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

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

- 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_o 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)
  - $N_{CMU} = 5{,}705, N_{Pitt.} = 18{,}031: N_{Total} = 23{,}736$

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

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	n
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?