Analysis of Divvy Trips 2019 Q1

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2024-02-28

Introduction

This document presents an analysis of Divvy Trips data for the first quarter of 2019. The analysis includes descriptive statistics, average ride lengths by user type and day of the week, and the number of rides by day of the week.

Setup Environment

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(lubridate)
```

```
##
## Attaching package: 'lubridate'
```

```
## The following objects are masked from 'package:base':
##
##     date, intersect, setdiff, union
```

```
library(readr)
library(ggplot2)
```

Load Data

```
trips_data <- read_csv("Divvy_Trips_2019_Q1.csv")
```

```
## Rows: 365069 Columns: 14
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr  (6): start_time, end_time, from_station_name, to_station_name, usertype...
## dbl  (6): trip_id, bikeid, from_station_id, to_station_id, birthyear, day_of...
## num  (1): tripduration
```

```
## time (1): ride_length
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

Descriptive Analysis

```
summary(trips_data)
```

```
##     trip_id          start_time          end_time             bikeid
##  Min.   :21742443   Length:365069      Length:365069      Min.   :   1
##  1st Qu.:21848765   Class :character   Class :character   1st Qu.:1777
##  Median :21961829   Mode  :character   Mode  :character   Median :3489
##  Mean   :21960872                                         Mean   :3429
##  3rd Qu.:22071823                                         3rd Qu.:5157
##  Max.   :22178528                                         Max.   :6471
##
##   tripduration      from_station_id from_station_name  to_station_id
##  Min.   :      61   Min.   :  2.0   Length:365069      Min.   :  2.0
##  1st Qu.:     326   1st Qu.: 76.0   Class :character   1st Qu.: 76.0
##  Median :     524   Median :170.0   Mode  :character   Median :168.0
##  Mean   :    1016   Mean   :198.1                      Mean   :198.6
##  3rd Qu.:     866   3rd Qu.:287.0                      3rd Qu.:287.0
##  Max.   :10628400   Max.   :665.0                      Max.   :665.0
##
##  to_station_name      usertype            gender            birthyear
##  Length:365069      Length:365069      Length:365069      Min.   :1900
##  Class :character   Class :character   Class :character   1st Qu.:1975
##  Mode  :character   Mode  :character   Mode  :character   Median :1985
##                                                           Mean   :1982
##                                                           3rd Qu.:1990
##                                                           Max.   :2003
##                                                           NA's   :18023
##  ride_length        day_of_week
##  Length:365069     Min.   :1.000
##  Class1:hms        1st Qu.:3.000
##  Class2:difftime   Median :4.000
##  Mode  :numeric    Mean   :4.145
##                    3rd Qu.:6.000
##                    Max.   :7.000
##
```

Mean, Max and Mode

```
mean_ride_length <- mean(trips_data$ride_length, na.rm = TRUE)
max_ride_length <- max(trips_data$ride_length, na.rm = TRUE)

getmode <- function(v) {
  uniqv <- unique(v)
  uniqv[which.max(tabulate(match(v, uniqv)))]
}
mode_day_of_week <- getmode(trips_data$day_of_week)
```

Average Ride Length by User Type and Day Of Week

```
avg_ride_length_by_type <- trips_data %>%
  group_by(usertype) %>%
  summarise(average_ride_length = mean(ride_length, na.rm = TRUE))

avg_ride_length_by_day_and_type <- trips_data %>%
  group_by(day_of_week, usertype) %>%
  summarise(average_ride_length = mean(ride_length, na.rm = TRUE))
```

```
## `summarise()` has grouped output by 'day_of_week'. You can override using the
## `.groups` argument.
```

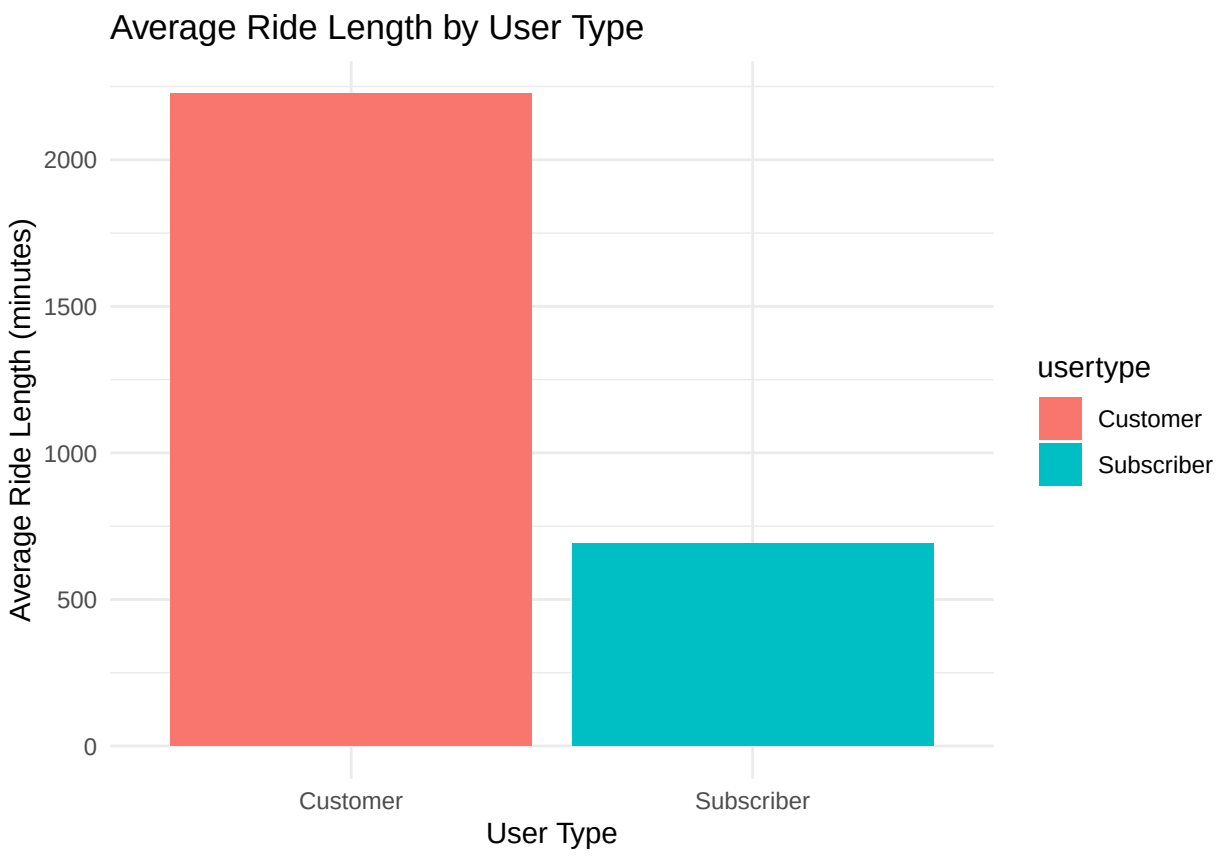
```
rides_by_day <- trips_data %>%
  group_by(day_of_week) %>%
  summarise(number_of_rides = n())
```

Visualization

Average Ride Length by Type of User

```
ggplot(avg_ride_length_by_type, aes(x = usertype, y = average_ride_length, fill = usertype)) +
  geom_bar(stat = "identity") +
  labs(title = "Average Ride Length by User Type", x = "User Type", y = "Average Ride Length (minutes)")
  theme_minimal()
```

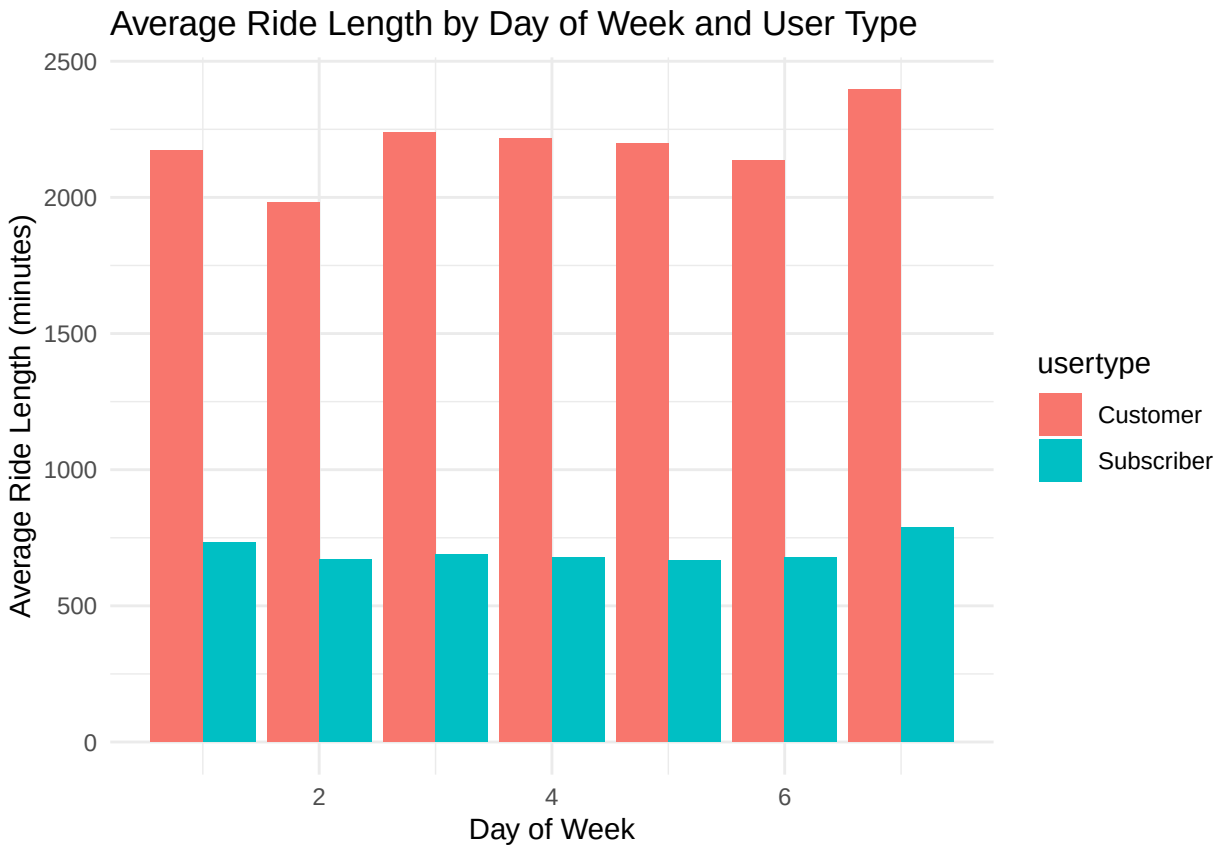
```
## Don't know how to automatically pick scale for object of type <difftime>.
## Defaulting to continuous.
```



Average Ride Length by Day and Type

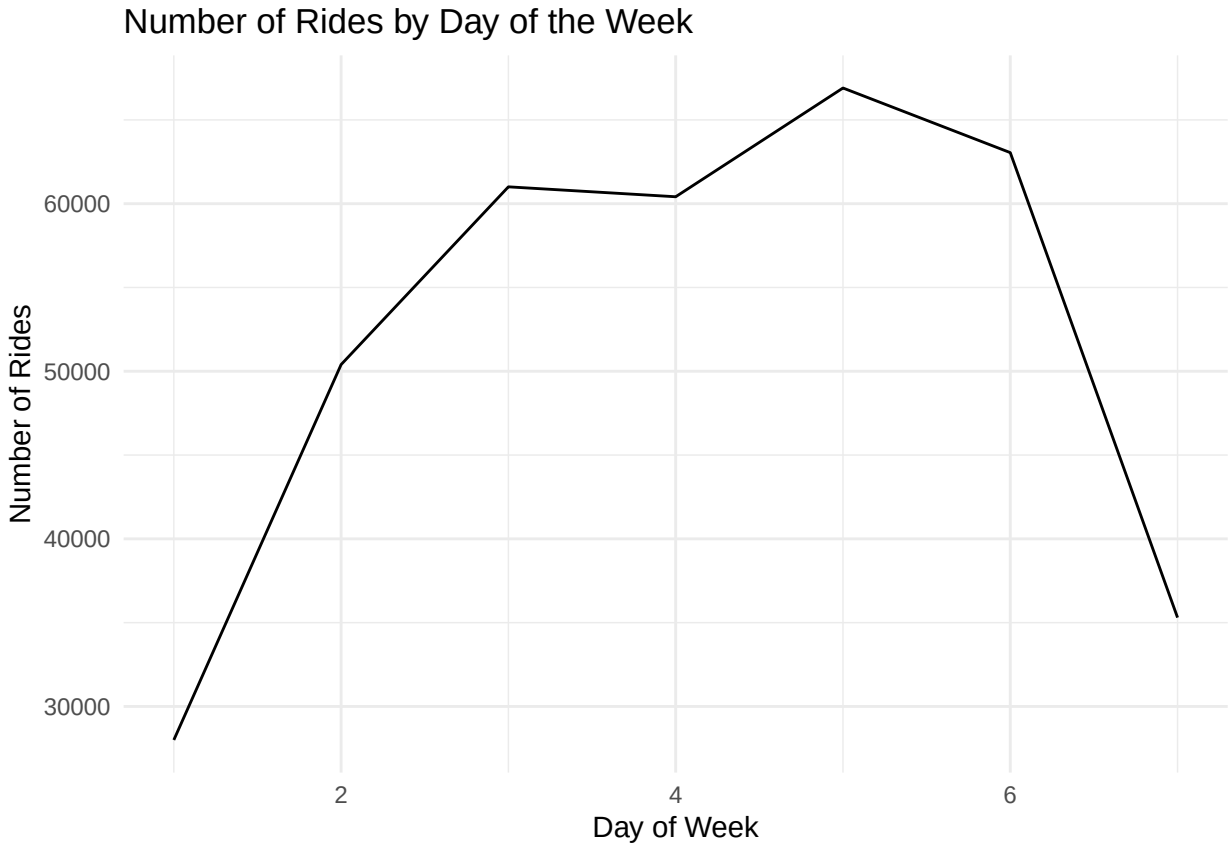
```
ggplot(avg_ride_length_by_day_and_type, aes(x = day_of_week, y = average_ride_length, fill = usertype)) +
  geom_bar(stat = "identity", position = "dodge") +
  labs(title = "Average Ride Length by Day of Week and User Type", x = "Day of Week", y = "Average Ride
  theme_minimal()
```

```
## Don't know how to automatically pick scale for object of type <difftime>.
## Defaulting to continuous.
```



Number of Rides by Day of the Week

```
ggplot(rides_by_day, aes(x = day_of_week, y = number_of_rides)) +
  geom_line(group=1) +
  labs(title = "Number of Rides by Day of the Week", x = "Day of Week", y = "Number of Rides") +
  theme_minimal()
```


Number of Rides by Day of the Week
60000
50000
40000
30000
Number of Rides
2
4
6
Day of Week