Quiz I

- How many of you speed up for yellow lights?
- How many of you exceed the speed limit when drive?
- How many of you wear seat-belts?
- How many of you have(had) fake ID’s?

*All involve state and federal laws and personal choices made about them.*

*One final question:*
- How many of you know someone that was involved in a drunk driving crash?
Two Years Later

Pete Krall (driver in jail), Don Farkouh & Mark Heir (killed)
How many of you have passed out from drinking?
How many of you have puked from drinking to much in the last month?
How many of you have lost your shoes?
How many of you have woken up next to some hideous hairy beast?
How many have had unidentifiable party injuries?

But there are protective behaviors that you follow:
How many of you have been the designated driver this semester?
How many of you have taken keys from a drunk sister?
How many of you have help a drunk sister through the night?
Quiz II

- How many of you have passed out from drinking?
- How many of you have puked from drinking too much in the last month?
- How many of you have pissed in your or someone else’s bed since you were at college?

But there are protective behaviors that we follow:

- How of you have been the designated driver this semester?
- How many of you have taken keys from a drunk brother?
- How many of you have helped a drunk brother through the night?
Problem is More than Drunk Driving
Why Campuses are Concerned

- On Nation’s Campuses
  - 42% binge drink (majority don’t!)
  - 1/3 college students drink to get drunk (2/3 don’t!)
  - 8% drink an average of 16 or more drinks a week (92% don’t)
  - Students spend $5.5B on alcohol – > than on soft drinks, tea, milk, juice, coffee, or books combined! (~$450/student-year)
  - White males drink more than any group
  - Fraternity members report drinking 15/week versus 5/week

- Medical Hazards
  - 240-360,000 of current 12M undergrads will die from alcohol related causes – more than will get MA’s and PhD’s combined
  - 60% of women diagnosed with STDs were drunk when infected
  - 1/5 students abandon safe sex when drunk (4/5 are safe!)
Why Campuses are Concerned (cont’d)

- Rape and Violence
  - 95% of violent crime on campus is alcohol related
  - 90% of all reported campus rapes occur when alcohol is being used by assailant, victim, or both
  - 80% of all campus vandalism is alcohol related

- Poor Academic Performance
  - Alcohol is implicated in more than 40% of academic problems and 28% of dropouts
  - Poor grades are correlated with increased use of alcohol
Why do we drink?

- Feels good
- Helps socialize, conversation
- Increased Confidence

Why else?? ......

(the “good” symptoms of low levels of alcohol use)

Pharmacological Effects of Alcohol

<table>
<thead>
<tr>
<th>Range of BAC</th>
<th>Area Affected</th>
<th>Usual Symptoms</th>
</tr>
</thead>
</table>
| 0.01-0.10%   | Frontal Lobe  | Reaction colored by individual’s personality  
Removal of inhibitions, loss of self-control, weakening of will power  
Development of *euphoria*, feeling of well-being, exaltation, increased *confidence*, expansiveness, generosity, altered judgment, increased *good fellowship*, loquaciousness, dulling of attention |

From CRC Handbook of Tables for Applied Engineering Science
Pharmacological Effects of Alcohol

<table>
<thead>
<tr>
<th>Blood Alcohol Level</th>
<th>Brain Region</th>
<th>Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.10-0.20%</td>
<td>Psychomotor Area</td>
<td>Apraxis, agraphia, ataxia, tremors, slurred speech, loss of skill</td>
</tr>
<tr>
<td>0.10-0.30%</td>
<td>Somestheseto-psyche</td>
<td>Dulled or distorted sensibilities</td>
</tr>
<tr>
<td>0.15-0.35%</td>
<td>Cerebellum</td>
<td>Disturbance of equilibrium</td>
</tr>
<tr>
<td>0.20-0.30%</td>
<td>Visuo-psychic Areas</td>
<td>Disturbance of color perception, dimensions, forms, motion, distance; diplopia</td>
</tr>
<tr>
<td>0.25-0.40%</td>
<td>Diencephalon</td>
<td>Apathy, inertia, tremors, cessation of automatic movements, sweating, dilation of surface capillaries, stupor, coma</td>
</tr>
<tr>
<td>0.40-0.50%</td>
<td>Medulla</td>
<td>Depression of respiration, peripheral collapse, subnormal temperature, death</td>
</tr>
</tbody>
</table>

From CRC Handbook of Tables for Applied Engineering Science

After 6 Drinks
Before 6 Drinks

After 6 Drinks

Before 6 Drinks

After 6 Drinks
Factors Affecting Alcohol Absorption

- Body Weight
- Gender
- Food in stomach
- Time Duration
- History of Drinking
- Genetics

Chemistry 101: Metabolism of Alcohol

(some fine print information from MIT homepage)

- Ethanol+NAD -> acetaldehyde
  \( \text{CH}_3\text{CH}_2\text{OH}+\text{NAD} \rightarrow \text{CH}_3\text{CHO}+\text{NADH}+\text{H}^+ \)
- Acetaldehyde+H\(_2\)O+NAD -> Acetic Acid
  \( \text{CH}_3\text{CHO}+\text{H}_2\text{O}+\text{NAD} \rightarrow \text{CH}_3\text{COOH}+\text{NADH}+\text{H}^+ \)

- Supply of NAD(nicotinamide adenine dinucleotide) is limited and will preferentially be used for alcohol metabolism, and therefore not available for making new glucose
- If glucose stores – glycogen – and NAD are limited, hypoglycemia is the result and blood sugar drops to levels too low for normal brain function and person will pass out
- 90% is metabolized; 10% is excreted or exhaled (breathalyzer)
- Inhibition of ADH (anti-diuretic hormone) results in increased urine production. Large volume beverages (like beer) can result in prodigious urine outputs. Too much urination will lead to dehydration and is one factor involved with etiology of a hangover.
Fun with Differential Equations

BAC case studies for a 150 lb male

\[
\frac{? [BAC]}{? t} - C \frac{? [Drinks]}{? t} = \frac{? [onedrink]}{[hour]} 
\]

BAC\(_i\) \sim BAC\(_{i+1}\) + 0.025*(Drinks-1)
Or More Simply: Goes Ins (#/hour) and Goes Outs (1 Drink/Hour)

\[
\text{BAC} = f(\text{Drinks}, \text{time})
\]

What is a Drink?

ONE STANDARD DRINK equals:

- 10 - 12 ozs beer
- 5 ozs wine or 1 cooler
- 1 shot or mixed drink
Fraternity suspended after student found dead

FORT COLLINS, Colorado (AP) -- A 19-year-old former homecoming queen was found dead at a Colorado State University fraternity over the weekend, and the fraternity chapter was suspended by its national headquarters.

The body of Samantha Spady, a sophomore from Beatrice, Nebraska, was found Sunday evening in a lounge at the Sigma Pi fraternity by a member giving a tour of the house. Police suspect drinking contributed to her death but are waiting for the results of toxicology tests.

Police believe the woman had been dead at least 12 hours, making it likely that she had been in the house since the previous evening.

Investigators suspect that alcohol led to Spady's death. Multiple sources say that a preliminary test showed she had a blood-alcohol content of 0.43 percent, more than five times the legal limit for intoxication for a driver in Colorado.


Wednesday, September 8, 2004 Posted: 12:11 PM EDT (1611 GMT)
High Risk Night of Drinking

Night of Drinking (time) vs. # Drinks

BAC (% Concentration)

21st Birthday

Send a Birthday Card Instead of Buying Shots

Bradley McCue (MSU, 1998) (www.brad21.org)
High Risk Night of Drinking

A typical Thursday or Friday?
Number of Drinks per Week and Resultant GPA

<table>
<thead>
<tr>
<th>GPA</th>
<th># Drinks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>2</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
</tr>
<tr>
<td>C</td>
<td>6</td>
</tr>
<tr>
<td>D-F</td>
<td>10</td>
</tr>
</tbody>
</table>

Stupid Freshman Coeds

<table>
<thead>
<tr>
<th>Night of Drinking (time)</th>
<th>Number of Drinks</th>
</tr>
</thead>
<tbody>
<tr>
<td>9pm</td>
<td>0</td>
</tr>
<tr>
<td>10pm</td>
<td>0</td>
</tr>
<tr>
<td>11pm</td>
<td>0</td>
</tr>
<tr>
<td>12am</td>
<td>0</td>
</tr>
<tr>
<td>1am</td>
<td>0</td>
</tr>
<tr>
<td>2am</td>
<td>0</td>
</tr>
<tr>
<td>3am</td>
<td>0</td>
</tr>
<tr>
<td>4am</td>
<td>0</td>
</tr>
<tr>
<td>5am</td>
<td>0</td>
</tr>
<tr>
<td>6am</td>
<td>0</td>
</tr>
<tr>
<td>7am</td>
<td>0</td>
</tr>
<tr>
<td>8am</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BAC (% Concentration)</th>
<th>Number of Drinks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.02</td>
<td>0</td>
</tr>
<tr>
<td>0.04</td>
<td>0</td>
</tr>
<tr>
<td>0.06</td>
<td>0</td>
</tr>
<tr>
<td>0.08</td>
<td>0</td>
</tr>
<tr>
<td>0.1</td>
<td>0</td>
</tr>
<tr>
<td>0.12</td>
<td>0</td>
</tr>
<tr>
<td>0.14</td>
<td>0</td>
</tr>
<tr>
<td>0.16</td>
<td>0</td>
</tr>
<tr>
<td>0.18</td>
<td>0</td>
</tr>
<tr>
<td>0.2</td>
<td>0</td>
</tr>
<tr>
<td>0.22</td>
<td>0</td>
</tr>
<tr>
<td>0.24</td>
<td>0</td>
</tr>
</tbody>
</table>
College is a time of change, growth, despair, opportunity, finding oneself.

Will you be yourself or imitating someone else?

Will you be teaching others to be themselves or imitating your bad habits?

Lower Risk Night of Drinking

<table>
<thead>
<tr>
<th># Drinks</th>
<th>BAC (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>1</td>
<td>0.02</td>
</tr>
<tr>
<td>2</td>
<td>0.04</td>
</tr>
<tr>
<td>3</td>
<td>0.06</td>
</tr>
<tr>
<td>4</td>
<td>0.08</td>
</tr>
</tbody>
</table>

Guidelines for Low-Risk Alcohol Use

0 drinks = lowest risk

Women: No more than one standard drink a day.

MEN: No more than two standard drinks a day.

It's always okay not to drink.
At many colleges

\[ \frac{2}{3} = \frac{1}{4} \]

\[ \text{2/3 of Students Consume} = \text{1/4 of Alcohol} \]
Example Poll - Misperceptions about Personal Drinking Rates

Point: *The loud, noticeable, few are influencing the perceived norm*

Perceptions and Realities on Alcohol Use (for % Think, this is a conglomerate)

I purposely ate before drinking last semester
- Self %: 50.00%
- Think %: 44.67%

I limited the amount of money I brought with me when going drinking
- Self %: 65.00%
- Think %: 68.75%

I used a sober driver/designated driver last semester
- Self %: 35.00%
- Think %: 33.33%

I stopped someone from driving after they had more than 2 drinks in a one hour period just before wanting to drive
- Self %: 21.88%
- Think %: 56.67%

I drove after drinking more than 2 drinks in a one hour period just before driving
- Self %: 90.63%
- Think %: 96.67%

I had to help another who was very drunk and/or passed out
- Self %: 90.63%
- Think %: 96.67%

I had to be helped by another because I was very drunk and/or passed out
- Self %: 18.75%
- Think %: 56.67%

I was in a fight last semester while drunk
- Self %: 18.75%
- Think %: 56.67%
So What was bottom line?

- You overestimate the # times per week brothers are drinking and slightly the amount.
- You are right on the national average for Greek drinking patterns. (*So, RPI is not different*)
- You are 3x the national average for college drinking patterns. (*Not a good above average stat*)
- You apparently spend >$75/month on booze. *(Are you being Efficient, Economical, and Enjoyable?)*
- You do watch out for each other if drinking. *(But overestimate number of fights, drinking & driving, and times needing help.)*

Do you drink too much?

- Do you drink alone when you feel angry or sad?
- Does your drinking make you late for - or miss - class?
- Do you ever drink after telling yourself you won’t?
- Do you ever forget what you did while you were drinking?
- Do you get headaches or have a hang-over after you have been drinking?
Low Risk Alcohol-Related Behaviors
From: Gerardo M. Gonzalez, Ph.D. University of Florida

- Use as an adjunct to an activity rather than as the primary focus of attention
- Provide food with alcohol at all times
- Provide non-alcoholic alternative drinks when hosting a party
- Express displeasure by offering a substitute drink to someone who has had too much to alcohol
- Set personal limits on how many drinks one is going to have during a night out or at a party
- Respect a person who chooses to abstain from drinking alcohol
- Provide transportation or overnight accommodations to those unable to drive safely after drinking.
Sometimes fraternity/sorority education is like Sysiphus pushing the rock up the mountain only to have it roll back down - but push it up we must.
If Choosing to Drink, then Optimize Your Buzz

by drinking with E’s

- Efficiently
- Economically
- Enjoyably