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Candidate name :
Candidate's number :
Session: May 2009

MATH PROJECT

What is the correlation between smoking and drinking from a certain age?

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A1

Introduction:

This goal of this investigation is to determine if there is any link between drinking and smoking. To do so I will look at different age groups and percentages of consumers.

In order to record my data I created a survey, which asks participants if they smoke, and if they do how frequently. The last question would ask if they tried smoking or drink first.

Here are some background statistics on smoking:

Approximately 80% of adult smokers started smoking before the age of 18. Every day and nearly 3,000 young people under the age of 18 become regular smokers. More than 5 million children living today will die prematurely because of a decision they will make as adolescents--the decision to smoke cigarettes. An estimated 2.1 million people began smoking on a daily basis in 1997. More than half of these new daily smokers were younger than age 18. This translates to more than 3,000 new youth smokers per day. The rate of youth initiation of daily smoking increased somewhat from 55.5 to 74.9 per 1,000 potential new users between 1991 and 1996, but remained level in 1997(the 1998 National Household Survey on Drug Abuse) Nearly all first use of tobacco occurs before high school graduation. Most young people who smoke are addicted to nicotine and report that they would like to quit but that they are unable to do so. Tobacco is often the first drug used by young people who use alcohol and illegal drugs. Among young people, those with poorer grades and lower self-images are most likely to begin using tobacco. Over the past decade, there has been virtually no decline in smoking rates among all teens. Among black adolescents, however, the prevalence of smoking has declined dramatically. Young people who come from a low-income family and have fewer than two adults living in their household are especially at risk for becoming smokers.

Here are some background statistics on drinking:

-More than 40% of teens who admitted drinking said they drink when they are upset; 31% said they drink alone; 25% said they drink when they are bored; and 25% said they drink to "get high." Each year, students spend \$5.5 billion on alcohol, more than they spend on soft drinks, tea, milk, juice, coffee or books combined. On a typical campus, per capita students spending for alcohol--\$446 per student--far exceeds the per capita budget of the college library. Nearly one-third of college students surveyed said they wished alcohol was not available at campus events, and nearly 90% wished that other drugs would disappear from campuses.-Approximately 240,000 to 360,000 of the nation's 12 million current undergraduates will ultimately die from alcohol-related causes--more than the number that will get MAs and PhDs combined. Sixty percent of college women diagnosed with a sexually transmitted disease were drunk at the time of infection.

Hypothesis:

I predict, without first looking at any data, that there will be a definite link between the consumption of these two widely available drugs. I base my opinion on the fact that alcohol and tobacco are the only recreational drugs that are pretty

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much universally acceptable in any country, thus are most probably the first that a child/teenager is exposed to. I also predict that most people by the age of 16 will be drinking, but not more than half will be smoking. This is largely due to the role of these drugs in our daily lives: alcohol is mostly first ever introduced to a person in the comfort of their own home and family, but a teenager caught smoking would most likely get into trouble.

The survey would look like this:

QUESTIONNAIRE :

Male Female

How old are you ?

13-15 16-18 19-21

Do you drink?

Yes No

Do you smoke?

Yes No

Did you smoke or drink first?

Smoke Drink

How many cigarettes do you smoke?

- One every month
- One every two weeks
- One every week
- One a day
- More than one a day

How much alcohol do you drink?

- Once every month
- Once every week
- Once a day

Results:

Total amount of participants: 60

Age groups	13-15	16-18	19-21
male	10	10	10
female	10	10	10
drinks	15	20	20
does not drink	5	0	1
smoke	8	13	12

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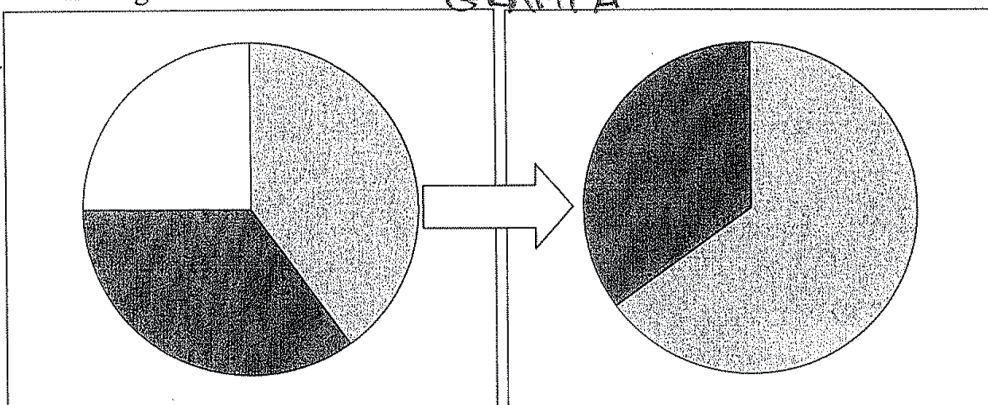
does not smoke	12	7	8
drank first	18	19	17
smoke first	2	1	3
amount smoked	1 every month, 4 every week, 3 every day	3 every month, 2 every week, 8 everyday	1 every month, 3 every week, 8 every day,
amount drank	4 every month, 10 every week, 1 every day	2 every month, 15 every week, 3 every day	2 every month, 16 every week, 2 once a day

Analysis:

With a total number of 60 participants, 30 were male and 30 were female. From the results above we unfortunately could not see a steady increase in alcohol and tobacco use (the increase was a lot bigger then anything I predicted). It seems that at the age of 13-15 most kids have tried cigarettes and 3/4 have tried alcohol, more so are doing so on a regular basis. This beat any of my previous expectations as I was slightly skeptical that the age group concerned would score that high.

teens
no smokers
on
3-15

GRAPH A



Drinkers
and
smokers
from 16-

In fact the graph above shows demonstrates that teens in the age of 16-18 have virtually no chance of not drinking, and more then a third of them have already started smoking.

This statistic made things slightly more interesting, but unfortunately I could no longer look at the progression of addictions with increase in age. This could have been done, if I did a yearly or even monthly analysis. However returning back to the subject at hand we can see that by the age of 16-18 everyone drinks on a regular basis, excluding one representative of the 19-21 age groups, whom I would dub an anomaly.

What is interesting for us in these statistics as with the large increase in drinkers from 13-15 to 16-18 of $((20-5)/15) = 33.3\%$, there is also a $((13-8)/8) = 62.5\%$ increase in smokers.

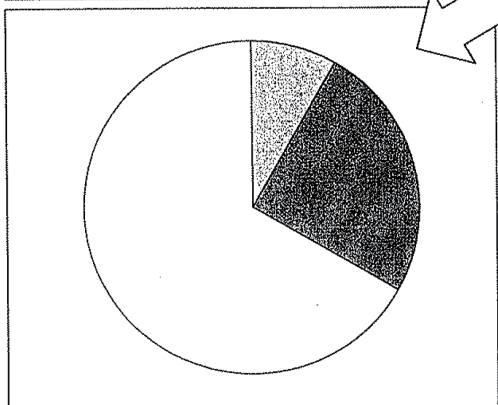
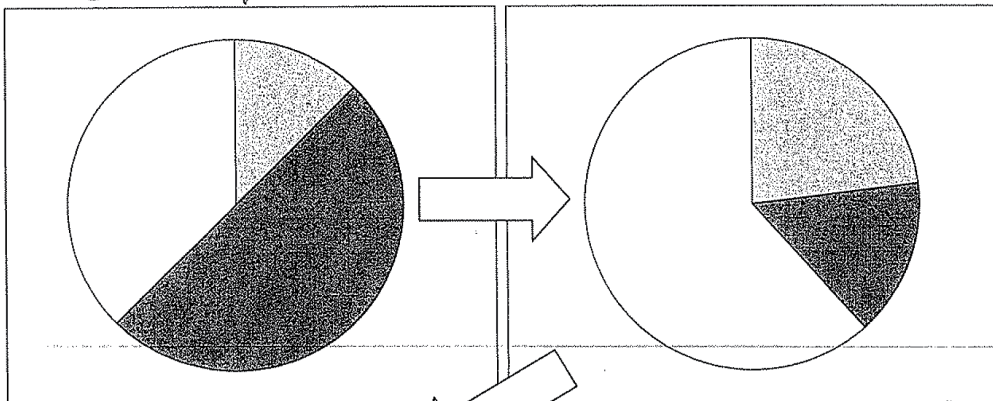
This could be the reflection of the fact that many teenagers try alcohol with their parents, but many try it outside of their household, whereas there are very few teenagers who try smoking for the first time with their parents around. Thus the increase in smokers should be more dramatic, as many of participants of the survey most likely live in a house where alcohol is considered barely dangerous for ones health and they have tried it before.

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frequency graph

GRAPH B.

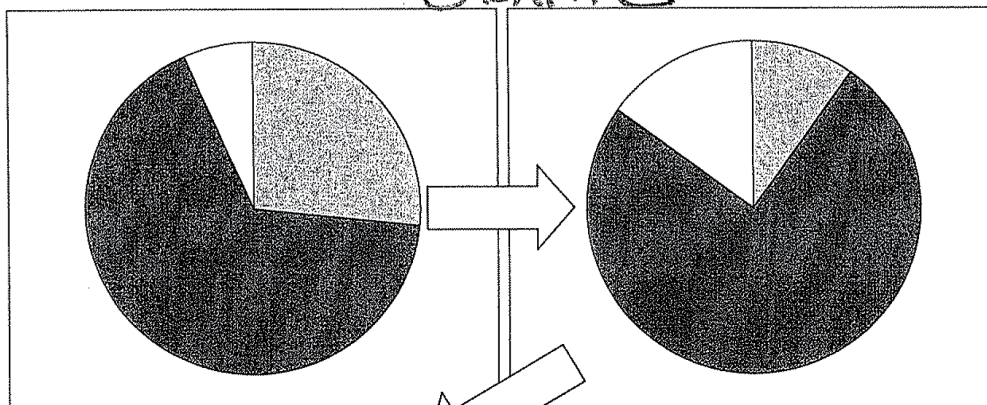
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Smoking frequency changes with age.

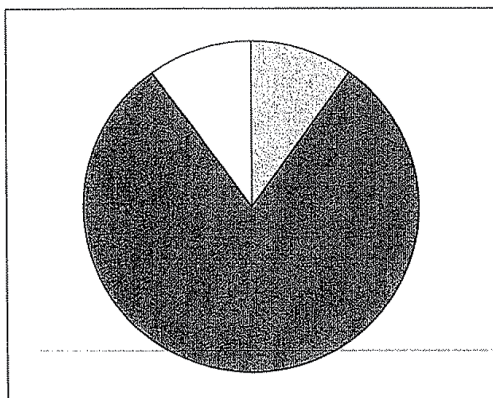
The graphs above device smokers by their cigarette consumption frequency. We can see that at first there are few frequent users, but with age the daily consumer portion of people becomes dominant, and the weekly out beats the monthly 3:1. This means that most probably with age smoking becomes more and more of a habit and users are slowly but surely becoming more aggressive smokers.

GRAPH C



drinking frequency changes with age.

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The graphs above divide drinkers by their alcohol consumption frequency.

Surprisingly already in the youngest generation sample we have a quite large percentage (75%) of frequent (once a week) drinkers. We can see that this is also the only percentage to increase in the statistic set, meaning that eventually a large portion of people will become frequent but not daily users of alcohol. This effect is quite logical and the reason why it is not seen with cigarettes is because alcohol becomes for most a type of leisure yet is too much of a hassle to attend to on a daily basis.

There were many surprises in these statistics, for example the amount of daily drinkers is on average about 10% of our sample. The percentage of rare/occasional drinkers is basically the same. One of the other most surprising things to me was the large amount of legal-drug users in the younger generation of participants, who are not actually legally permitted to acquire alcohol, or cigarettes in stores. Yet the numbers of habitual users are decently high.

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Conclusion:

In conclusion to these results: from what I see there is a definite correlation in the amounts of smokers and drinkers in teenage years. However the results that I received were not entirely convincing as the increases in these amounts were not the same percentage wise, meaning that even if these two widely spread drugs were related, there are more variables that we are missing out.

Looking at numbers there was no definite correlation, as increases were not even close. Looking at the graphs, I had a slighter better visualization of how people divide into groups, and it was a lot easier to justify certain changes and tendencies in the statistics. For example cigarettes turned out to be more addictive with time, as users slowly begin to smoke more frequently, yet alcohol frequencies remained on about the same level, as it is more of an occasional social leisure then an addictive substance.

Looking at these statistics and being able to visualize and justify tendencies, I conclude that there is a definite correlation between smoking and drinking between teens, but not to such an extent that one causes the other. Both are one of the only world wide available over-the-counter drugs, and it was interesting to see that the more addictive substance was visible and identifiable through statistics on how frequently people use it. If my sample of people was not limited to 60 people and 3 sample generations, I would perhaps have been able to look further into the problem, but from an outlook it seems that the correlation is coincidental, and does not indicate that the two drugs are related.

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