Gaming Headset Sales Analysis: Single-Person Households

Correlation Between Living Alone and Gaming Headset Sales in Swiss Cantons

1 Executive Summary

This analysis investigates the correlation between the proportion of single-person households and gaming headset sales in Swiss cantons.

Research question: Is there a correlation between single-person household rates and per-capita gaming headset sales?

Hypothesis: The higher the proportion of people living alone, the higher the demand for gaming headsets.

2 1. Data & Method

We analyze sales data from Digitec Galaxus for gaming headsets and compare them with single-person household rates across Swiss cantons.

Data sources: - Gaming headset sales by canton (Digitec Galaxus) - Single-person household rates and population by canton (Einpersonenhaushalt.csv)

Method: Pearson correlation between single-person household percentage and sales per 5,000 residents.

3 2. Data Preparation

```r
# Load packages
library(tidyverse)
library(readr)
library(ggplot2)
library(knitr)
library(corrplot)

options(scipen = 999)
theme_set(theme_minimal())


# Load household data
household_data <- read_delim("Einpersonenhaushalt.csv",
                             delim = ";",
                             locale = locale(encoding = "UTF-8"))

# Rename columns for easier handling
colnames(household_data) <- c("Canton_ID", "Canton", "Single_Household_Pct", "Population")

# Load sales data
sales_data <- read_csv("DigitecLive_Cleaned.csv",
                       locale = locale(encoding = "UTF-8"))

kable(household_data,
      digits = 1,
      format.args = list(big.mark = "'"),
      caption = "Single-Person Household Rates by Canton")
```

Table 1: Single-Person Household Rates by Canton

Canton_ID	Canton	Single_Household_Pct	Population
1	Zürich	37.2	1'620'020
10	Freiburg	33.8	346'674
11	Solothurn	36.3	289'792
12	Basel-Stadt	47.8	201'384
13	Basel-Landschaft	35.2	301'323
14	Schaffhausen	38.7	88'667
15	Appenzell Ausserrhoden	35.8	56'705
16	Appenzell Innerrhoden	32.1	16'733
17	St. Gallen	36.2	540'036
18	Graubünden	39.9	206'138
19	Aargau	33.4	735'808

Canton_ID	Canton	Single_Household_Pct	Population
2	Bern	38.5	1'071'216
20	Thurgau	34.5	299'509
21	Tessin	42.1	358'903
22	Waadt	38.4	855'106
23	Wallis	38.6	371'288
24	Neuenburg	42.2	179'518
25	Genf	38.0	531'102
26	Jura	39.0	74'840
3	Luzern	35.1	437'944
4	Uri	34.1	38'275
5	Schwyz	33.6	168'931
6	Obwalden	34.0	39'662
7	Nidwalden	34.3	45'345
8	Glarus	37.1	42'371
9	Zug	32.4	133'739

```r
# Filter for gaming headsets
# Search for gaming headsets in categories and product names
gaming_headset_keywords <- c("gaming.*headset", "gaming.*kopfhörer", "gaming.*kopfhoerer")
pattern <- paste(gaming_headset_keywords, collapse = "|")

gaming_sales <- sales_data %>%
  filter(
    str_detect(tolower(`infos.Category`), pattern) |
    str_detect(tolower(fullProductName), pattern)
  )

# Get unique cantons from sales data
cat(sprintf("Total gaming headset sales: %d\n", nrow(gaming_sales)))
```

```
Total gaming headset sales: 1076
```

```r
cat(sprintf("Unique cantons in sales data: %d\n",
            length(unique(gaming_sales$canton))))
```

```
Unique cantons in sales data: 26
```

4 3. Results

```
# Aggregate sales by canton
sales_by_canton <- gaming_sales %>%
  group_by(canton) %>%
  summarise(Total_Sales = n(), .groups = 'drop') %>%
  rename(Canton = canton)

# Merge with household data
# Map canton abbreviations to full names
canton_mapping <- c(
  "ZH" = "Zürich", "BE" = "Bern", "LU" = "Luzern", "UR" = "Uri",
  "SZ" = "Schwyz", "OW" = "Obwalden", "NW" = "Nidwalden", "GL" = "Glarus",
  "ZG" = "Zug", "FR" = "Freiburg", "SO" = "Solothurn", "BS" = "Basel-Stadt",
  "BL" = "Basel-Landschaft", "SH" = "Schaffhausen", "AR" = "Appenzell Ausserrhoden",
  "AI" = "Appenzell Innerrhoden", "SG" = "St. Gallen", "GR" = "Graubünden",
  "AG" = "Aargau", "TG" = "Thurgau", "TI" = "Tessin", "VD" = "Waadt",
  "VS" = "Wallis", "NE" = "Neuenburg", "GE" = "Genf", "JU" = "Jura"
)

sales_by_canton <- sales_by_canton %>%
  mutate(Canton_Full = canton_mapping[Canton])

analysis_data <- household_data %>%
  left_join(sales_by_canton, by = c("Canton" = "Canton_Full")) %>%
  filter(!is.na(Total_Sales)) %>%
  mutate(Sales_per_5k = (Total_Sales / Population) * 5000)

kable(analysis_data %>%
        select(Canton, Single_Household_Pct, Population, Sales_per_5k) %>%
        arrange(desc(Single_Household_Pct)),
      digits = 2,
      format.args = list(big.mark = "'"),
      col.names = c("Canton", "Single HH %", "Population", "Sales per 5k"),
      caption = "Gaming Headset Sales per 5,000 Residents by Canton")
```
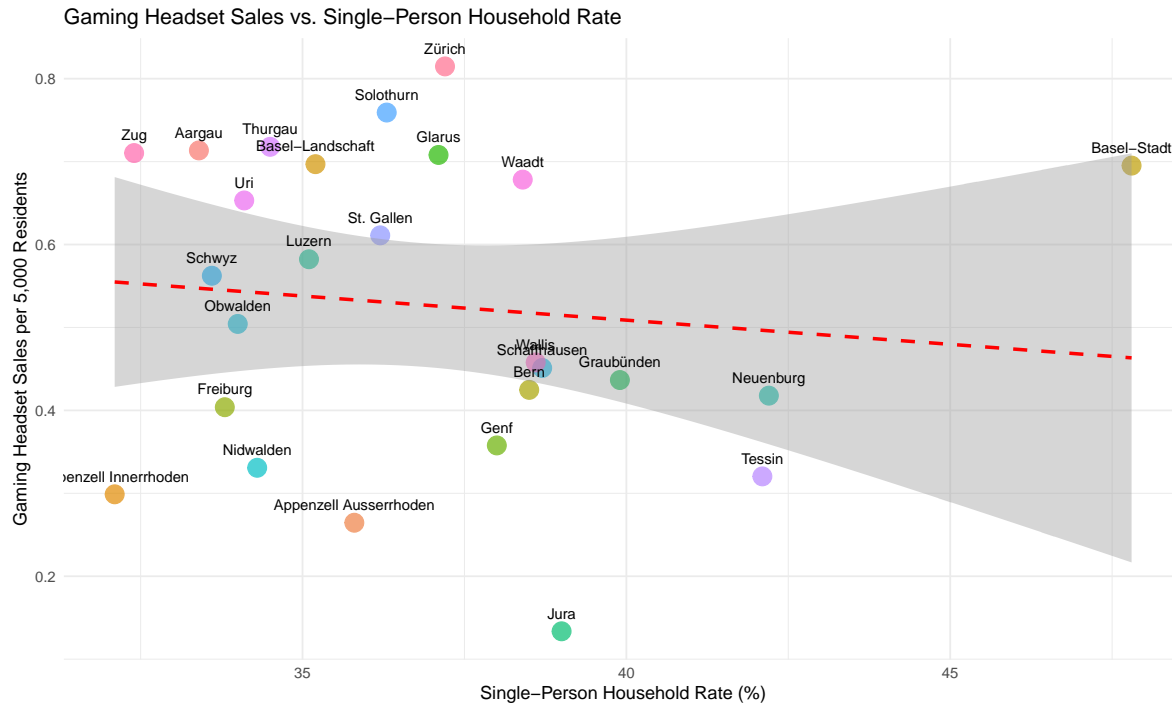
Table 2: Gaming Headset Sales per 5,000 Residents by Canton

Canton	Single HH %	Population	Sales per 5k
Basel-Stadt	47.8	201'384	0.70

Canton	Single HH %	Population	Sales per 5k
Neuenburg	42.2	179'518	0.42
Tessin	42.1	358'903	0.32
Graubünden	39.9	206'138	0.44
Jura	39.0	74'840	0.13
Schaffhausen	38.7	88'667	0.45
Wallis	38.6	371'288	0.46
Bern	38.5	1'071'216	0.42
Waadt	38.4	855'106	0.68
Genf	38.0	531'102	0.36
Zürich	37.2	1'620'020	0.81
Glarus	37.1	42'371	0.71
Solothurn	36.3	289'792	0.76
St. Gallen	36.2	540'036	0.61
Appenzell Ausserrhoden	35.8	56'705	0.26
Basel-Landschaft	35.2	301'323	0.70
Luzern	35.1	437'944	0.58
Thurgau	34.5	299'509	0.72
Nidwalden	34.3	45'345	0.33
Uri	34.1	38'275	0.65
Obwalden	34.0	39'662	0.50
Freiburg	33.8	346'674	0.40
Schwyz	33.6	168'931	0.56
Aargau	33.4	735'808	0.71
Zug	32.4	133'739	0.71
Appenzell Innerrhoden	32.1	16'733	0.30

```
# Visualization
ggplot(analysis_data, aes(x = Single_Household_Pct, y = Sales_per_5k)) +
  geom_point(aes(color = Canton), size = 5, alpha = 0.7) +
  geom_smooth(method = "lm", se = TRUE, color = "red", linetype = "dashed") +
  geom_text(aes(label = Canton), vjust = -1.2, size = 3) +
  labs(
    title = "Gaming Headset Sales vs. Single-Person Household Rate",
    x = "Single-Person Household Rate (%)",
    y = "Gaming Headset Sales per 5,000 Residents"
  ) +
  theme_minimal() +
  theme(legend.position = "none")
```

Gaming Headset Sales vs. Single–Person Household Rate


```
# Correlation analysis
cor_result <- cor.test(analysis_data$Single_Household_Pct,
                       analysis_data$Sales_per_5k,
                       method = "pearson")

cat(sprintf("Correlation coefficient (r): %.3f\n", cor_result$estimate))
```

Correlation coefficient (r): -0.114

```
cat(sprintf("p-value: %.4f\n", cor_result$p.value))
```

p-value: 0.5809

```
cat(sprintf("Result: %s\n",
            ifelse(cor_result$p.value < 0.05,
                   "Significant correlation (p < 0.05)",
                   "No significant correlation")))
```
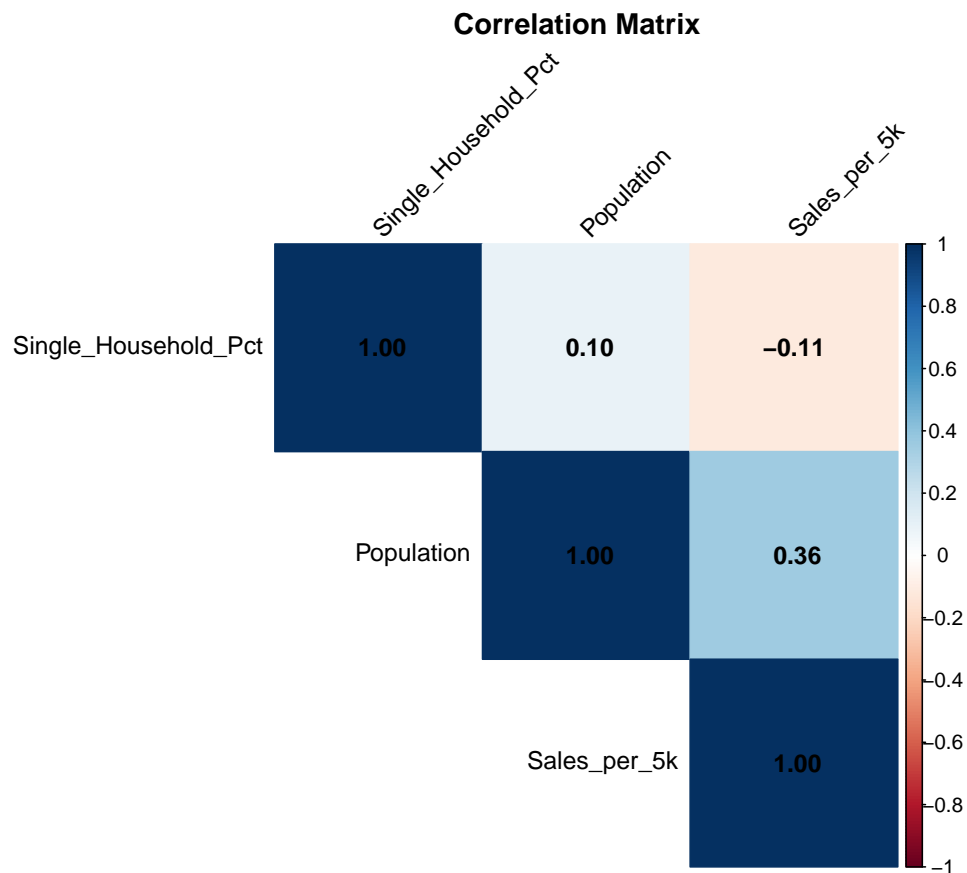
Result: No significant correlation

```r
# Linear regression
model <- lm(Sales_per_5k ~ Single_Household_Pct, data = analysis_data)
cat(sprintf("\nR²: %.3f (%.1f%% variance explained)\n",
            summary(model)$r.squared,
            summary(model)$r.squared * 100))
```

```
R²: 0.013 (1.3% variance explained)
```

```r
# Correlation matrix
cor_data <- analysis_data %>%
  select(Single_Household_Pct, Population, Sales_per_5k)

cor_matrix <- cor(cor_data, use = "complete.obs")

corrplot(cor_matrix,
        method = "color",
        type = "upper",
        addCoef.col = "black",
        tl.col = "black",
        tl.srt = 45,
        title = "Correlation Matrix",
        mar = c(0, 0, 2, 0))
```

Correlation Matrix


```
# Canton ranking
ranking <- analysis_data %>%
  mutate(
    HH_Rank = rank(-Single_Household_Pct),
    Sales_Rank = rank(-Sales_per_5k)
  ) %>%
  select(Canton, Single_Household_Pct, HH_Rank, Sales_per_5k, Sales_Rank) %>%
  arrange(HH_Rank)

kable(ranking,
      digits = 2,
      col.names = c("Canton", "Single HH %", "HH Rank",
                    "Sales per 5k", "Sales Rank"),
      caption = "Canton Ranking by Single Households and Gaming Headset Sales")
```

Table 3: Canton Ranking by Single Households and Gaming Headset Sales

Canton	Single HH %	HH Rank	Sales per 5k	Sales Rank
Basel-Stadt	47.8	1	0.70	8
Neuenburg	42.2	2	0.42	19
Tessin	42.1	3	0.32	23
Graubünden	39.9	4	0.44	17
Jura	39.0	5	0.13	26
Schaffhausen	38.7	6	0.45	16
Wallis	38.6	7	0.46	15
Bern	38.5	8	0.42	18
Waadt	38.4	9	0.68	9
Genf	38.0	10	0.36	21
Zürich	37.2	11	0.81	1
Glarus	37.1	12	0.71	6
Solothurn	36.3	13	0.76	2
St. Gallen	36.2	14	0.61	11
Appenzell Ausserrhoden	35.8	15	0.26	25
Basel-Landschaft	35.2	16	0.70	7
Luzern	35.1	17	0.58	12
Thurgau	34.5	18	0.72	3
Nidwalden	34.3	19	0.33	22
Uri	34.1	20	0.65	10
Obwalden	34.0	21	0.50	14
Freiburg	33.8	22	0.40	20
Schwyz	33.6	23	0.56	13
Aargau	33.4	24	0.71	4
Zug	32.4	25	0.71	5
Appenzell Innerrhoden	32.1	26	0.30	24

5 4. Conclusion

Hypothesis: The higher the proportion of people living alone, the higher the demand for gaming headsets.

Result: NOT CONFIRMED (r = -0.114, p = 0.5809)

Key findings: - Canton with highest single-household rate: Basel-Stadt (47.8%) - Gaming headset sales range: 0.13 - 0.81 per 5k residents

Interpretation: Weak negative correlation between single-person household rate and gaming headset sales.

Possible explanations: 1. **Lifestyle**: People living alone may spend more time gaming 2. **Urbanization**: High single-household rates often in cities with higher purchasing power 3. **Age demographics**: Younger people living alone are more likely to game 4. **Privacy**: Need for headsets when living with others vs. alone

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Data: Digitec Galaxus (Gaming Headsets), BFS (Single-Person Households 2024)