7%—a decrease of 1.5%)
 - How about the percentage of 12th graders with past-year alcohol use in those years?
(A: Decreased 55.6% to 52.1%—a decrease of 6.2%)
 - Which grade level had the largest percentage change in past-year alcohol use from 2017 to 2019?
(A: 8th grade had the largest change, an increase of 9.6%; 12th grade had the second largest change, a decrease of 6.2%; 10th grade had the third largest change, a decrease of 1.5%)
 - What do you think could be causing the changes (decreases or increases) in rates of past-year alcohol use for 10th and 12th graders?
(A: Students might mention a growing awareness of the risks of using alcohol, the increase in vaping as a replacement for using alcohol, or a lessening of peer pressure to use alcohol, among other possible causes.)
 - Review [this page](#) to find the 2019 statistics on binge drinking (defined as drinking five or more drinks in a row in the past 2 weeks). How have rates of binge drinking changed in the past 5 years?

(A: Rates of binge drinking among students in 10th and 12th grades reached a 5-year low in 2019: 14.4% of students in 12th grade reported binge drinking in 2019, compared to 19.4% in 2014. Among students in 10th grade, 8.5% reported binge drinking compared to 12.6% in 2014.)

- Are any of these changes surprising to you? Why or why not?

(A: Some students may be surprised that rates of alcohol use among teens are decreasing. This could present an opportunity to point out that, despite what some teens may think, everyone in their age group is not using drugs or alcohol.)

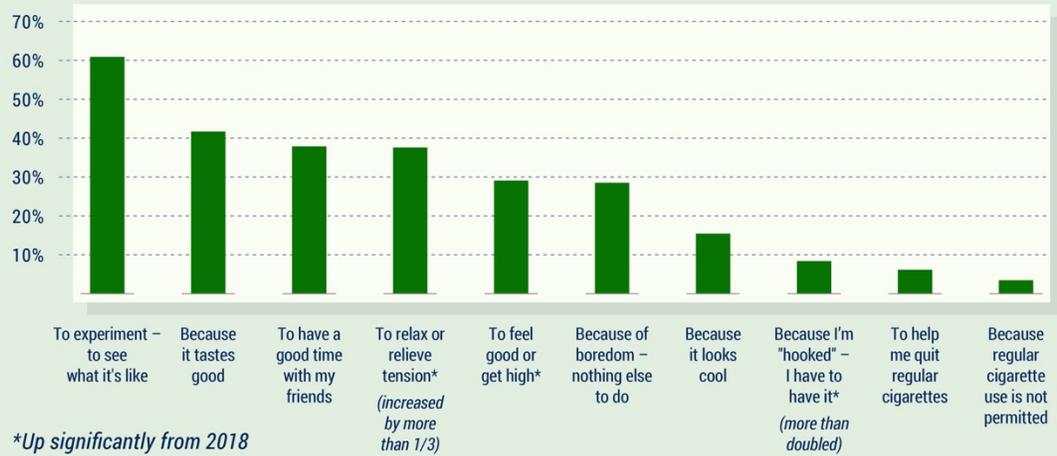
- Using the information on [this page](#), describe three effects of using alcohol on the teen brain and body.
- Reviewing the information on [this page](#), describe three ways you can tell that this information about drug use trends in this lesson is from a reliable source. If you aren't sure, you can review [this checklist \(PDF\)](#) on evaluating online health information from the National Library of Medicine.

3. **Bar graphs are another way to represent data.** Like line graphs, bar graphs have a horizontal x-axis and a vertical y-axis. The height of each bar represents a certain value (percent) for each group.

For example, the bar graph below shows the main reasons teens said they vaped in 2019. The x-axis shows the reasons teens gave for vaping, and the y-axis shows the percentage of teens who gave each reason.

TEEN VAPING CLIMBS SIGNIFICANTLY*

TEENS REPORT REASONS FOR VAPING



To view information on other drugs from the 2019 Survey visit:

www.drugabuse.gov/related-topics/trends-statistics/infographics/monitoring-future-2019-survey-results-overall-findings



DRUGABUSE.GOV

Sometimes, data shown in a table can also be effectively shown in a bar graph. The table below presents the percentage of 8th, 10th, and 12th graders who think people risk harming themselves (physically or in other ways) if they use marijuana regularly.

The data in the table is taken from Tables 9, 10, and 11 [here](#).

- Select 3 different years from the table. Then, on a separate sheet of paper, create a bar graph to represent the percentage data of those 3 years for each grade level.

Trends in Perceived Harmfulness of Regular Marijuana Use by 8th, 10th, and 12th Graders (percent who selected "great risk"*)										
Survey year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Student grade										
12th grade	46.8	45.7	44.1	39.5	36.1	31.9	31.1	29.0	26.7	30.3
10th grade	57.2	55.2	50.9	46.5	45.4	43.2	44.0	40.6	38.1	39.6
8th grade	68.0	68.3	66.9	61.0	58.9	58.0	57.5	54.8	52.9	52.3

*The survey answer choices were: (1) No risk, (2) Slight risk, (3) Moderate risk, (4) Great risk, and (5) Can't say, drug unfamiliar.

- What do you think could be causing the percentage change across the 3 years you selected for your bar graph? In other words, what might be some of the reasons why 8th, 10th, and 12th graders' perceptions are changing about the harm from using marijuana regularly?
(A: Students may cite the legalization of marijuana in a growing number of states [described in [this blog post](#)] as well as marijuana vaping, which they may incorrectly view as less harmful than smoking marijuana—among other possible reasons.)
- Using the information on [this page](#), describe three effects on the teen brain of using marijuana.