

Program Presentation for the 2006 National Social Norms Conference

Measuring Late Night Blood Alcohol Levels in a College Setting

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Importance of Conducting a Blood Alcohol Concentration (BAC) Survey

- Contributes an Independent Data Source beyond self report surveys for campaign messages and program assessment
- Enhance believability and credibility of your social norms health promotion program

Protocol for Conducting a BAC Survey on a College Population

- Times were selected when the perceived greatest amount of drinking was taking place -- 11pm – 3am
- Measurement stations were established just inside randomly selected residence hall entrances
- Measurements were taken from week days and week ends throughout the term.
- Subjects were randomly selected from among those entering the residence hall

Protocol (cont.) Data Collected from Test Subjects

- Breathalyzer Test
- Short Two Page Survey



Protocol (cont.) BAC Measurement Seeks to Ensure Subject Anonymity and Safety

- Breathalyzer instrument chosen does not display BAC result
- Instrument displays a sample ID number.
 - ID entered onto blank survey form on clipboard for subject to fill out.
 - After returning the survey to a closed box with slot, subjects are given a card with the sample ID so that they may call later to find out what their BAC was.



Protocol (cont)

Subject Data Collection Procedure

- Script Asking for Voluntary Participation

“Hello. You have been randomly selected to participate in a student research project on alcohol use at HWS. This will only take a few minutes of your time. You must be 18 or older to participate. Are you 18 or older? We will ask you to fill out a short anonymous survey and have your blood alcohol, or BAC measured by breathalyzer. The BAC measurement will be stored internally by the instrument. We will not know what your BAC is. But, you will receive a test number so that you can call a phone number tomorrow and get your BAC results. You should know that as members of the HWS community we have the responsibility to call security should you exhibit symptoms of alcohol poisoning while you are with us. You cannot get into trouble by participating in this project. Would you like to participate?”

Protocol (cont)

Provisions to Ensure that the Presence of Measurement Stations do not Alter, or worse, Increase Drinking

- Researchers only allow randomly selected subjects to participate
- No subject may be tested more than once in a given evening
- Students do not know where measurement stations will be set up.

Protocol (cont)

Subject and Researcher Safety Issues

- Subject Safety
 - Participation is voluntary and anonymous
 - There is no way to connect a BAC result or survey result back to an individual
 - Researchers are trained to recognize and respond to alcohol poisoning
- Researcher Safety
 - Two researchers present at all times
 - Security notified of collection station locations



the Herald



By and for the students of Hobart and William Smith Colleges

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You Could Be A Factoid!

Melissa Sorrells

Copy Editor

Jeff Quinto, Adam Bordonaro, Lauren Gianniny, and Andrew Stern are working on an important student research project. Along with Chemistry Professor David Craig, the group will be asking students entering residence halls late at night to take an anonymous survey and Breathalyzer Test.

Don't worry if you've been drink-

ing—the surveys are totally anonymous and there's no way you can get into trouble. And don't worry if you haven't been drinking—the group is trying to gather a representative sample of students that are out and about late at night.

Actually, the whole process is kind of neat and high-techy: the Breathalyzer instrument doesn't display the actual BAC to the student or researchers. The data is stored internally on the device to be down-

loaded later. The student may call after their test to find out their BAC with an anonymous number.

If you need more motivation than that, consider why they're doing this project. First and foremost, they're trying to figure out how much how many of us are drinking, and who doesn't love those campus factoids? They're also trying to figure out how well students can perceive their own BAC level and measure the distribution of metabolic clearance rates in the college population (that's fancy-pants language for trying to learn who can drink more than who without getting trashed), so you can determine once and for all whether or not you're actually a "cheap date".

So, if some weird looking students approach you with some high-tech medical equipment, don't run screaming; help out fellow students!

Results – sample characteristics

- 1499 Participants
(86% participation of those randomly selected):
 - 54% males, 46% females
 - 19% over 21, 81% under 21
 - 61% from school nights and 39% from weekend nights
 - Class rank: 44% 1st yr, 27% 2nd yr, 17% 3rd yr, and 12% 4th yr

How Representative of the Campus is this sample?

Campus Overall

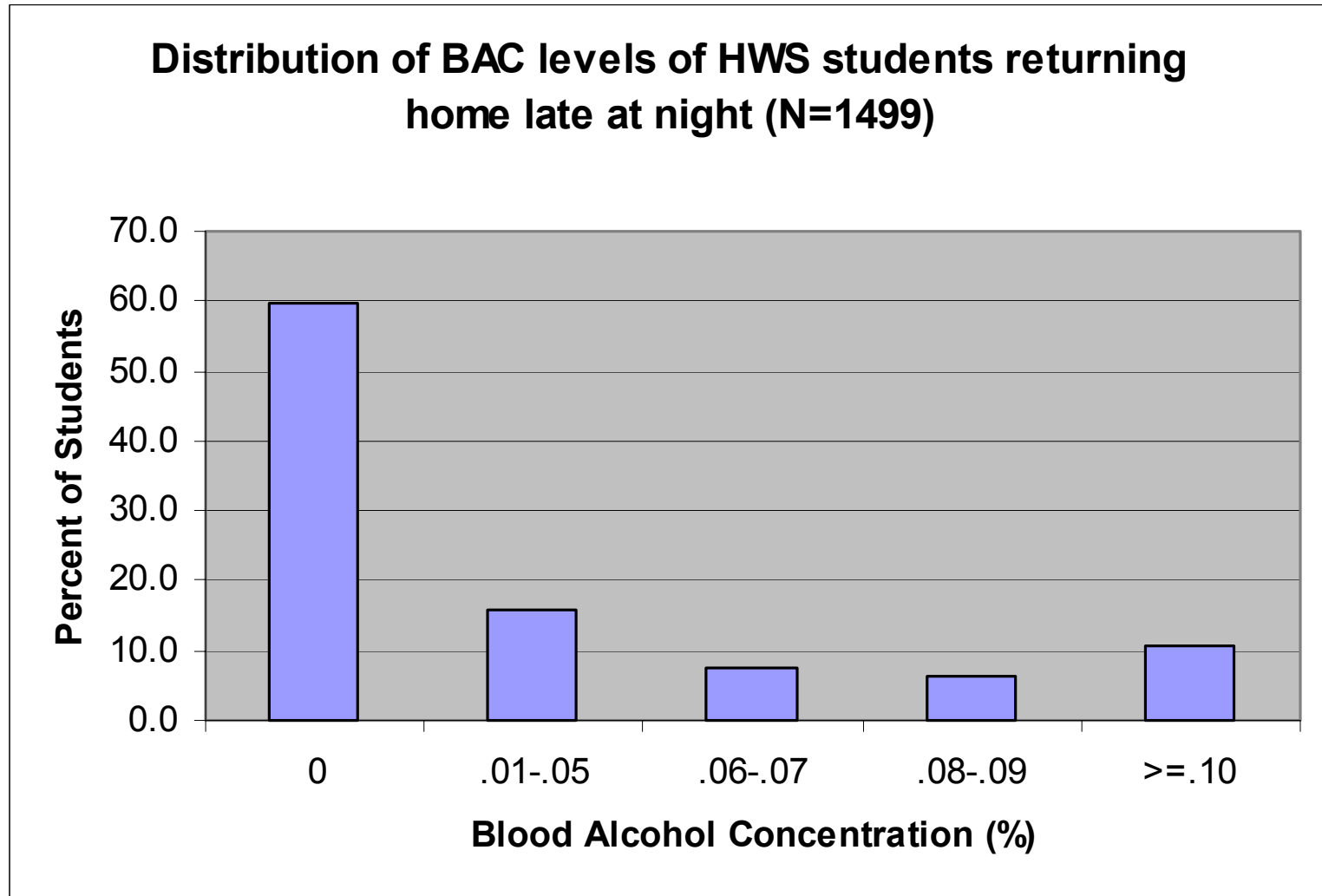
- Recent representative self report surveys indicate that a majority of students consume 4 or fewer drinks or none at all at parties and bars.

BAC sample participants

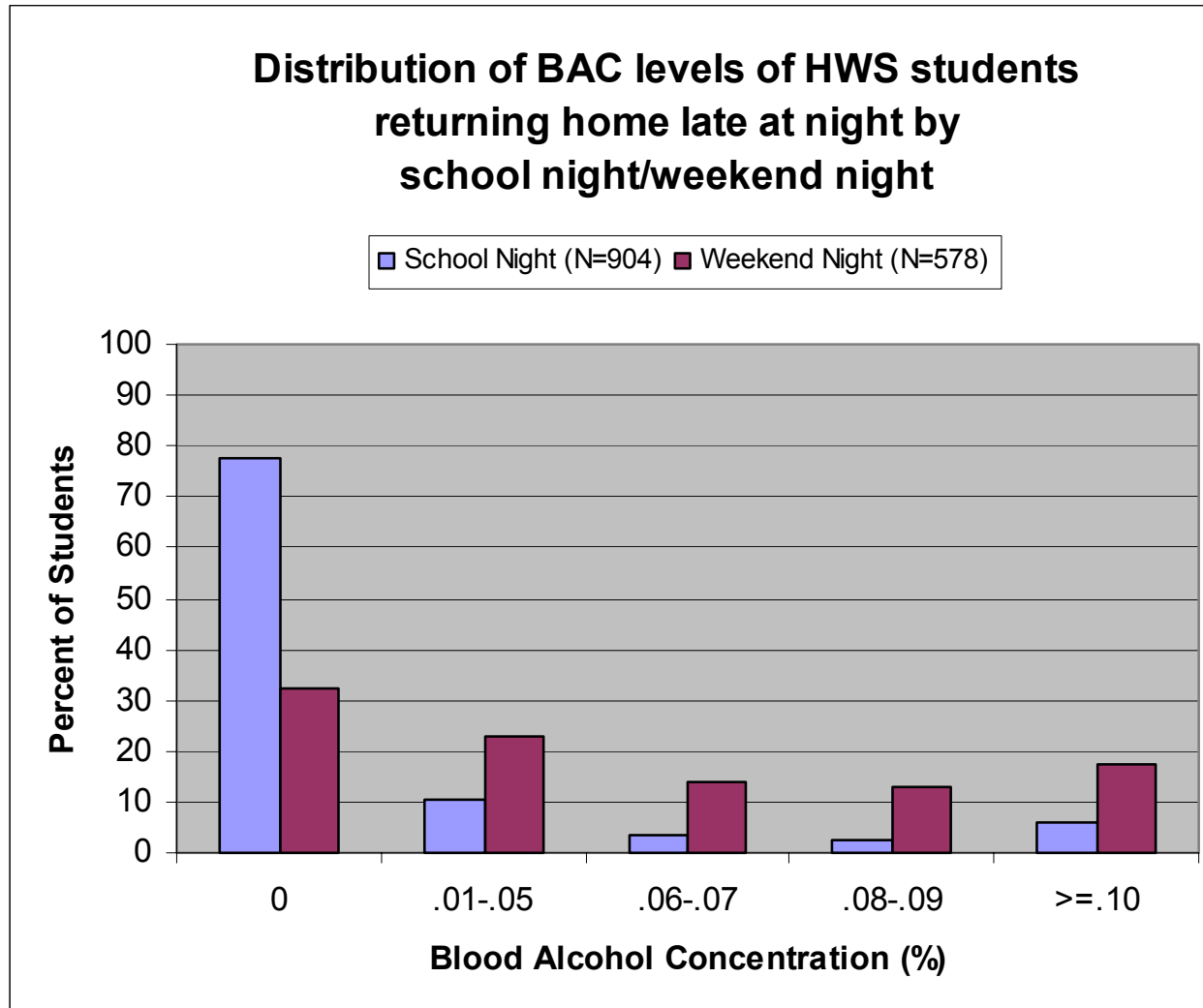
- On the evening of measurement the majority of students reported consuming 0 drinks.
- They reported typically consuming 6 drinks or fewer or none when they drink

This sample is not representative of the entire sample...it is representative of student that are out and about between 11pm and 3am and live in a residence hall

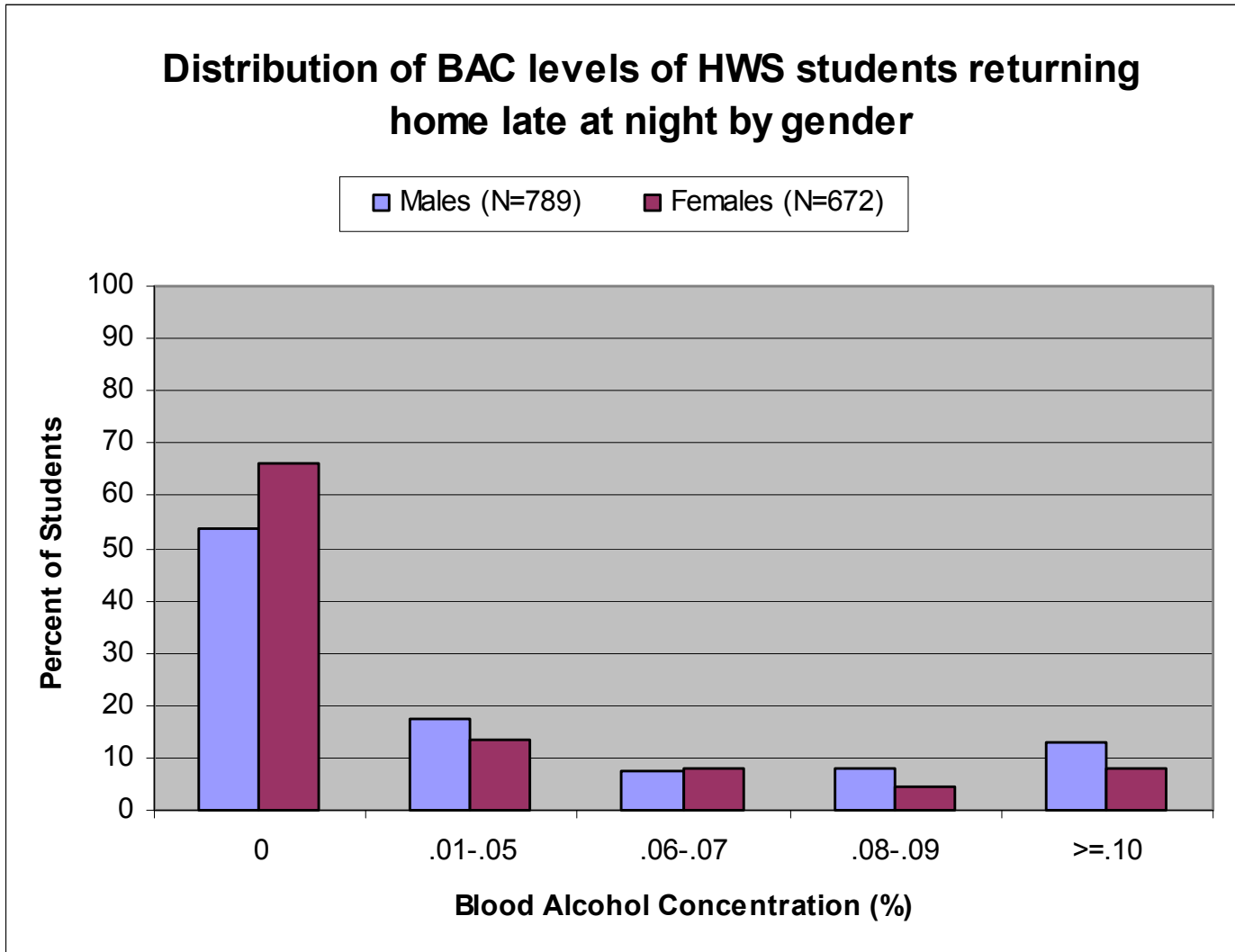
BAC for All Subjects



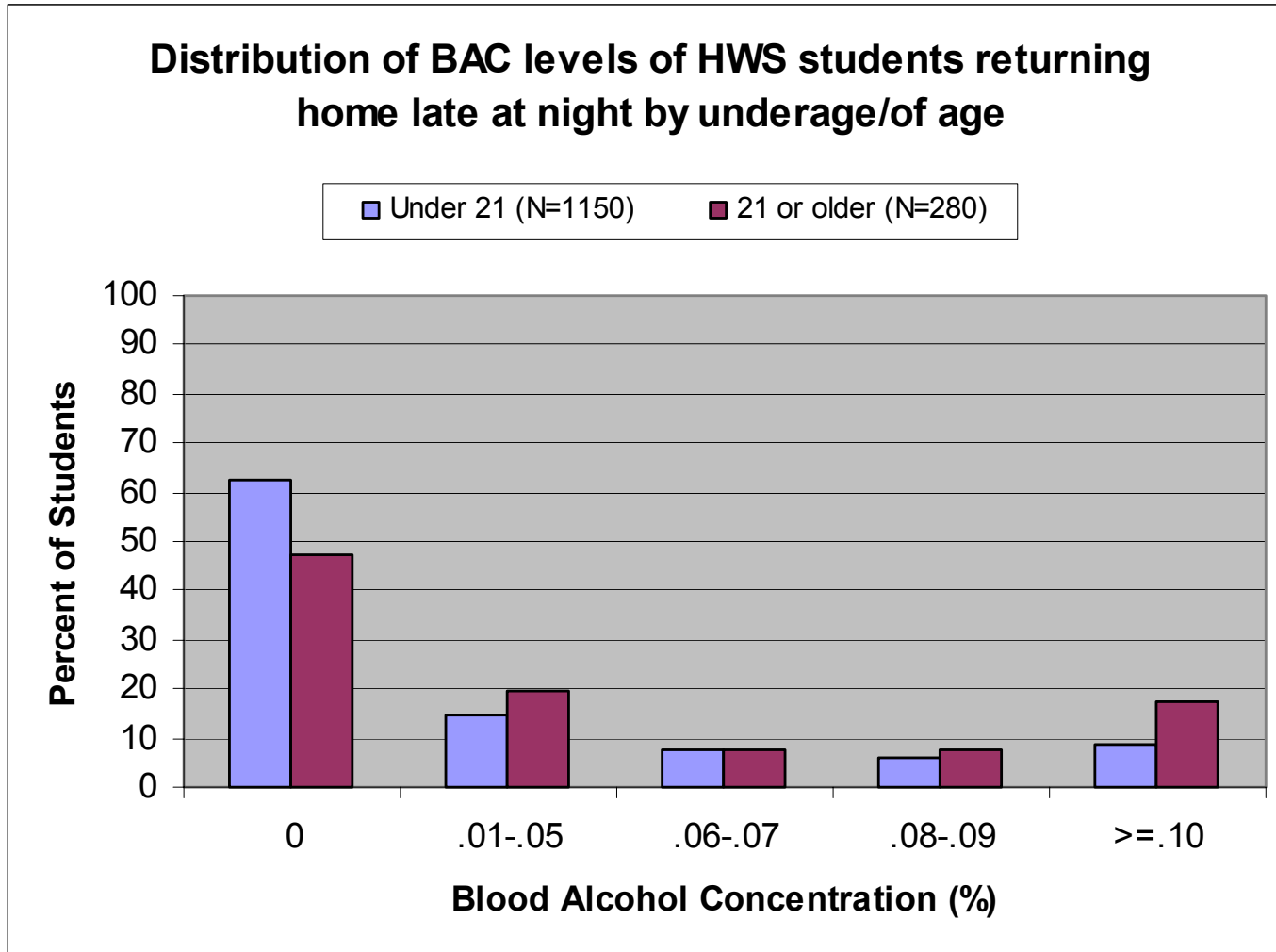
BAC on School Nights and Weekend Nights



BAC by Gender



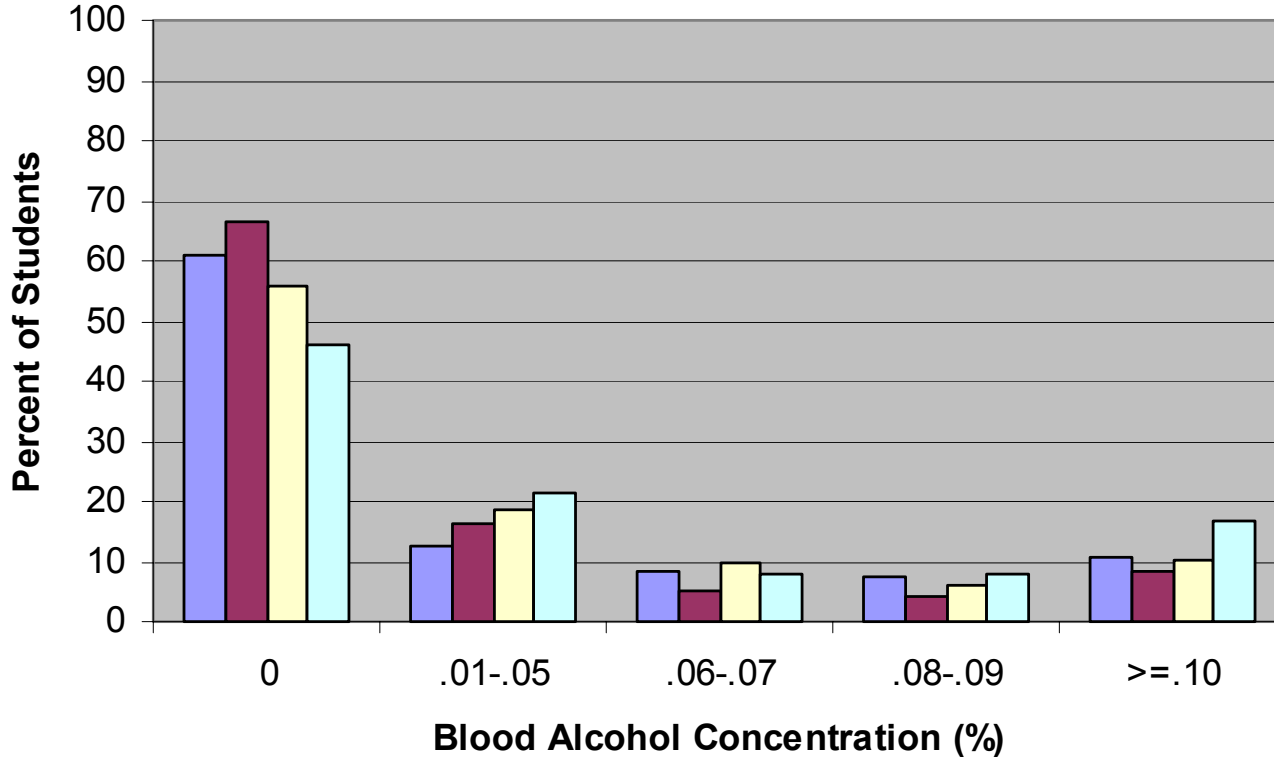
BAC by Underage/Of Age



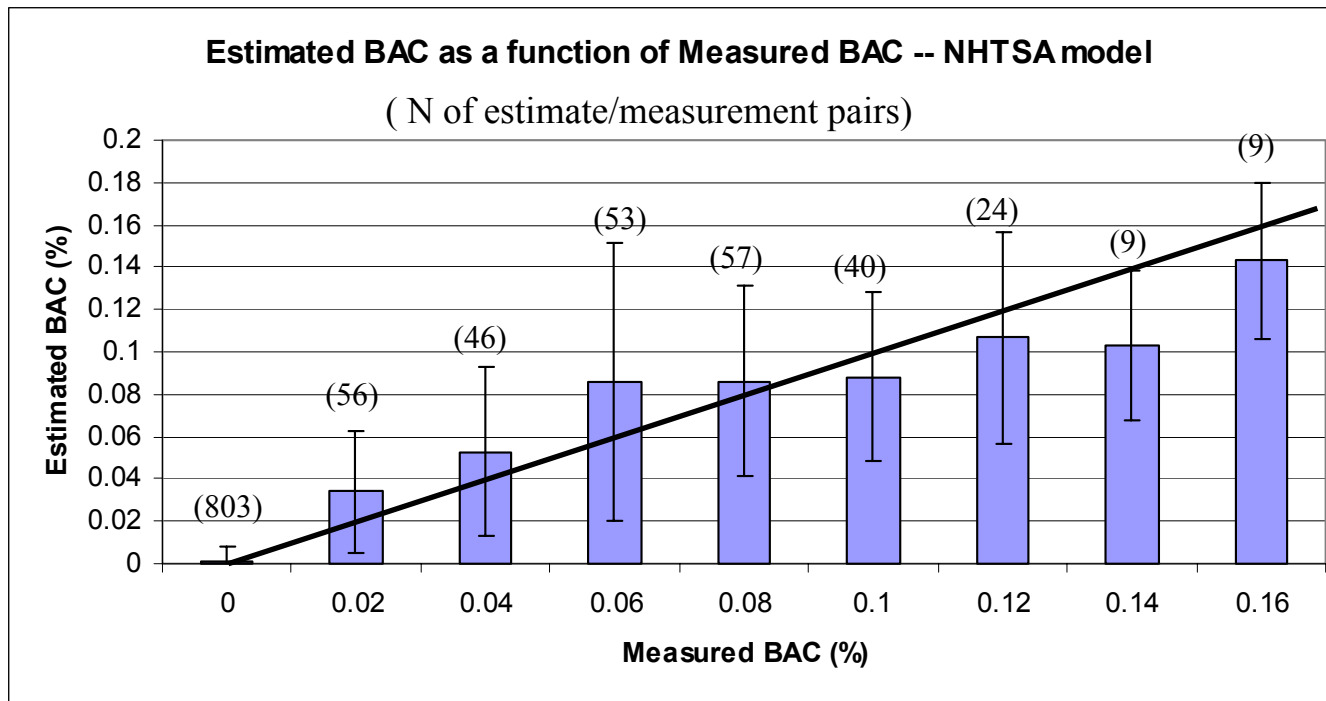
BAC by Class Year

Distribution of BAC levels of HWS students returning home late at night by class year

■ First Year (N=635) ■ Second Year (N=391) ■ Third Year (N=249) ■ Fourth Year (N=182)



Correlation of NHTSA-Estimated BAC to Measured BAC



Standard Error
of Estimate
.026 g/dL

Regression Coeff.
 $1.003 \pm .019$

Perceptions of Intoxication

		Perceived Intoxication Level (% within level)			
		Sober	A little Buzzed	Pretty Drunk	Wasted
Meas BAC (g/dL)	0	66.9	8.6	1.3	0
	.01-.05	26.5	41.1	10.4	4.2
	.06-.07	1.3	19.6	20.8	8.3
	.08-.09	1.3	14.7	18.2	16.7
	>=.10	4.0	16.0	49.4	70.8

51.6%
Accurate

7.2%
Over-Estimate

40.8%
Under-Estimate

BAC of 5/4 “Binge” Drinkers as They Return Home to Residence Hall

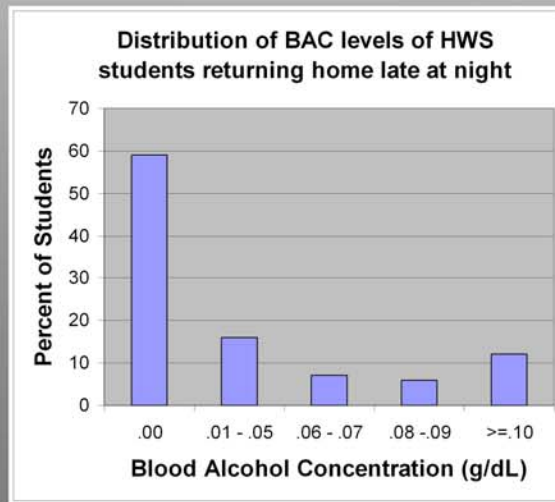
	Not 5/4 Binge Drinker N=645		5/4 Binge Drinker N=495	
BAC (%)	Male (%)	Female (%)	Male (%)	Female (%)
0	85	88	4	7
.01-.05	11	10	23	18
.06-.07	1	2	18	28
.08-.09	2	1	19	15
$\geq .10$	<1	<1	36	33

Sample Social Norms Poster



75%
of HWS Students
Blew a 0.05 or lower BAC
Returning Home
Late at Night

Data collected from 1,261 randomly selected students returning to residence halls late at night between 11pm and 3am during Spring '03, Fall '03, Spring '04, Fall '04, and Spring '05



BAC measurements were collected every night of the week (59% of sample from school nights, 41% from weekend nights). Men are 53% of the sample and women are 47% of the sample.

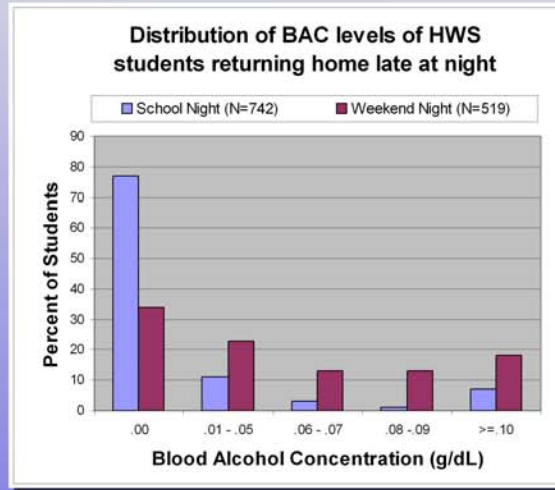
These results were obtained from chemistry department independent study and honors students advised by Professor David W. Craig: Davidek Heron (H03), Maranda Bliss (WS03), Zachary Schneider (H04), Matthew Yarger (H04), Jeffrey Quinto (H05), Adam Bordonaro (H05), Lauren Gianniny (WS05), and Andrew Stern (H05).

See <http://people.hws.edu/craig/bac> for more information



88% on School Nights and 56% on Weekend Nights Blew a 0.05 or lower BAC Returning Home Late at Night

Data collected from 1,261 randomly selected students returning to residence halls late at night between 11pm and 3am during Spring '03, Fall '03, Spring '04, Fall '04, and Spring '05



Blood Alcohol Concentration (BAC) and Behavioral Effects	
BAC (g/dL)	Average Effects
.01 - .05	Between .02 to .04 most people are feeling relaxed, energetic and happy. Time seems to pass quickly. At .05 motor skills may be slightly impaired.
.06 - .07	Giddiness, lowered inhibitions, and impaired judgment; an individual's ability to make rational decisions concerning personal capabilities is affected; continued loss of coordination.
.08 - .09	Muscle coordination definitely impaired and reaction times increased; sensory feelings of numbness in the cheeks and lips and extremities. A BAC of 0.08 is the DWI limit for New York State and most other states.
.10 or higher	Clear deterioration of coordination and reaction times; individuals may stagger and speech become slurred; judgment and memory further affected. Continued depression of motor, sensory, and mental functions at higher levels. Loss of consciousness between .3 and .4.

Ref: Corry, JM and Cimbalic, P. (1985). *Drugs: Facts, Alternatives, Decisions* (p171). Wadsworth Publishing Co.

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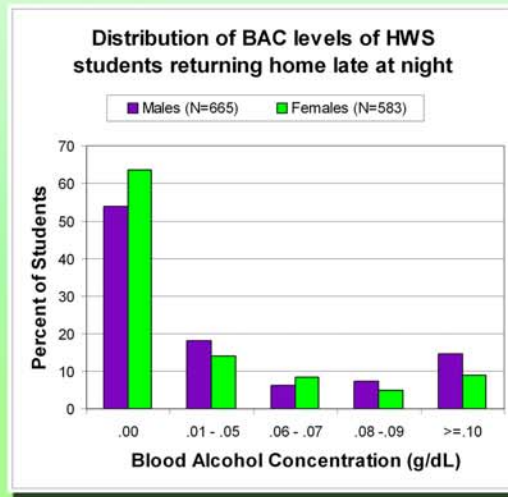
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72% of Males and 78% of Females Blew a 0.05 or lower BAC Returning Home Late at Night

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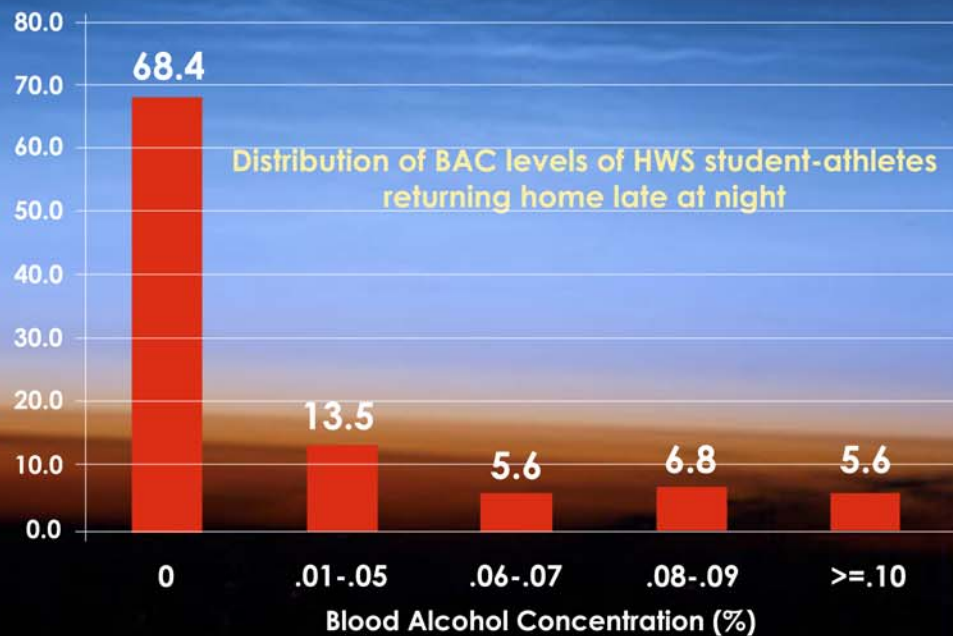
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82% of HWS student-athletes blew a 0.05 or lower BAC returning home late at night



Source: Data collected from 194 randomly selected student-athletes returning to residence halls late at night between 11pm and 3am every night of the week during Fall '04, Spring '05, and Fall '05.

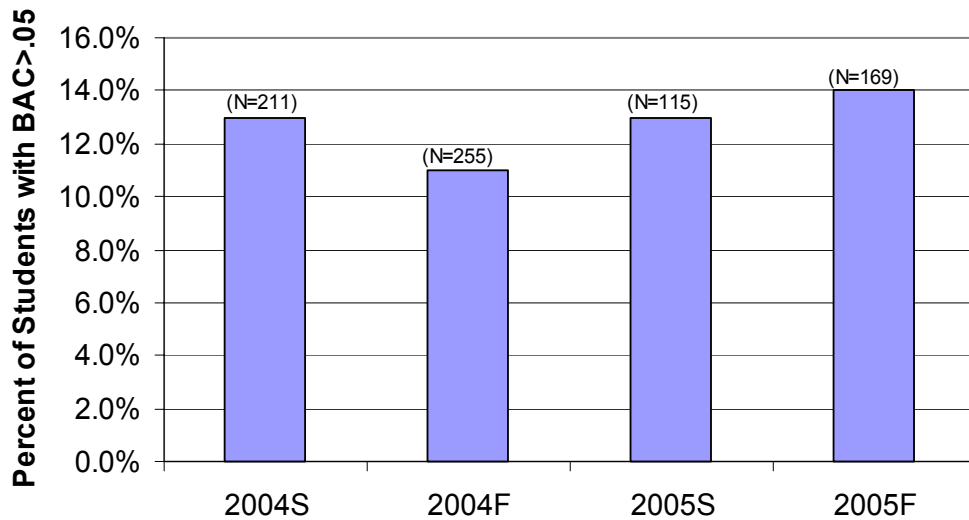
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Using BAC results to monitor changes in campus environment

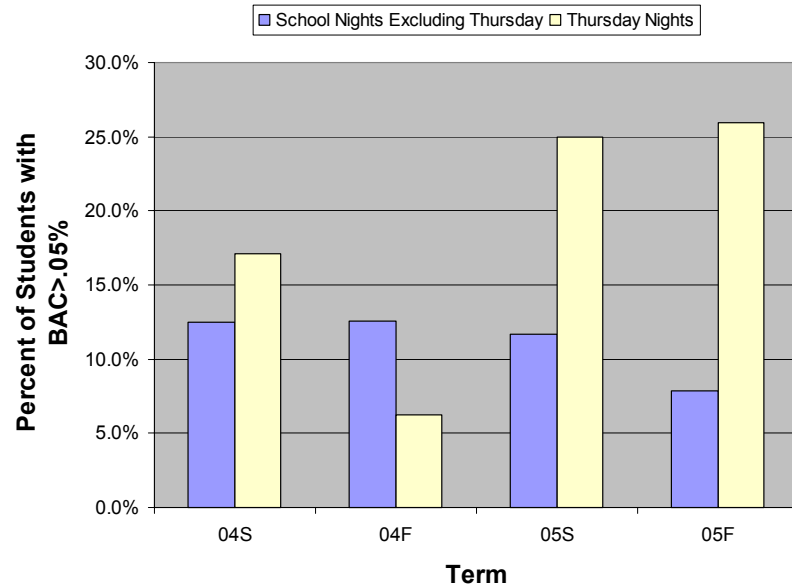
1. What is the explanation for variations in school night drinking?

2. Note the variability in Thursday night drinking compared to the aggregate for all other school nights. No other night has this degree of variation across these terms. Note also the correspondence of terms with lower risk on Thursday to the terms with lower risk on the left.

Higher Risk (BAC>.05%) Alcohol Consumption on School Nights (S,M,T,W,R)

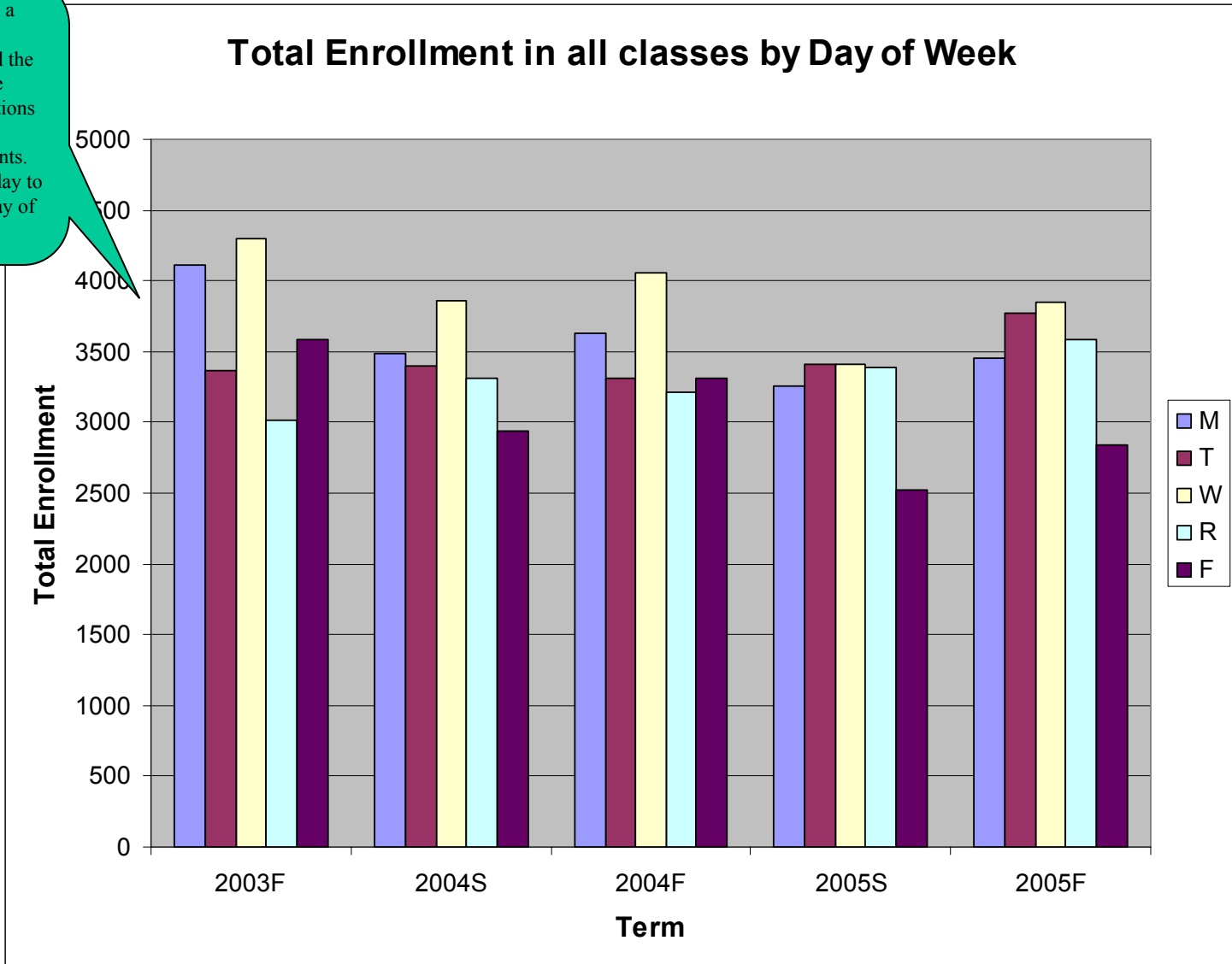


School Night Drinking Patterns



Change in Academic Environment?

A recent change from a term calendar to a semester calendar and the addition of alternative course scheduling options has created a shift in Friday class enrollments. Note the shift for Friday to the lowest enrolled day of the week over time.



How well does Friday course enrollments predict Thursday night drinking?

