



Alcoholic Energy Drinks

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About The Project

About Alcoholic Energy Drinks

- Any beverage that contains both caffeine and alcohol
- Recent concern over the safety of using alcohol and caffeine in combination
- FDA ban on manufacturing of beverages containing caffeine & alcohol

Motivation

- No prior research about safety or usage for products like Four Loko, or Joose
- Products like Redbull/Vodkas are still legal for consumption
- Asses college student's opinion of alcoholic energy drinks
 - Did widespread concern/ban have an affect on their opinions?

Questionnaire



3 Kinds of Questions

- Demographic
- Drinking Habits
- Attitude towards Alcoholic Energy Drinks

Demographic Questions

- Age
- University
- Gender
- Greek-life Affiliation

Drinking Habits

- Frequency
- Blackouts
- Alcohol and Energy Drinks

Attitudes towards Alcoholic Energy Drinks

- Motivation
- Attitude towards removal of caffeine from Four Loko
- Health Risks of Alcoholic Energy Drinks



Estimated Sample Size

Initial Sample Size Calculation

- Survey consists of primarily yes/no questions
 - Bernoulli distribution

$$SD_{\text{Worst Case Scenario}} = \sqrt{(.5)(1 - .5)} = .5$$

- May be difficult to receive a large sample size
 - Other surveys, refusal to respond, etc.
 - 90% Confidence Interval
 - .05 Margin of Error

Initial Sample Size Calculation (Contd.)

- Calculate n_0 as follows:

$$n_0 = \frac{(z_{\alpha/2})^2 (SD)^2}{(ME)^2} \longrightarrow n_0 = \frac{(1.645)^2 (.5)^2}{(.05)^2} \longrightarrow n_0 = 270.6025$$

- SRS Without Replacement (Assumption)

$$\square N_{CMU} = 5,705, N_{Pitt.} = 18,031: N_{Total} = 23,736$$

$$n \geq \frac{N_{Total} n_0}{N_{Total} + n_0} \longrightarrow n \geq \frac{(23,736)(270.6025)}{(23,736) + (270.6025)} \longrightarrow n \geq 267.5522678$$

Stratified Sample Size Calculation

- Two main strata: CMU & Pitt.
- Optimal Allocation
 - Resulting margin of error should match up with CI
 - Trial & error using function
 - N = overall sample, Z = Z-score for corresponding CI

```
Margin.Of.Error = function(N, Z) {  
  CMU=Z*sqrt(((5705/23736)^2)*(1-((N/2)/5705))*(.25/(N/2)))  
  PITT=Z*sqrt(((18031/23736)^2)*(1-((N/2)/18031))*(.25/(N/2)))  
  MOE=CMU+PITT  
  return(MOE)  
}
```

Stratified Sample Size Calculation (Contd.)

Confidence Interval	Margin of Error	Z-Score	Margin.Of.Error() Output	<i>n</i>
90%	.05	1.64485	.050001	529
85%	.075	1.43953	.07516184	182
82.5%	.0875	1.35631	.08769576	119
80%	.1	1.28155	.1005161	81

- Compare to $n = 268$ (SRS without replacement)

Problems With Sample Size

- No pilot study
 - Worst case scenario assumptions
- Response rate
 - Penalty for how many people to ask
 - Example: $n = 268, r = .5 \longrightarrow n_{Penalty} = 268/.5 = 536$
- Allocation among strata
 - Proportionate sampling
 - By strata size
 - By strata standard deviation
 - Sub-strata locations
- Cumbersome trial & error



Foreseeable Problems/Successes

Foreseeable Problems

- Response Rate
 - Rate could be much lower than anticipated
- Inaccurate Responses
 - Underage students uncomfortable
- Non-Representative Sample
 - One or more groups are under-reported

Foreseeable Successes

- Nice Weather
 - Students in better mood and more people are out
- Determine Different Views
 - CMU and Pitt students
 - Greek and Non-Greek
- Accurate Analysis
 - Lower response rate but still enough to have accurate results



Future Work

Future Work

- Implement survey
 - Three times a week
 - Paper Surveys, Clipboards, Manila Envelope for anonymity
 - On both campuses
- Weekly analysis
 - Representativeness
 - Enter data together- data entry error
- Analyze results
 - Descriptive Statistics
 - Mainly use ANOVA

Conclusion

- Understand student's attitudes towards alcoholic energy drinks
- Possibly give report to SHS
 - Awareness
 - Preparedness



Questions?