Comparative Analysis of Coffee Habits Between Remote and In-Person Workers

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Executive Summary

Introduction

According to Scander et al. (2018), coffee is the second highest consumed beverage in volume, after water, in the world. No wonder it plays a central role in daily routines of workers all over the world, influencing both productivity and spending habits. According to Smith (2005), caffeine consumption enhances alertness, shortens reaction time, and improves mental clarity in the workspace. The working model shift to remote and hybrid work become increasingly common and so does the coffee consumption patterns by the working people. In a survey dataset published by James Hoffman, a pioneer of third wave coffee movement and a World Champion Barista, along with a coffee company Cometeer held a survey of around 4000 individuals about four coffees and where coffee drinkers were asked about their demographics, coffee drinking habits, coffee taste preferences, and their spending habits, which according to "State of Hybrid Work 2024 | US Report" (n.d.) could be approximately 25% of total spending in a working day! Through this survey data, this report explores how working location influences daily coffee consumption, monthly coffee spends, and consumer's willingness to splurge

on premium brews. By comparing different behaviours we can provide insights into shift in consumer habits in the coffee industry.

Methodology

The survey categorizes respondents into three groups: those who work from home, those who work in an office, and those with a hybrid work arrangement. Using a questionnaire format, the survey focuses on participants' coffee consumption habits.

```
library(ggplot2)
library(readr)
library(tidyverse)
library(patchwork)
library(knitr)
```

```
coffee_survey <- read_csv(here::here("data/coffee_survey.csv"))

coffee_survey_selected <- coffee_survey %>%
  select("submission_id", "wfh", "cups", "total_spend", "most_paid") %>%
  mutate(wfh = recode(wfh, "I do a mix of both" = "both",
                      "I primarily work from home" = "remote",
                      "I primarily work in person" = "in_person"))
```

```
work_mode_summary <- coffee_survey_selected %>%
  filter(!is.na(wfh)) %>%
  count(wfh) %>%
  mutate(work_mode = wfh,
         proportion = scales::percent(n/sum(n))) %>%
  select(work_mode, n, proportion)

knitr::kable(work_mode_summary)
```

Table 1: Proportion of Participants by Work Mode

work_mode	n	proportion
both	883	25.1%
in_person	1049	29.8%
remote	1592	45.2%

Table 1 is used to show the number of people in each group, and calculate the percentage of them within the total sample. So that we can compare the proportion of different groups.

```r
cup_sum <- coffee_survey_selected %>%
  filter(!is.na(cups), !is.na(wfh)) %>%
  count(cups, wfh) %>%
  mutate(cups = factor(
    cups,
    levels = c("Less than 1", "1", "2", "3", "4", "More than 4"))
    )

p1 <- cup_sum %>%
  ggplot(aes(x = cups, y = n, fill = wfh)) +
  geom_col(position = "dodge", width = 0.6) +
  labs(
    title = "Cups of coffee per day",
    x = "Cups",
    y = "Number of people",
    fill = "Work Mode") +
  theme_minimal()

total_spend_sum <- coffee_survey_selected %>%
  filter(!is.na(total_spend), !is.na(wfh)) %>%
  count(total_spend, wfh) %>%
  mutate(total_spend = factor(
    total_spend, levels = c(
      "<$20", "$20-$40", "$40-$60", "$60-$80", "$80-$100", ">$100"))
    )

p2 <- total_spend_sum %>%
  ggplot(aes(x = total_spend, y = n, fill = wfh)) +
  geom_col(position = "dodge", width = 0.6) +
  labs(
    title = "Money spent on coffee per month",
    x = "Spending Range", y = "Number of People", fill = "Work Mode"
    ) +
  theme_minimal()

most_paid_sum <- coffee_survey_selected %>%
  filter(!is.na(most_paid), !is.na(wfh)) %>%
  count(most_paid, wfh) %>%
  mutate(most_paid = factor(most_paid, levels = c(
    "Less than $2", "$2-$4", "$4-$6", "$6-$8", "$8-$10",
    "$10-$15", "$15-$20", "More than $20"))
    )
```

```
p3 <- most_paid_sum %>%
  ggplot(aes(x = most_paid, y = n, fill = wfh)) +
  geom_col(position = "dodge", width = 0.6) +
  labs(title = "Maximum Price Paid for a Cup of Coffee",
       x = "Spending Range", y = "Number of People", fill = "Work Mode"
       ) +
  theme_minimal()
```

```
p1 <- p1 + theme(axis.text.x = element_text(angle = 45, hjust = 1))
p2 <- p2 + theme(axis.text.x = element_text(angle = 45, hjust = 1))
p3 <- p3 + theme(axis.text.x = element_text(angle = 45, hjust = 1))

combined <- (p1 | p2) / (p3 | patchwork::plot_spacer())

ggsave("combined_plot.png", combined, width = 14, height = 10)

knitr::include_graphics("combined_plot.png")
```

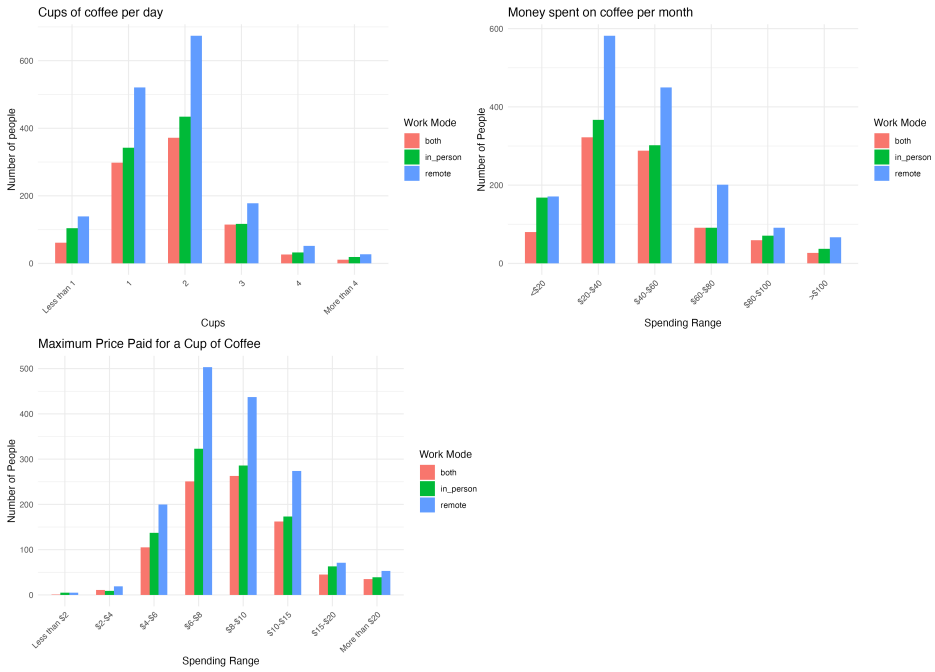

Figure 1: Research results

According to Figure 1 , we can make comparisons across the three groups, showing their daily

coffee consumption, monthly coffee spending, and the maximum price paid for a cup of coffee. This allows us to observe respondents' preferences and behavior regarding coffee consumption. Building on these insights, we can further apply cluster analysis to categorize consumers into different types, which helps us draw more conclusions.

Results

Table 1 shows that among the survey participants, the proportion of people working from home is significant, reaching 45.2%. From Figure 1, it shows that the preferences for coffee prices are roughly the same for different working methods, and people who drink two cups of coffee a day also account for the highest proportion in both groups. However, the average coffee consumption of people working from home tends to be higher than that of people working in the office. Most respondents spend $20 to $50 on coffee per month. Regardless of the working environment, there are few people who spend less than $20 or more than $100 per month.

```
library(cluster)
library(factoextra)
```

```
clean_data <- coffee_survey_selected %>%
  drop_na()
wfh_data <- clean_data %>%
  mutate(
    cups_numeric = case_when(
      cups == "Less than 1" ~ 0.5,
      cups == "1" ~ 1,
      cups == "2" ~ 2,
      cups == "3" ~ 3,
      cups == "4" ~ 4,
      cups == "More than 4" ~ 5,
      TRUE ~ as.numeric(NA)
    ),
    total_spend_numeric = case_when(
      total_spend == "<$20" ~ 10,
      total_spend == "$20-$40" ~ 30,
      total_spend == "$40-$60" ~ 50,
      total_spend == "$60-$80" ~ 70,
      total_spend == "$80-$100" ~ 90,
      total_spend == ">$100" ~ 110,
      TRUE ~ as.numeric(NA)
    )
  ) %>%
```

```
  filter(wfh == "remote")
wfh_cluster_data <- wfh_data %>%
  select(cups_numeric, total_spend_numeric) %>%
  na.omit() %>%
  scale()
set.seed(123)
wfh_kmeans <- kmeans(wfh_cluster_data, centers = 3, nstart = 25)
```

```
fviz_cluster(wfh_kmeans, data = wfh_cluster_data,
             geom = "point",
             ellipse.type = "convex",
             ggtheme = theme_minimal(),
             main = "Cluster Visualization: Work from Home Group")
```

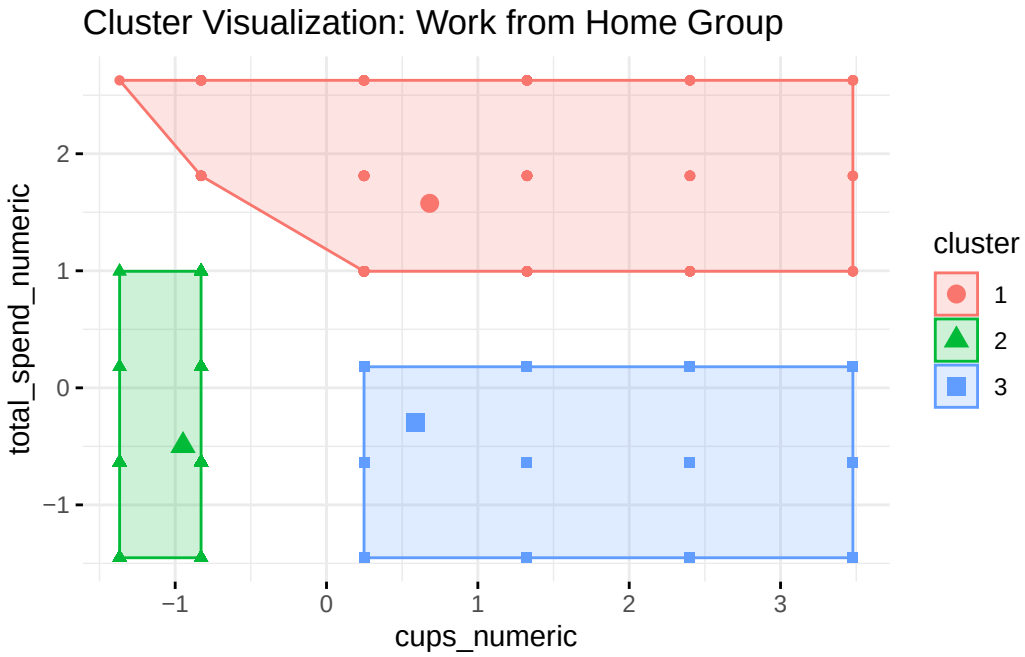

Figure 2: Cluster Visualization: Work from Home Group

Further research on the daily coffee intake and monthly consumption of people working from home can be divided into three groups: high consumption and high intake, low consumption, and conflicting groups. From Figure 2 , it shows that nearly half of the people working from home are high consumption and high intake groups, indicating that this office style is more dependent on coffee and also pursues the quality of coffee.

Conclusion

Discussion

This study explores the relationship between work modes (working from home, working in person and hybrid working) and coffee consumption behaviors (daily intake, monthly expenditure and maximum expenditure). The results show that different groups have similar preferences in coffee consumption and price. However, the remote working group has relatively higher consumption, which also reflects differences in lifestyle, such as the convenience of brewing coffee for people working from home.

Cluster analysis shows the coffee consumption behaviors of different groups about people working from home. High consumption accounting for the majority reflects requirements for coffee quality. However, due to limitations like accuracy, other relevant variables need to be introduced for in-depth investigation.

Conclusin

Overall, the research finds that remote workers not only make up the largest proportion but also tend to consume more coffee and spend more on it monthly and most individuals drink two cups per day. Clustering of remote workers further highlights a substantial group characterized by both high coffee intake and high spending, suggesting a stronger reliance on and appreciation for coffee among those who work from home.

Recommendations

1. Implement health education initiatives to raise awareness about the potential risks of excessive coffee consumption and to encourage healthier consumption patterns. For example, the company could offer alternative beverages such as tea and herbal infusions.
2. Expand the dataset by incorporating additional relevant variables like age and income level, and conduct qualitative analysis to identify the driving factors of high coffee consumption behavior under the same office mode.

Scander, Henrik, Celia Monteagudo, Bente Nilsen, Richard Tellström, and Agneta Yngve. 2018. "Beverage Consumption Patterns and Energy Contribution from Beverages Per Meal Type: Results from a National Dietary Survey in Sweden." *Public Health Nutr.* 21 (18): 3318–27. https://doi.org/10.1017/S1368980018002537.

Smith, Andrew P. 2005. "Caffeine at Work." *Hum Psychopharmacol* 20 (6): 441–45. https://doi.org/10.1002/hup.705.

"State of Hybrid Work 2024 | US Report." n.d. Owl Labs. Accessed May 24, 2025.