



Analysis of Rising Cannabis Usage Trends

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Research Question

What are the trends of cannabis usage in our community and in the nation?

I. Background & Significance

Marijuana's rise in popularity and relevance

Marijuana usage has been rising in popularity

- Recent legal measures legalizing marijuana
 - Prop 64** in California - legalization of recreational marijuana for ages 21 or older
 - Legalizations across the nation for medical and non-medical cannabis
 - Easier access laws - many dispensaries are located within all major cities, only requiring medical cards or prescriptions that are sometimes laxly given by doctors willing to look the other way
- Perception of marijuana being less harmful than other drugs

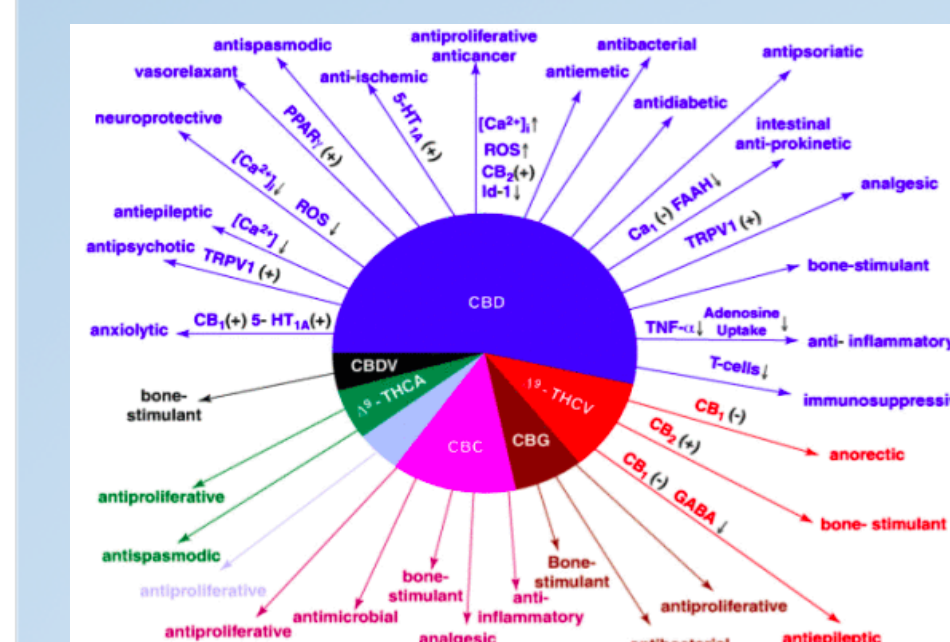


FIGURE 1. Pharmacological potential of cannabis (why cannabis can be helpful and potentially why it is so quickly rising in popularity)

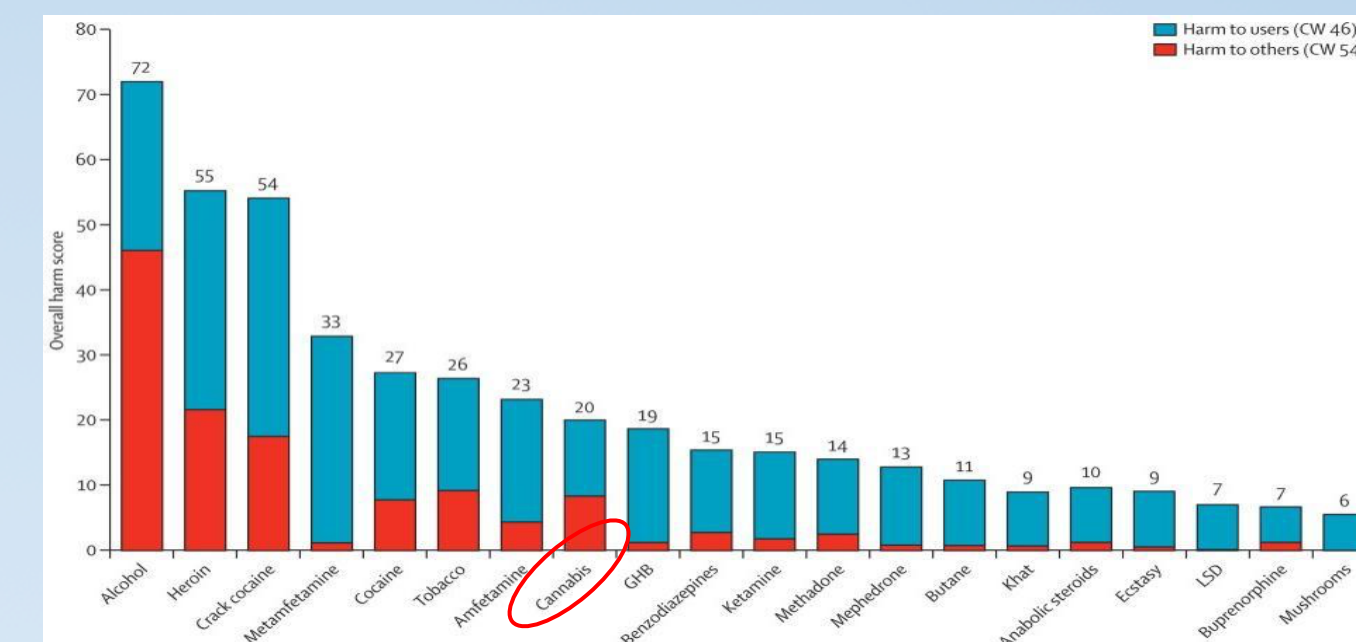


FIGURE 2. Relative harmfulness of drugs

Substance abuse and the teenage brain

Addiction to a substance is defined as: A **chronic, relapsing brain disease** that is characterized by *compulsive* drug seeking and use, despite harmful consequences.⁷

Addictive behavior is characterized in two different ways:

Physiological:

- Body has adapted to the presence of a substance or drug, and when this substance is removed from the body withdrawal symptoms are displayed (nausea, vomiting, shaking, anxiety, sweating, shakiness, confusion, irritability, delirium, seizures).

Psychological (majority of addictive behavior):

- Physiological addiction is independent of the development of psychological addiction
- Caused by feeling need to take action under a certain kind of stress

How addiction develops:

- Experimentation with drug
 - Teens use drugs for the same reasons adults do: to relax, destress and feel good. However, teenagers have more *reasons* to use them (curiosity, rebellion against parents and seeking acceptance from peers), and thus have a **higher likelihood of developing a disorder**.
- Regular use
 - More likely to develop if one begins using *alone*, rather than with peers.
 - Drugs such as cannabis activate the reward system, flooding the brain synapses with dopamine, resulting in a powerful "feel-good" effect.
 - Use tends to increase in those with behavioral problems or psychological conditions.
- Tolerance
 - Treatment is more often than not required to stop the progression to dependence at this stage.
 - Intervention by peers or family members is likely to not work past this stage.
- Dependence
 - Increased tolerance, withdrawal symptoms.

Relevant statistics concerning teenage drug addiction

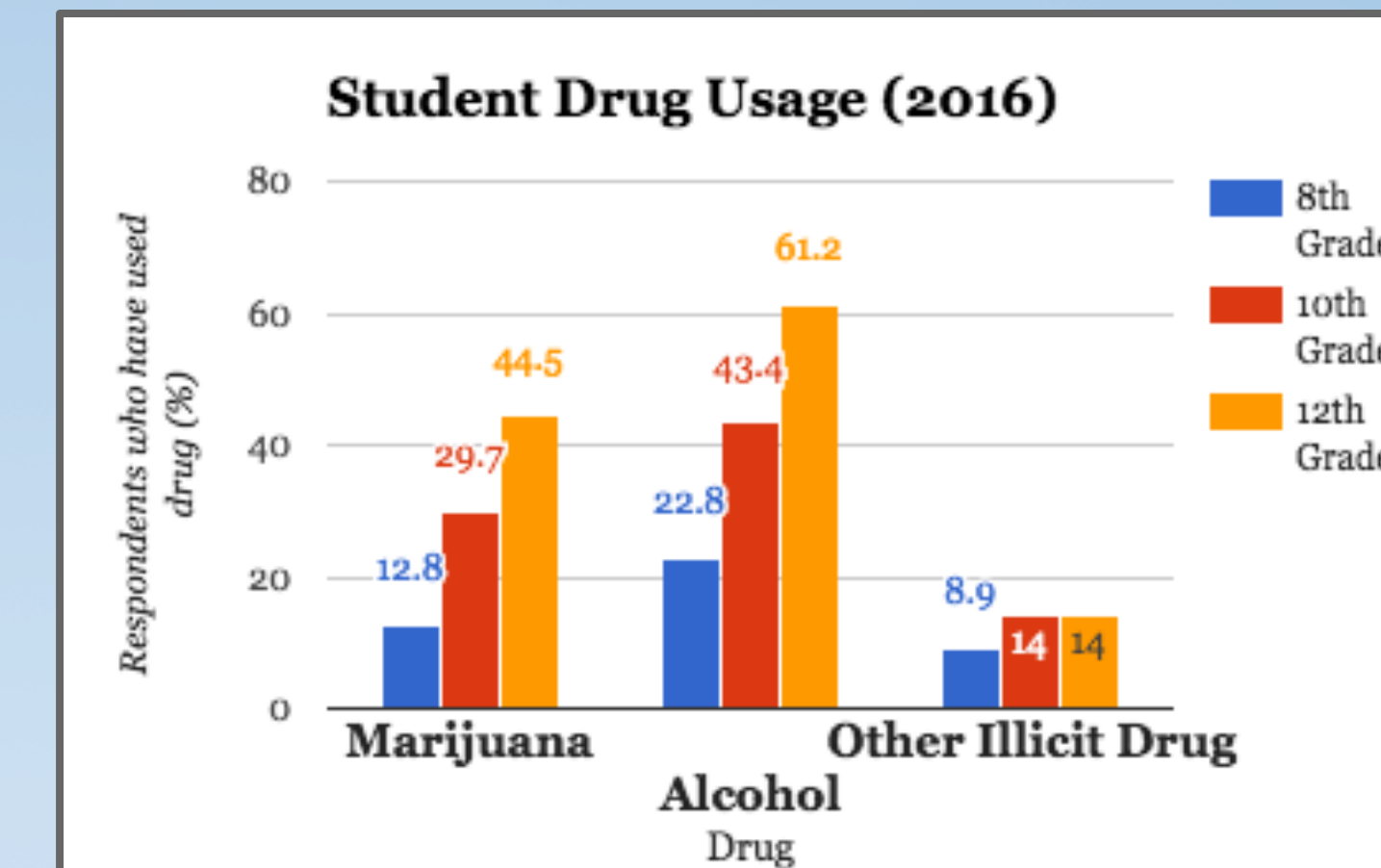
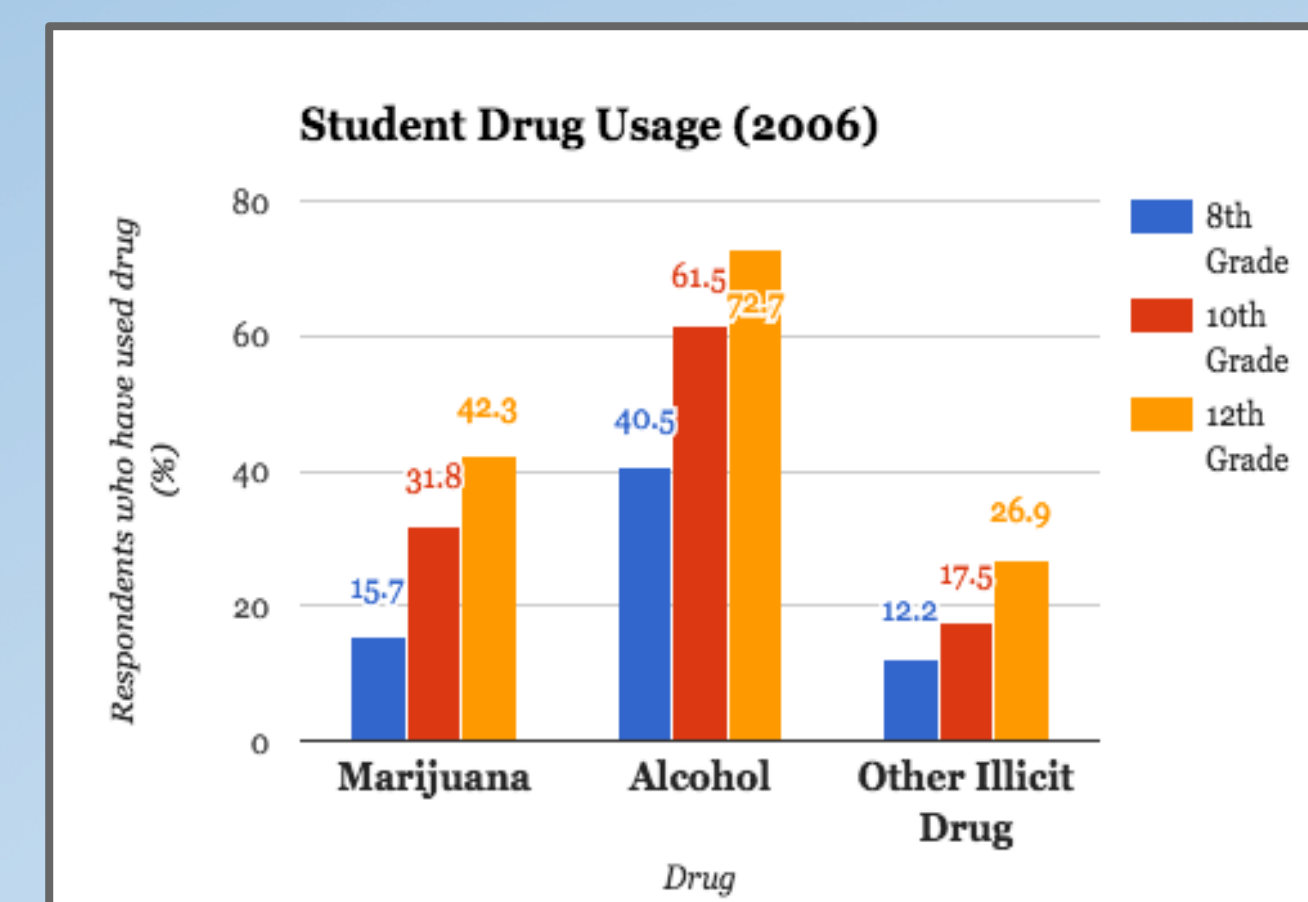
- Those who use marijuana before the age of 18 are **four times more likely** to develop a cannabis use disorder than adults who begin using³
 - Approximately 9% of regular drug users will become dependent¹
 - Teenagers make up 17% of the entirety of the using population.¹
- Since teenager's brains are yet to be mature, they get **addicted faster** and often once addicted will have lasting damage in the learning center of the brain (affecting functions that include: learning, judgement, decision-making, stress, memory and behavior)¹

Why it matters

Teenagers in our community and nationwide engage in risky behaviors - it's an unchangeable facet of adolescent psychology. Combined with the factor of the rising popularity and media coverage of cannabis, more teenagers are likely to partake in using cannabis, and subsequently developing substance use disorders without knowing of these risks associated with their behavior beforehand. We need to educate teenagers and adults alike on the drug and its properties so, as a first step towards preventing substance dependence, they can make educated decisions in their actions.

II. Results

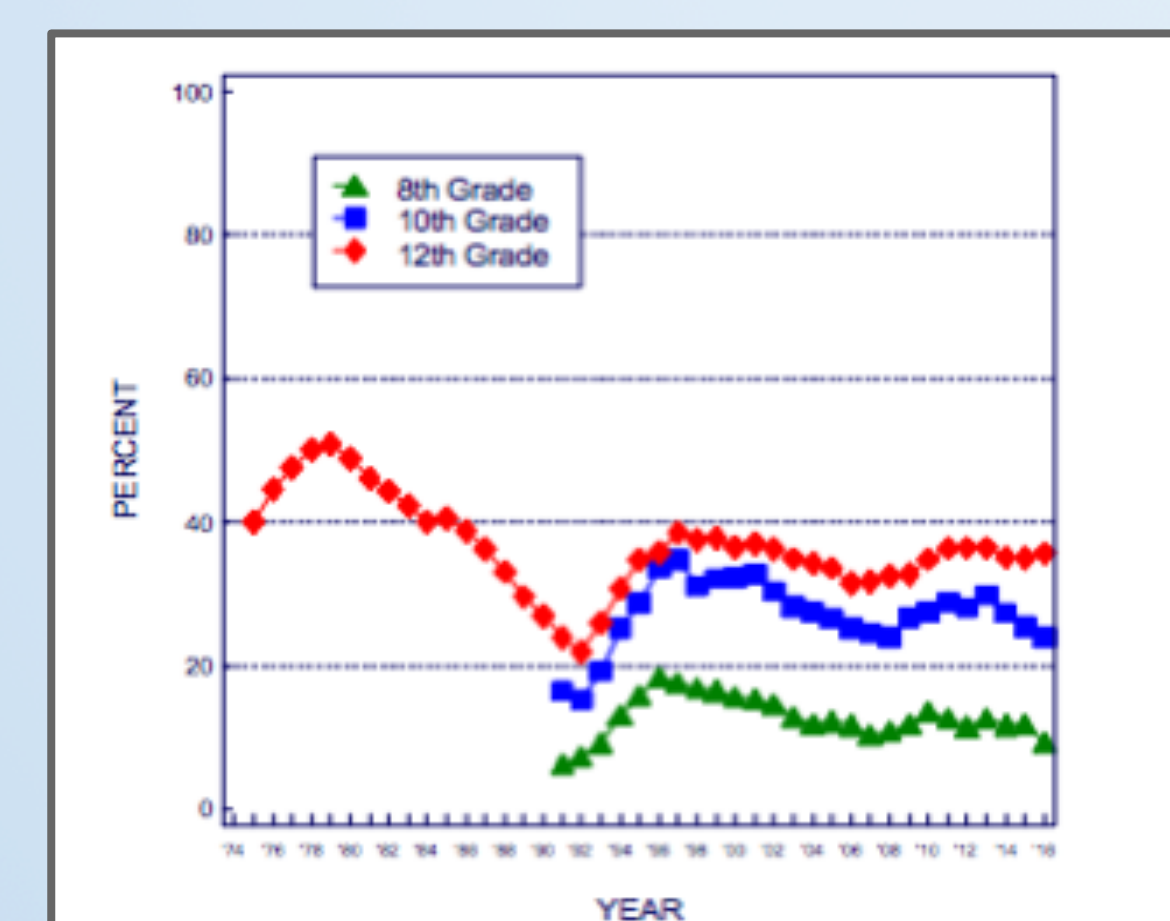
National Data



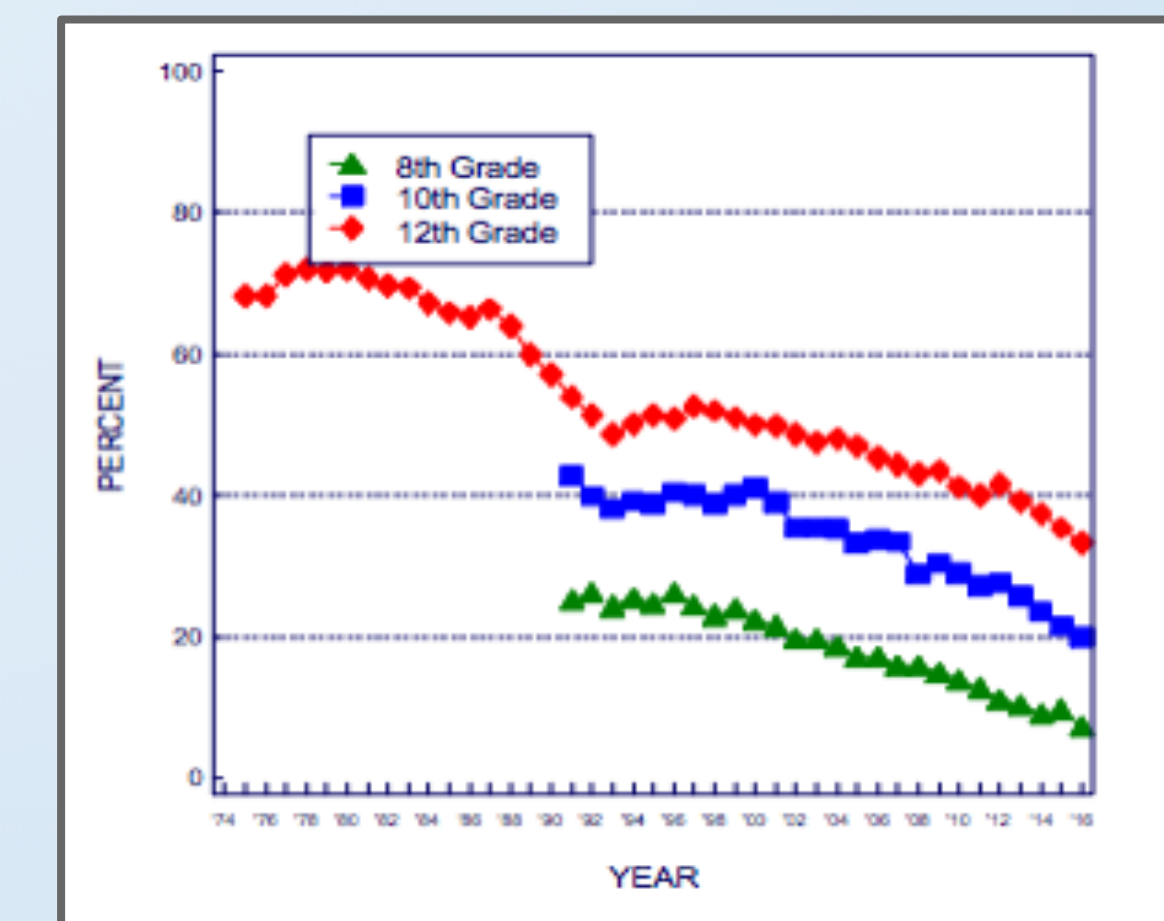
Palo Alto High School Specific Data Set (2015-16)x

Statement	Percent of 11th graders it applies to
Has used marijuana	22%
Has consumed alcohol	41%
Tried to stop using marijuana	13%
There is moderate to great risk associated with regular marijuana use	51%
There is moderate to great risk associated with regular alcohol use	87%
Marijuana is easy to obtain	71%

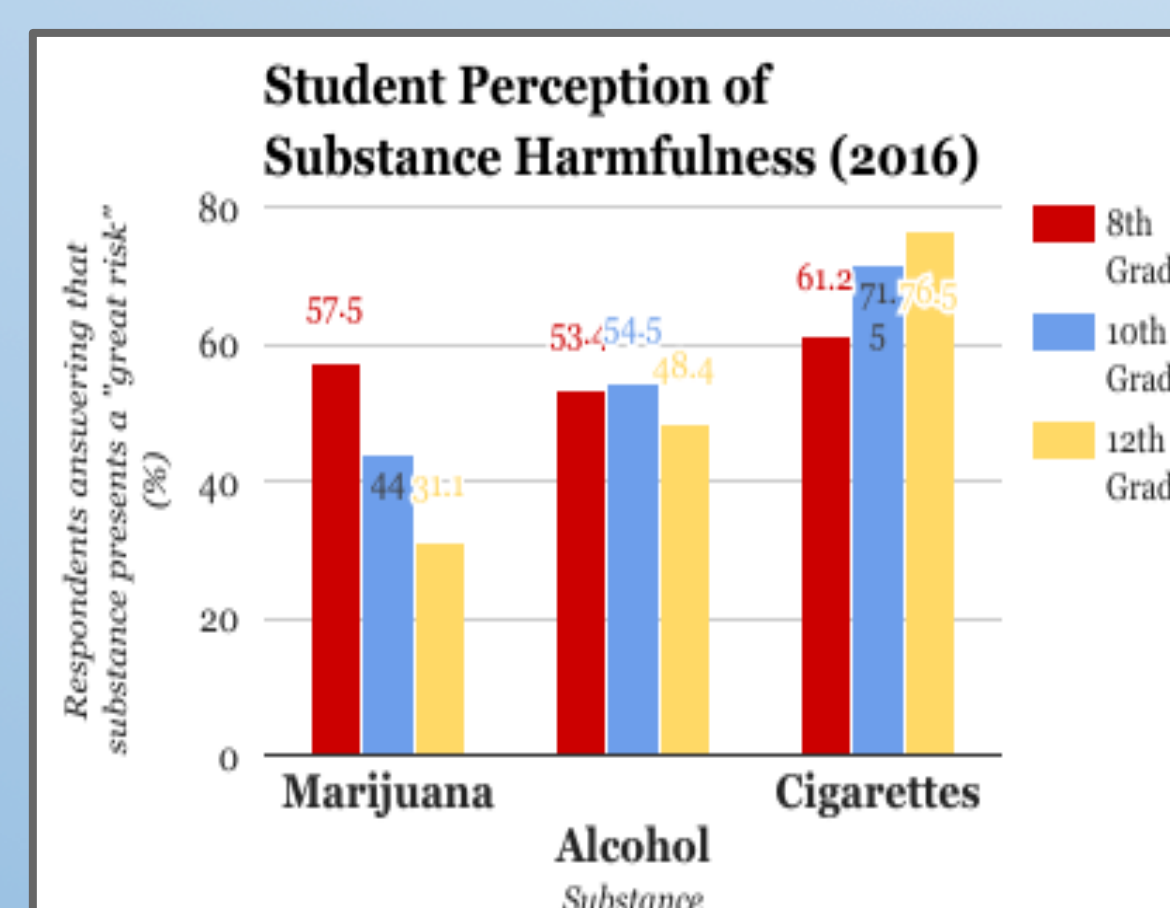
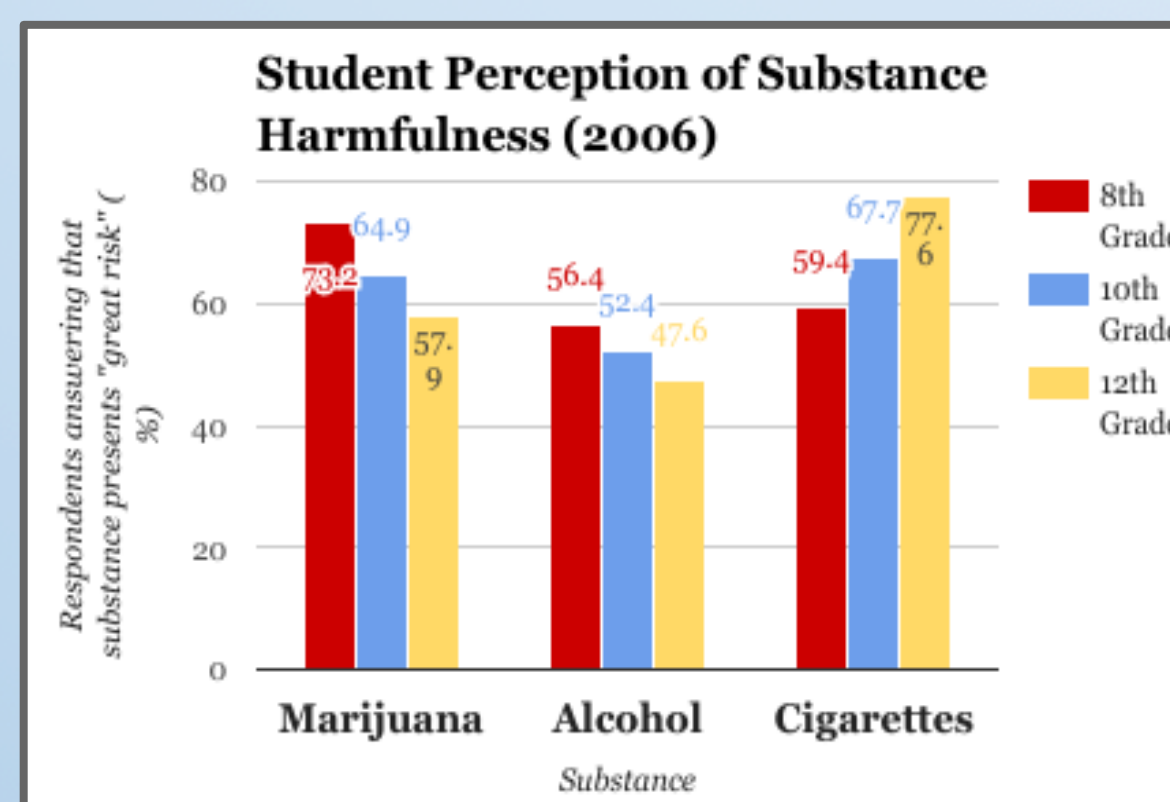
Nationwide % of High School Students Using Marijuana



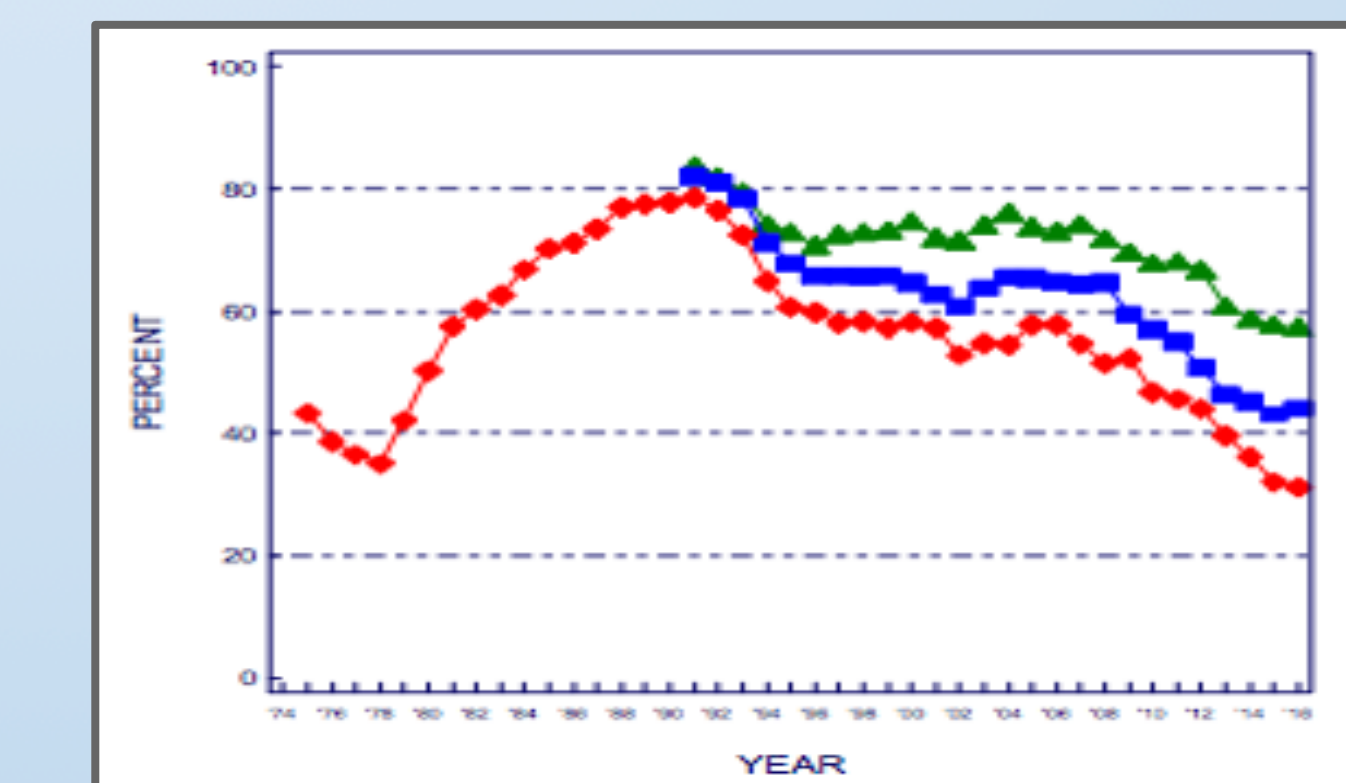
Nationwide % of High School Students Using Alcohol



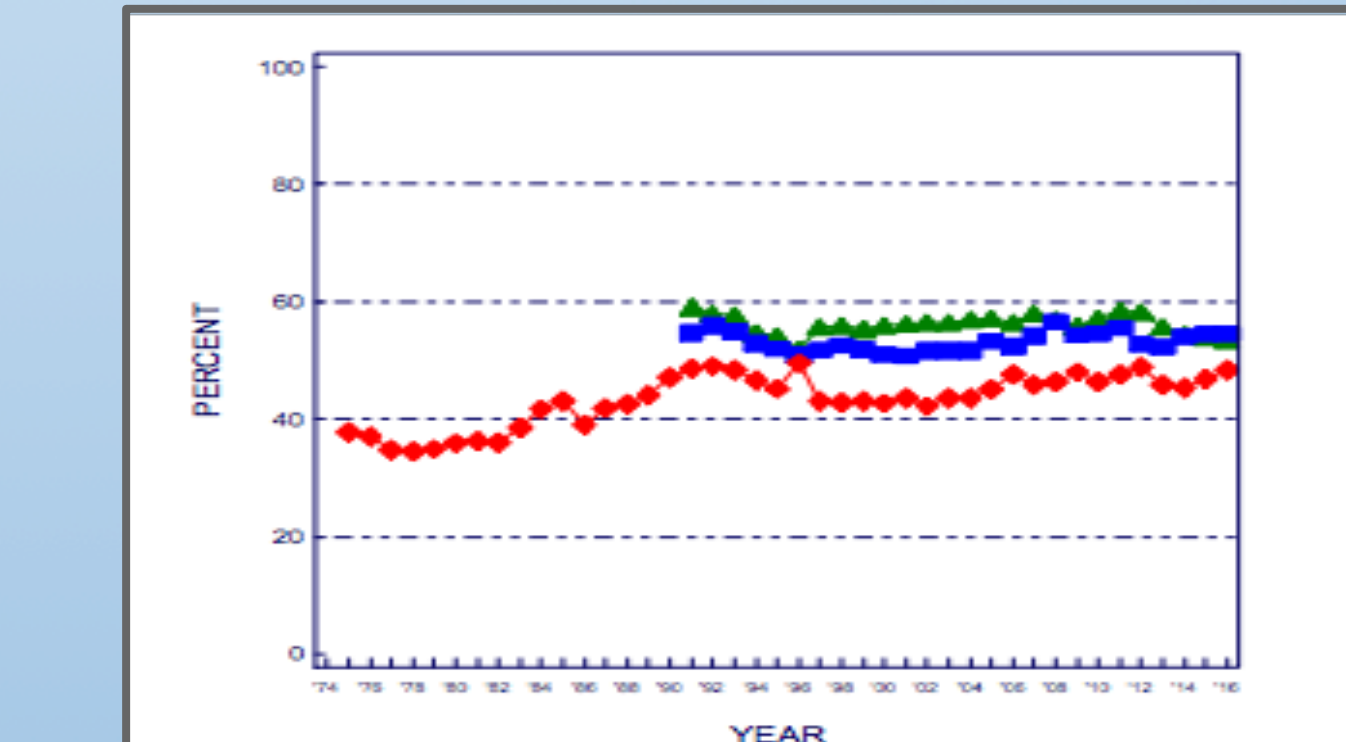
Paly Data



Nationwide % Students Perceiving Great Risk in Regular Marijuana Use



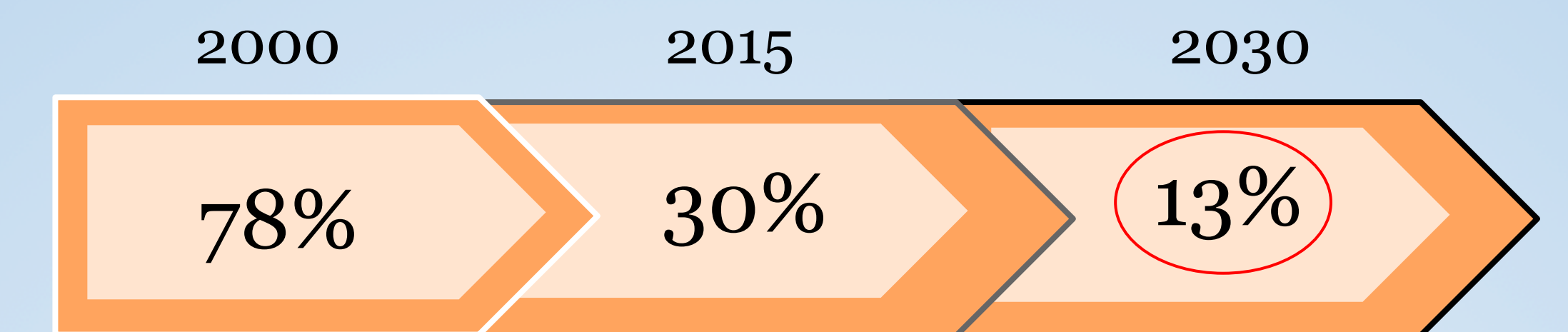
Nationwide % Students Perceiving Great Risk in Regular Alcohol Use



III. Analysis & Conclusion

According to current data, cannabis use is suggested to increase. Students' perception on marijuana being a great risk has decreased in the last 15 years and will likely continue to decrease until this trend is stopped.

- This data is more relevant to the teenage population because teenagers are more prone to substance use. The damage it does affects their brain functions and overall health in the long term.⁴
- Compared to other substances (e.g., alcohol), they perceive marijuana as the "safer" alternative.

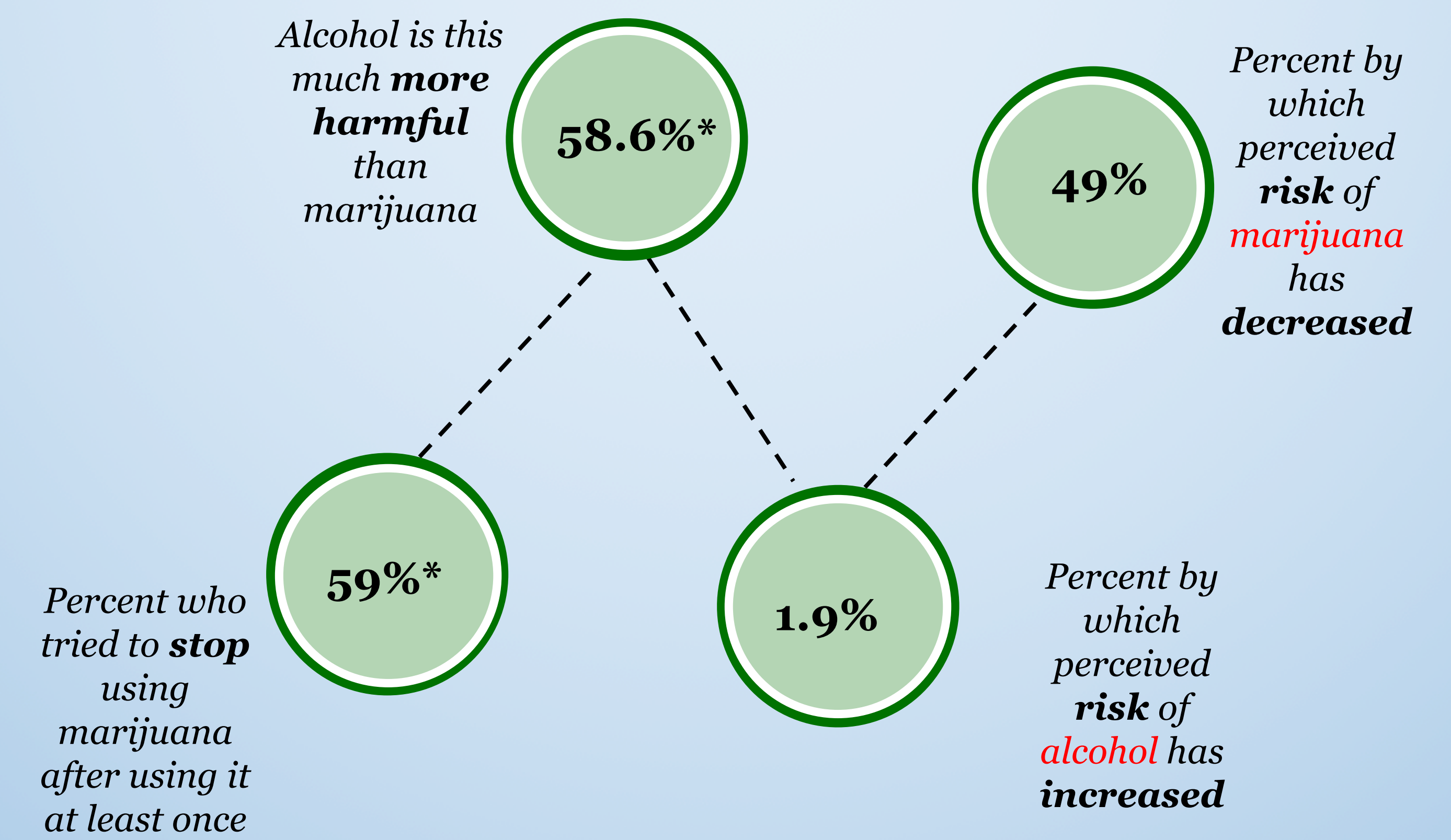


Projected timeline of how many students in the nation will perceive marijuana as posing great risk*

*Based on projected recent data trend lines

Obtaining marijuana has been easier, especially after the current regulations such as the recently passing of Prop 64.

- Prop 64 legalizes cannabis usage for those over 21 starting in 2018. Currently, it is legalized for those with a medical card or prescription. These new laws will give more people access by marijuana being easily obtained, since a card or prescription is all that is required. Physicians often give these cards perfunctorily or look the other way.



* = Palo Alto High School Statistic Un-starred = nationwide high school statistic

According to the recent 2016 California Healthy Kids Survey, approximately 15% of freshmen and 47% of juniors of Palo Alto High School have missed school because of **stress**, **anxiety**, **under preparedness** for a test or assignment or **sleep deprivation**. As drugs are becoming more popular, **marijuana usage will only increase**.

We would like to thank C.Y. Angie Chen, Dr. Bonnie Halpern-Felsher, and Dr. Jeong Choe for their insightful and unconditional guidance and mentorship, making this project possible.

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