Hotels

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```
library(tidyverse)
library(infer)
```

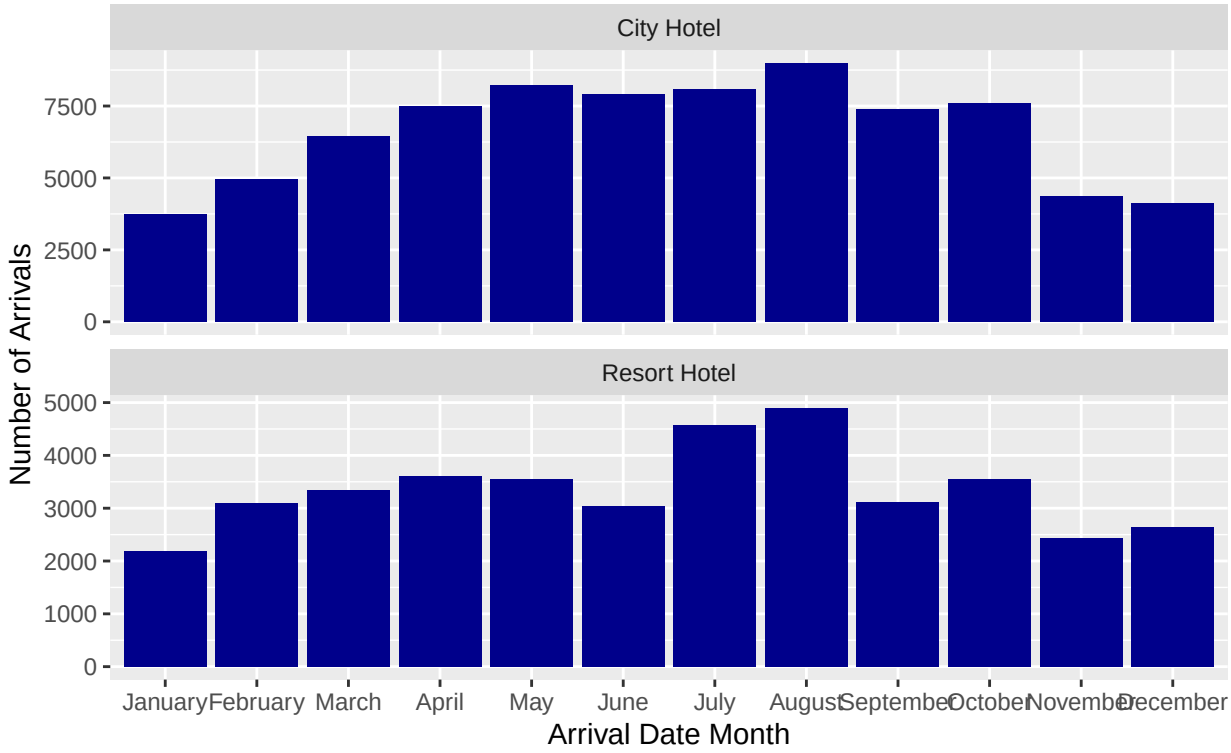
```
hotel_bookings <- read.csv("~/R/DIIG/hotel_bookings.csv")
```

```
hotel_bookings <- hotel_bookings %>%
  mutate(total_nights = stays_in_week_nights + stays_in_weekend_nights)
```

First, I visualized the distribution of visits to the hotels based on month of the year, to find that there was an increase in volume of arrivals in the warmer months.

```
hotel_bookings <- hotel_bookings %>%
  mutate(arrival_date_month = factor(arrival_date_month,
                                     levels = c("January", "February", "March", "April", "May",
                                                "June", "July", "August", "September",
                                                "October", "November", "December")))
```

```
hotel_bookings %>%
  group_by(hotel, arrival_date_month) %>%
  ggplot(aes(x = arrival_date_month)) +
  geom_bar(fill = "darkblue") +
  facet_wrap(~ hotel,
             nrow = 2,
             scales = "free_y") +
  labs(title = "Distribution of Arrivals at Hotel by Month of the Year",
       subtitle = "Faceted by City vs. Resort Hotel",
       x = "Arrival Date Month",
       y = "Number of Arrivals")
```

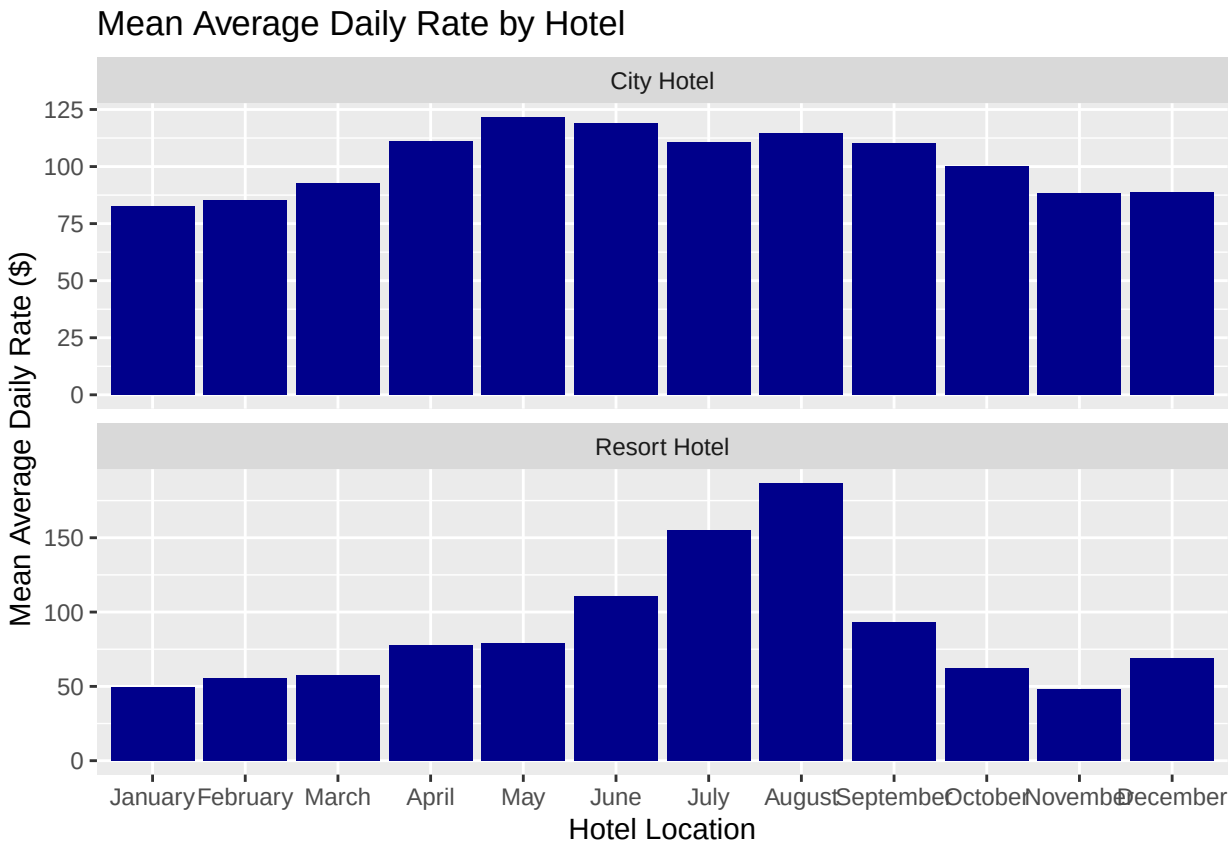


I also changed the is_canceled variable from numeric to categorical, as 0 and 1 represent a booking being cancelled or not.

```
hotel_bookings$is_canceled <- as.factor(hotel_bookings$is_canceled)
```

```
hotel_bookings %>%
  group_by(hotel, arrival_date_month) %>%
  summarise(meanadr = mean(adr)) %>%
  ggplot(aes(x = arrival_date_month, y = meanadr)) +
  geom_col(fill = "darkblue") +
  facet_wrap(~ hotel, nrow = 2, scales = "free_y") +
  labs(title = "Mean Average Daily Rate by Hotel",
       x = "Hotel Location",
       y = "Mean Average Daily Rate ($)")
```

```
## `summarise()` regrouping output by 'hotel' (override with `.groups` argument)
```




```
hotel_bookings %>%
  group_by(hotel, arrival_date_month) %>%
  summarise(meanadr = mean(adr))
```

```
## `summarise()` regrouping output by 'hotel' (override with `.groups` argument)
```

```
## # A tibble: 24 x 3
## # Groups:   hotel [2]
##    hotel      arrival_date_month meanadr
##    <chr>      <fct>                <dbl>
##  1 City Hotel January               82.6
##  2 City Hotel February              85.1
##  3 City Hotel March                 92.6
##  4 City Hotel April                111.
##  5 City Hotel May                  122.
##  6 City Hotel June                 119.
##  7 City Hotel July                 111.
##  8 City Hotel August               115.
##  9 City Hotel September            110.
## 10 City Hotel October              100.
## # ... with 14 more rows
```

For this data challenge, I'll mainly be focusing on Resort Hotels.

```
resort_bookings <- hotel_bookings %>%
  filter(hotel == "Resort Hotel")
```

```
#logit_mod1 <- glm(is_canceled ~ lead_time + arrival_date_year + arrival_date_month +
#              #     arrival_date_week_number + arrival_date_day_of_month + stays_in_weekend_nights +
```

```
#    stays_in_week_nights,
#   data = resort_bookings, family = "binomial", maxit = 100)
```

```
#logit_mod2 <- glm(is_canceled ~ adults + children + babies + meal + country +
#      market_segment + is_repeated_guest + previous_cancellations + previous_bookings_not
#     booking_changes + deposit_type,
#   data = resort_bookings, family = "binomial", maxit = 100)
```

```
#logit_mod3 <- glm(is_canceled ~ days_in_waiting_list + adr + required_car_parking_spaces +
#    total_of_special_requests + reservation_status + reservation_status_date,
#   data = resort_bookings, family = "binomial", maxit = 100)
```