Drinking Excess Alcohol Is Dangerous (D.E.A.D)

Business Solutions

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UNDERSTANDING THE PROBLEM

GOAL

Make alcohol culture safer in Iowa

OBJECTIVE

Analyze patterns in alcohol sales to understand what factors drive higher or lower alcohol purchases

UNDERSTANDING THE DATA

IOWA LIQUORS SALES

- Purchase information for Iowa Class “E” liquor licenses on a store level
  - Provided by the Iowa Department of Revenue, Alcoholic Beverages section

HOLIDAYS

- Information about government-designated holidays
  - To see if stores purchased alcohol within 10 days before a holiday

IOWA CITY

- Information about the populations for different cities in Iowa
  - To measure the size of a city’s population and group cities in to population brackets

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METHOD

RESPONSE VARIABLE

- **Volume of alcohol (gallons) ordered**
  - Looked at the total volume of alcohol a store ordered for a each unique city and date combination

MODEL GOAL

- Focused on what variables are contributing more to the average change in volumes of alcohol ordered by stores

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RESULTS

ABOUT THE MODEL

Variables: population bracket, season, day of the week, major college town, holidays

Most Important Coefficients:

College Town	Holiday	Day of Week		Season
		Sunday	**Thursday**	**Winter**
-186.59	20.02	-494.5	167.86	-12.77

Comparing Types of Alcohol: Whiskey, Vodka, Tequila

College Town

Whiskey and **vodka** are associated with a **higher** expected total volume of liquor ordered compared to **tequila**

Holiday

Whiskey and **vodka** are associated with a **higher** expected total volume of liquor ordered compared to **tequila**

Season

Spring and Winter:

- **Whiskey** is associated with **positive change** in expected total volume of liquor ordered
- **Tequila** and **vodka** are associated with a **negative change** in expected total volume of liquor ordered

Day of the Week

Monday and Tuesday:

- Expected change in mean total volume of alcohol ordered is **negative** regardless of the type of alcohol

Saturday:

- Largest **positive change** in mean volume regardless of type of alcohol

Population Brackets

Highest Population Bracket:

- **Tequila** and **vodka** are associated with **positive changes** in mean predicted total volume of liquor ordered
- **Whiskey** is associated with a **negative change** in expected total alcohol volume of liquor ordered

CONCLUSIONS

- Stores in college towns are, surprisingly, associated with decreases in expected total alcohol volume purchased compared to non college towns, holding other variables in the model constant
- Thursday orders are associated with increases in predicted total volume of alcohol purchased while Sundays are associated with decreases in predicted total volume purchased
- Winter purchases are associated with decreases in total volume purchased relative to other seasons

Note: These conclusions are *theories* of relationships between two or more variables holding other predictors constant, not conclusions of cause and effect. There could be variables in which their relationship with total volume of alcohol purchased depends on the value of the third variable.

CONCLUSIONS

- Stores in college towns are, surprisingly, associated with decreases in expected total alcohol volume purchased compared to non college towns, holding other variables in the model constant
- Thursday orders are associated with increases in predicted total volume of alcohol purchased while Sundays are associated with decreases in predicted total volume purchased
- Winter purchases are associated with decreases in total volume purchased relative to other seasons
- Vast differences in mean change for a given explanatory variable can be different depending on the type of alcohol data used in a model

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THANK YOU

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