

Does your Age and English class level
have an effect on whether or not you
drink alcohol in High School?

Lucy, Cassie, Gaby
AP statistics
Jay Selvaag
2016-17

We are interested in the association between student age and if they drink alcohol and student Class level/difficulty and if they drink alcohol.

We have a focus on High School age students who attend Washburn High School and are in either freshman regular or honors english or Junior regular or honors english, Freshman (9th grade) and Juniors (11th grade). We chose a regular english and an honors english for both grades and conducted a survey based on those chosen classes.

Background information: We are aware that High School is when many kids try/start drinking alcohol. We know that many kids start drinking at all different ages.

Why we chose this topic: Our knowledge of knowing that High School is when kids start drinking made us want to chose this topic to see if there is a specific age High schoolers start drinking and if the difficulty of class has an effect on when they start drinking.

What we hope to discover:

We are hoping to discover the answer to why we chose this topic. We want to figure out what age most High Schoolers start drinking by giving a survey to both freshman and juniors in High School. We want to know if more or less kids drink when they take more advanced classes or if their age has an effect on when they start drinking.

Data Collection

Data collection:

- **Survey sheets:** asked freshman and juniors to indicate (yes or no) of whether they drink or not
- Organized the surveys by grade and whether the English class was honors or regular.
- We went to Mr. Rice's honors freshman english class, Then Ms. Koppel's Juniors Honors English class, Then to Ms. Brandes room for regular english 9, and finally we went to Ms. Pederson's regular english 11 class
- We then put all of our data together and did two Chi-Square tests for Association (age vs drinker) and (honors vs drinker)

Procedure:

- We chose to use a convenience sample of students that attend our high school because they were the easiest to attain data from.
- We used stratified sampling (we chose the groups we were going to use based on grade)
- Although there was some undercoverage when it came to our strata because some kids may have been absent in the classes and we did not survey every single english class there was for freshman and juniors.
- Some people knowing lied or chose not to respond to the survey (Non-response bias)
- There was some response bias due to the way the question was worded in the survey

Findings:

Freshman honors

(Rice): 1/31: 3.22%

Freshman normal

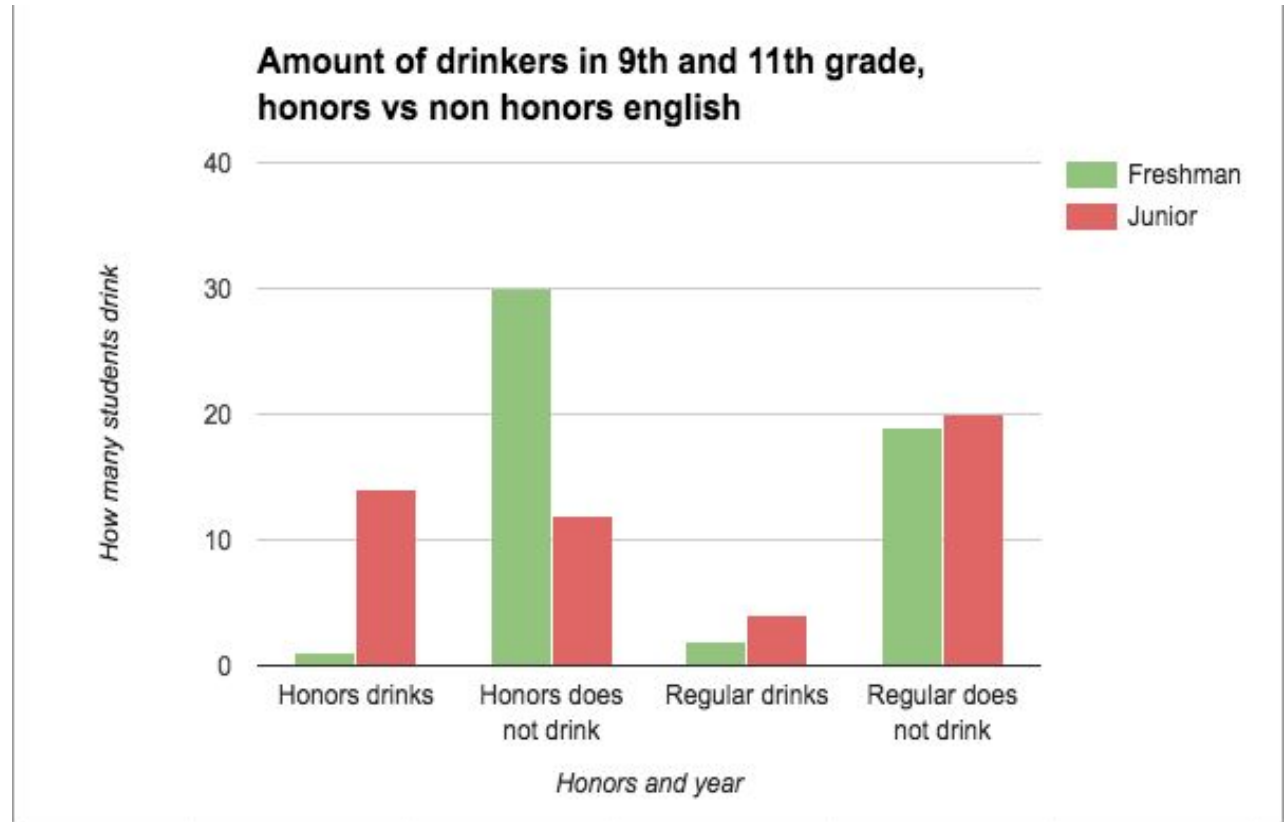
(Brandes): 2/21: 9.52%

Juniors honors

(Koppel) :14/26: 53.84%

Juniors normal

(Pederson): 4/24: 16.66%



Age Vs Drinker- Chi square test for association (PHANTOMS)

P: We are interested in if there is an association between high school drinking and age

H: Ho: There is no association between high school drinking and age

Ha: There is an association between high school drinking and age

A: Random: Random SRS from

Independent: $n < 1/10N$ We assume < 1010 people drink alcohol

Large Counts: all expected values are greater than 5.

N: We will test for Chi- Square Test of Association

T:

	yes	no	total
Junior	18	32	50
Freshman	3	48	51
	21	80	101

$$(50 \cdot 21) / 101 = 10.40$$

$$(21 \cdot 51) / 101 = 10.50$$

$$(50 \cdot 80) / 101 = 39.60$$

$$(51 \cdot 80) / 101 = 40.40 = 97.8$$

Expected: 10.4 36.5

 10.5 40.4

$$(18 - 10.4)^2 / 10.4$$

$$(36.5 - 32)^2 / 36.5$$

O: DF = 3 - 2 = 1

P = 1.9221-4E

M: The P-Value is significant at the .05 level, we reject the null hypothesis

S: There is strong evidence that there is an association between high school drinking and age.

Analysis: Age vs Drinker

Is there an association between the amount of freshman and juniors who drink?

Our data reports that there is evidence of an association between age and the amount of people who drink in high school. The data illustrates that more people in a junior class drink than compared to a freshman class. This could be due to the fact that juniors who are typically 16 and 17 years of age, are closer to the legal drinking age compared to freshmen who are typically between 14 and 15. In our society drinking is associated with an amount of maturity so that people are better able to make decisions under the influence of alcohol. For this reason, these results are not surprising and other studies concerning this association would most likely demonstrate these same results.

Honors Vs Drinker- Chi square test for association (PHANTOMS)

P: We are interested in if there is an association between the amount of drinkers in regular english classes and the amount of drinkers in honors english classes.

H: Ho: there is no association between the class you take and drinking.

Ha: there is an association between the class you take and drinking.

A: Random: random SRS from honors and normal english classes✓

Independent: $57 \leq 1/10N$ there are more than 570 high school students taking honors english✓

$45 \leq 1/10N$ there are more than 450 high school students taking normal english✓

LC: All expected values are greater than 5 ✓

N: We will be using the chi-square test for association

T: Observed:

	Yes	No
Honors	15	42
Normal	6	39

Expected:

	Yes	No
Honors	11.74	45.25
Normal	9.25	35.74

$$\mathbf{O:} (15-11.74)^2/11.74 + (42-45.25)^2/45.25 + (6-9.25)^2/9.25 + (39-35.74)^2/35.74 = 2.57$$

df=1 P-value= .1074 (calculator) between .15 & .10 (on table)

M: Because the p-value is insignificant at a =.05 level we fail to reject the null hypothesis.

S: There is not strong evidence that there is an association between taking an honors class and drinking in high school.

Analysis: Normal vs Honors

Is there a association between the amount of people who drink and what type of class they take in high school?

Our results concluded that there was no strong evidence claiming that people who are in regular classes drink more than those taking honors classes. This was our initial inquiry because generally people think that if you're in an honors class in high school you don't participate in illegal activities and focus more on school work. Though the results were inconclusive while observing the "yes" answers from the honors and normal classes and it appeared that more people actually drank in the honors classes. This was surprising to see. There are many variations in the people assigned to classes which could have affected our results along with many of influential variables.

Improvements/Conclusion- Gaby

- Found there was a significant association between drinking and age
- Not enough evidence to say there was an association between drinking and english class taken
- Improvements:
 - Make the question easier to understand
 - Ask a larger population (more classes) so that there is less undercoverage
 - Have students drop answers into bucket (confidentiality)