

Estimation of BAC

Calculation of BAC for inexperienced drinkers – The American Happy Hour Experience

		DC	WP
Weight lb		208	192
Frac H2O		0.58	0.58
Drinks	Time (hr)	BAC	BAC
1	0.25	0.018	0.019
2	0.5	0.035	0.039
3	0.75	0.053	0.058

In experiment, subjects drink 1.5oz shots of 80proof vodka on 15min intervals, measuring BAC 15min after each dose of alcohol.

$$BAC(\%) = \frac{\text{number of drinks} \times .54\text{oz} \frac{\text{etoh}}{\text{drink}} \times 23.36 \frac{\text{g}}{\text{oz}} \times .806 \frac{\text{mL water}}{\text{mL blood}} \times 100(\text{for } \%) - MR \times \text{hr drinking}}{\frac{\text{weight}(\text{lb})}{2.2046 \text{ lb/kg}} \times (.49 \text{ (females) or } .58(\text{males})) \frac{\text{kg water}}{\text{kg body}} \times \frac{1 \text{ L water}}{1 \text{ kg water}} \times \frac{1000\text{mL}}{1 \text{ L}}}$$

Ref: National Highway traffic Safety Administration

*MR=.017 BAC/hr
or .02 if >60 dr/month

Negative consequences due to drinking in 2014-2015

Negative consequences due to last drinking occasion	BAC Level		
	low (<.05)	moderate (.05-.079)	high (.08+)
Physical injury to self	1%	3%	10%
Physical injury to others	0%	1%	2%
Fighting	0%	3%	4%
Negative reaction from others	1%	8%	8%
Damage to property	1%	0%	5%
Cutting class	1%	3%	3%
Inefficiency in studies	3%	1%	5%
Late papers, missed exams	1%	0%	1%
Damaged relationships	1%	3%	5%
Impaired driving	1%	0%	2%
Intimacy not desired by other person	1%	0%	1%
Sexually active but would not have chose	2%	4%	7%
Unprotected intercourse	2%	3%	5%
Blackouts	3%	8%	20%
Missed athletic events	0%	0%	2%
Consequence on last drinking occasion	9%	21%	37%

Source: 2015 spring survey of all HWS students with 879 responding.

Alcohol and Traffic Fatalities

- Traffic Crashes are leading cause of death for <40 yo
- 10,076 were killed in alcohol related crashes in 2013 (30.8 percent of overall driving fatalities).
- 1989 Years of Potential Life Lost
 - men 470,000
 - women 139,960
- Modeling Predicts 47% reduction in traffic fatalities with elimination of alcohol from roadways

Table 3
Total and Alcohol-Impaired (AI) Driving Fatalities*

	2012	2013	Change	% Change
Total Fatalities	33,782	32,719	-1,063	-3.1%
AI-Driving Fatalities	10,336	10,076	-260	-2.5%

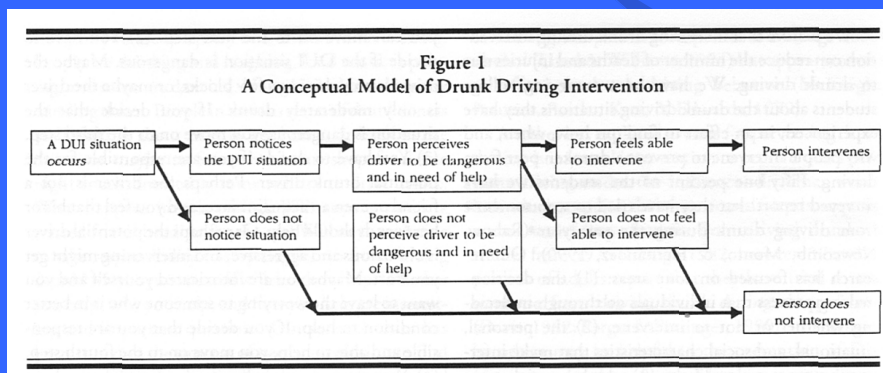
Alcohol-Impaired Drivers in Fatal Crashes by Vehicle Type

Passenger Car	4,129	4,062	-67	-1.6%
Light Truck - Van	253	253	0	0.0%
Light Truck - Utility	1,482	1,414	-68	-4.6%
Light Truck - Pickup	1,919	1,902	-17	-0.9%
Motorcycles	1,413	1,296	-117	-8.3%
Large Trucks	78	92	+14	+18%

Source: FARS 2012 (Final), 2013 (ARF)
*See definition in text.

[NHTSA 2013 Report](#)

Model for Intervention



Alcohol and Driving and Drinking in the Workplace discussion questions

- Describe the patterns of youth drinking and the relationship to youth crash involvement (193-195)
- How effective is enforcement and increased penalties; Education, Treatment and Rehabilitation; and Public Information and Education? (195-199)
- Describe the incidence and relative risk of abuse among health care workers (pp285-290)