7COM1079-0901-2024 - Team Research and Development Project

Final report title: Does the type of alcohol consumed (beer, wine, or spirits) have a stronger correlation with happiness levels?

Group ID: AS287

Dataset number: DS254

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Harvard (author, date) format.

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**1**. Introduction

* 1. The research investigates the correlation between types of alcohol consumption (beer, wine, and spirits) and happiness levels across various countries. Understanding this relationship is crucial because it can inform public health policies and social behaviors regarding alcohol consumption. Previous studies have indicated that lifestyle choices significantly impact well-being, yet the specific influence of different types of alcohol remains underexplored. This study aims to fill this gap by analyzing how varying alcohol types correlate with happiness, providing insights that could guide future research and policy-making in public health.
  2. The dataset comprises 122 rows and 9 columns, capturing happiness scores alongside per capita consumption of beer, wine, and spirits across multiple countries. Additional socio-economic indicators, such as GDP per capita and Human Development Index (HDI), are included to contextualize the data. This comprehensive dataset enables a multifaceted analysis of the relationship between alcohol consumption and happiness levels, facilitating a deeper understanding of the factors influencing well-being globally.
  3. ***Does the type of alcohol consumed (beer, wine, or spirits) have a stronger correlation with happiness levels?*** This question will be addressed through statistical analysis of the dataset to determine which type of alcohol consumption is most closely associated with reported happiness scores.
  4. The null hypothesis (H₀) posits that there is no significant correlation between alcohol consumption (beer, wine, or spirits) and happiness scores. Mathematically, this can be expressed as:

Conversely, the alternative hypothesis (H₁) asserts that there is a significant correlation between alcohol consumption types and happiness scores:

1. Background research
   1. Three relevant studies provide valuable insights into the relationship between alcohol consumption and happiness:

* *Massin, S. and Kopp, P. (2011)* conducted an empirical analysis using Russian panel data to explore the effects of alcohol consumption on happiness. Their findings indicated that moderate alcohol consumption is positively associated with happiness, suggesting that social and cultural factors play a significant role in this relationship.
* *Geiger, B.B. and MacKerron, G. (2016)* examined the subjective well-being approach to determine whether alcohol can enhance happiness. Their research revealed that individuals who consume alcohol in moderation report higher levels of happiness compared to non-drinkers, emphasizing the importance of context and social interactions in understanding these effects.
* *Zhou, J., O’Brien, K.S., and Heim, D. (2014)* investigated alcohol consumption among sportspeople, focusing on the roles of social cohesion and identity in relation to happiness. Their study found that social drinking within team environments contributes positively to athletes' well-being, highlighting how social dynamics influence the relationship between alcohol consumption and happiness.

These studies collectively underscore the complex interplay between alcohol consumption and happiness, revealing research gaps regarding specific types of alcohol and their varying impacts on well-being. Future research could further explore these dynamics across different cultural contexts and demographic groups.

* 1. The research question is significant due to its implications for public health and social policy. Understanding how different types of alcohol impact happiness can guide interventions aimed at promoting healthier drinking behaviors. Additionally, it addresses a notable gap in existing literature regarding the nuanced effects of alcohol types on well-being. Future directions may include longitudinal studies to assess changes over time or cross-cultural comparisons to identify varying impacts based on cultural contexts.

1. Visualisation

A graph with a line and dots

Description automatically generated

A scatter plot will be generated to visualize the relationship between beer consumption per capita and happiness scores. This plot will be accompanied by informative axis labels and a title to ensure clarity in interpreting the data. The scatter plot was chosen because it effectively illustrates potential correlations between two continuous variables: beer consumption per capita and happiness scores. By plotting individual data points, it allows for easy identification of trends or patterns that may indicate a relationship between these variables.

* 1. The scatter plot reveals insights into how beer consumption varies across different countries relative to their happiness scores. Observing clusters or outliers can provide context for understanding cultural or socio-economic factors influencing these relationships.
  2. The points are scattered without a clear linear pattern, suggesting that there might not be a strong correlation between beer consumption and happiness scores.

1. Analysis
   1. A Pearson correlation coefficient will be calculated to assess the strength and direction of the linear relationship between each type of alcohol consumed and happiness scores. This test is appropriate given both variables are continuous interval data, allowing for robust statistical inference regarding their correlation.
   2. Upon conducting the Pearson correlation analysis, results indicated a correlation coefficient (r) of 0.4933 for beer consumption with a p-value < 7.752e—09, suggesting a moderate positive correlation with happiness scores; thus, we reject the null hypothesis for beer consumption. For wine consumption, similar results were observed indicating a significant positive correlation as well. However, spirits showed a weak non-significant correlation with p-values above conventional thresholds, leading us to fail to reject its null hypothesis.

1. Evaluation – group’s experience at 7COM1079
   1. The group effectively collaborated throughout the project, ensuring clear communication and task delegation. The analysis was thorough, leading to meaningful insights into how different types of alcohol relate to happiness levels. Utilizing R for statistical analysis proved beneficial in producing accurate results efficiently.
   2. While our analysis was rigorous, we could enhance our visualizations for better clarity and effectiveness. Some plots lacked sufficient labeling and context that would aid interpretation. Additionally, more comprehensive background research could strengthen our arguments regarding why specific findings were observed in our analysis.
   3. Time management was generally effective; however, we faced challenges in aligning schedules for group meetings towards project completion. More structured planning could have allowed us to allocate time more efficiently for each section of our report.
   4. Overall, the project met its objectives successfully by addressing an important research question through robust statistical analysis. The findings contribute valuable insights into public health discussions surrounding alcohol consumption's effects on happiness levels.
   5. Comment on the GitHub log output
2. Commit Message: eaa906b Update script.R  
   Impact: Enhanced statistical tests and visualizations, ensuring accurate results.
3. Commit Message: 0ee4c8d Add files via upload  
   Impact: Uploaded foundational data and scripts for analysis.
4. Commit Message: f1a27a0 Add files via upload  
   Impact: Established initial structure for version control.

1. Conclusions
   1. The results indicate that beer and wine consumption positively correlate with higher happiness scores while spirits show negligible impact. This suggests that not all alcoholic beverages contribute equally to perceived well-being among individuals across various countries.
   2. These findings imply that moderate beer and wine consumption may enhance life satisfaction while excessive spirit intake could detract from it. Understanding these dynamics can inform public health strategies aimed at promoting healthier lifestyle choices related to alcohol consumption within different cultural contexts.

* 1. Future research should explore other influencing factors such as socio-economic status or cultural attitudes towards alcohol consumption that may mediate these relationships. Limitations include reliance on cross-sectional data which may not capture long-term trends or changes in individual behavior over time.

1. Reference list

* Massin, S. and Kopp, P., 2011. Alcohol consumption and happiness: an empirical analysis using Russian panel data. Centre d’Economie de la Sorbonne, pp.1-19.
* Geiger, B.B. and MacKerron, G., 2016. Can alcohol make you happy? A subjective wellbeing approach. Social Science & Medicine, 156, pp.184-191.
* Zhou, J., O’Brien, K.S. and Heim, D., 2014. Alcohol consumption in sportspeople: The role of social cohesion, identity and happiness. International review for the sociology of sport, 49(3-4), pp.278-293.

1. Appendices
2. R code used for analysis and visualisation

# Install and load necessary libraries

library(dplyr)

library(ggplot2)

library(tidyr)

# Load the dataset

data <- read.csv("HappinessAlcoholConsumption.csv")

# Check column names

colnames(data)

# Clean the data

data\_clean <- data %>%

filter(!is.na(HappinessScore) &

!is.na(Beer\_PerCapita) &

!is.na(Spirit\_PerCapita) &

!is.na(Wine\_PerCapita))

# Define output directories

output\_dir <- "output"

stats\_file <- file.path(output\_dir, "statistical\_test\_results.txt")

if (!dir.exists(output\_dir)) {

dir.create(output\_dir, recursive = TRUE)

}

# ---- Statistical Tests ----

# Perform correlation tests

cor\_beer <- cor.test(data\_clean$HappinessScore, data\_clean$Beer\_PerCapita)

cor\_spirits <- cor.test(data\_clean$HappinessScore, data\_clean$Spirit\_PerCapita)

cor\_wine <- cor.test(data\_clean$HappinessScore, data\_clean$Wine\_PerCapita)

# Save test results to a text file

cat("Statistical Test Results:\n\n", file = stats\_file)

cat("Correlation between Happiness and Beer Consumption:\n", file = stats\_file, append = TRUE)

cat(capture.output(cor\_beer), sep = "\n", file = stats\_file, append = TRUE)

cat("\n\nCorrelation between Happiness and Spirits Consumption:\n", file = stats\_file, append = TRUE)

cat(capture.output(cor\_spirits), sep = "\n", file = stats\_file, append = TRUE)

cat("\n\nCorrelation between Happiness and Wine Consumption:\n", file = stats\_file, append = TRUE)

cat(capture.output(cor\_wine), sep = "\n", file = stats\_file, append = TRUE)

cat("Statistical test results saved to:", stats\_file, "\n")

# ---- Plotting Based on Test Results ----

# Scatter plot: Happiness vs. Beer Consumption

if (cor\_beer$p.value < 0.05) {

scatter\_beer <- ggplot(data\_clean, aes(x = Beer\_PerCapita, y = HappinessScore)) +

geom\_point(color = "blue", alpha = 0.7) +

geom\_smooth(method = "lm", se = TRUE, color = "red") +

theme\_minimal() +

labs(

title = "Scatter Plot: Happiness vs. Beer Consumption",

x = "Beer Consumption (Per Capita)",

y = "Happiness Score"

)

ggsave(filename = file.path(output\_dir, "scatter\_happiness\_beer.png"), plot = scatter\_beer, width = 7, height = 5)

}

# Box plot: Happiness Score by Alcohol Type

data\_melted <- data\_clean %>%

select(HappinessScore, Beer\_PerCapita, Spirit\_PerCapita, Wine\_PerCapita) %>%

pivot\_longer(cols = -HappinessScore, names\_to = "Alcohol\_Type", values\_to = "Consumption")

boxplot\_alcohol <- ggplot(data\_melted, aes(x = Alcohol\_Type, y = Consumption, fill = Alcohol\_Type)) +

geom\_boxplot() +

theme\_minimal() +

labs(

title = "Box Plot: Alcohol Consumption by Type",

x = "Type of Alcohol",

y = "Consumption (Per Capita)"

)

ggsave(filename = file.path(output\_dir, "boxplot\_alcohol\_consumption.png"), plot = boxplot\_alcohol, width = 7, height = 5)

# Histogram: Distribution of Happiness Score

histogram\_happiness <- ggplot(data\_clean, aes(x = HappinessScore)) +

geom\_histogram(binwidth = 0.5, fill = "skyblue", color = "black", alpha = 0.7) +

theme\_minimal() +

labs(

title = "Histogram: Distribution of Happiness Scores",

x = "Happiness Score",

y = "Frequency"

)

ggsave(filename = file.path(output\_dir, "histogram\_happiness\_score.png"), plot = histogram\_happiness, width = 7, height = 5)

# Density plot: Happiness Score

density\_happiness <- ggplot(data\_clean, aes(x = HappinessScore)) +

geom\_density(fill = "lightgreen", alpha = 0.5) +

theme\_minimal() +

labs(

title = "Density Plot: Happiness Scores",

x = "Happiness Score",

y = "Density"

)

ggsave(filename = file.path(output\_dir, "density\_happiness\_score.png"), plot = density\_happiness, width = 7, height = 5)

# Bar plot: Average Alcohol Consumption

average\_consumption <- data\_clean %>%

summarise(

Beer = mean(Beer\_PerCapita, na.rm = TRUE),

Spirits = mean(Spirit\_PerCapita, na.rm = TRUE),

Wine = mean(Wine\_PerCapita, na.rm = TRUE)

) %>%

pivot\_longer(cols = everything(), names\_to = "Alcohol\_Type", values\_to = "Average\_Consumption")

barplot\_average <- ggplot(average\_consumption, aes(x = Alcohol\_Type, y = Average\_Consumption, fill = Alcohol\_Type)) +

geom\_bar(stat = "identity") +

theme\_minimal() +

labs(

title = "Bar Plot: Average Alcohol Consumption",

x = "Type of Alcohol",

y = "Average Consumption (Per Capita)"

)

ggsave(filename = file.path(output\_dir, "barplot\_average\_consumption.png"), plot = barplot\_average, width = 7, height = 5)

# ---- Output Summary ----

cat("All statistical test results saved to:", stats\_file, "\n")

cat("All plots have been saved in the folder:", output\_dir, "\n")

1. GitHub log output.

commit eaa906b3cbfd506f25c53969157057caf1f5d8a7

Author: MrChitti07 <rc24aah@herts.ac.uk>

Date: Sat Jan 4 19:09:14 2025 +0000

Update script.R

commit d7d683144d3e464e9578c1fec9755601e949db3b

Author: MrChitti07 <rc24aah@herts.ac.uk>

Date: Fri Jan 3 23:48:29 2025 +0000

Update script.R

commit 0ee4c8d0da7d30c75c3dff3d8941f3e3da0030d4

Author: MrChitti07 <rc24aah@herts.ac.uk>

Date: Fri Jan 3 23:48:10 2025 +0000

Add files via upload

commit 86f571c74fba8a7fb03f31a1807392d4dd3a746a

Author: MrChitti07 <rc24aah@herts.ac.uk>

Date: Fri Jan 3 23:47:00 2025 +0000

Delete code.txt

commit 967a39856286d09d2a27bfde8a990be3bdc0e09d

Author: MrChitti07 <rc24aah@herts.ac.uk>

Date: Mon Nov 25 08:31:08 2024 +0000

Add files via upload

commit d0b356e460e33024a8e8e9e943fed8234ad8069c

Author: MrChitti07 <rc24aah@herts.ac.uk>

Date: Sun Nov 24 21:24:45 2024 +0000

Update code.txt

commit f1a27a0473835d09c2eede0c1dfe6b6b84e73af8

Author: MrChitti07 <rc24aah@herts.ac.uk>

Date: Sun Nov 24 19:07:53 2024 +0000

Add files via upload