Lesson 4: Annotations Solutions

Annotating and saving solutions

This document contains the skills i learnt when taking the Google Data Analytics Professional Certificate course on Coursera. This was in module 7,Programming with R.

Step 1: Import data

The data in this example is originally from the article Hotel Booking Demand Datasets (https://www.sciencedirect.com/science/article/pii/S2352340918315191), written by Nuno Antonio, Ana Almeida, and Luis Nunes for Data in Brief, Volume 22, February 2019.

The data was downloaded and cleaned by Thomas Mock and Antoine Bichat for #TidyTuesday during the week of February 11th, 2020 (https://github.com/rfordatascience/tidytuesday/blob/master/data/2020/2020-02-11/readme.md).

You can learn more about the dataset here: https://www.kaggle.com/jessemostipak/hotel-booking-demand

Run the code below to read in the file 'hotel_bookings.csv' into a data frame:

```
hotel_bookings <- read.csv("hotel_bookings.csv")
```

Step 2: Get at a sample of the data and also preview all the column names:

```
head(hotel_bookings)
```

```
##          hotel is_canceled lead_time arrival_date_year arrival_date_month
## 1 Resort Hotel           0       342              2015               July
## 2 Resort Hotel           0       737              2015               July
## 3 Resort Hotel           0         7              2015               July
## 4 Resort Hotel           0        13              2015               July
## 5 Resort Hotel           0        14              2015               July
## 6 Resort Hotel           0        14              2015               July
##   arrival_date_week_number arrival_date_day_of_month stays_in_weekend_nights
## 1                       27                         1                       0
## 2                       27                         1                       0
## 3                       27                         1                       0
## 4                       27                         1                       0
## 5                       27                         1                       0
## 6                       27                         1                       0
##   stays_in_week_nights adults children babies meal country market_segment
## 1                    0      2        0      0   BB     PRT         Direct
## 2                    0      2        0      0   BB     PRT         Direct
## 3                    1      1        0      0   BB     GBR         Direct
## 4                    1      1        0      0   BB     GBR      Corporate
## 5                    2      2        0      0   BB     GBR      Online TA
## 6                    2      2        0      0   BB     GBR      Online TA
##   distribution_channel is_repeated_guest previous_cancellations
## 1               Direct                 0                     0
```

```
## 2               Direct                0                    0
## 3               Direct                0                    0
## 4            Corporate                0                    0
## 5                TA/TO                0                    0
## 6                TA/TO                0                    0
##   previous_bookings_not_canceled reserved_room_type assigned_room_type
## 1                              0                  C                  C
## 2                              0                  C                  C
## 3                              0                  A                  C
## 4                              0                  A                  A
## 5                              0                  A                  A
## 6                              0                  A                  A
##   booking_changes deposit_type agent company days_in_waiting_list customer_type
## 1               3   No Deposit  NULL    NULL                    0     Transient
## 2               4   No Deposit  NULL    NULL                    0     Transient
## 3               0   No Deposit  NULL    NULL                    0     Transient
## 4               0   No Deposit   304    NULL                    0     Transient
## 5               0   No Deposit   240    NULL                    0     Transient
## 6               0   No Deposit   240    NULL                    0     Transient
##   adr required_car_parking_spaces total_of_special_requests reservation_status
## 1   0                            0                         0          Check-Out
## 2   0                            0                         0          Check-Out
## 3  75                            0                         0          Check-Out
## 4  75                            0                         0          Check-Out
## 5  98                            0                         1          Check-Out
## 6  98                            0                         1          Check-Out
##   reservation_status_date
## 1              2015-07-01
## 2              2015-07-01
## 3              2015-07-02
## 4              2015-07-02
## 5              2015-07-03
## 6              2015-07-03
```

```
colnames(hotel_bookings)
```

```
##  [1] "hotel"                         "is_canceled"
##  [3] "lead_time"                     "arrival_date_year"
##  [5] "arrival_date_month"            "arrival_date_week_number"
##  [7] "arrival_date_day_of_month"     "stays_in_weekend_nights"
##  [9] "stays_in_week_nights"          "adults"
## [11] "children"                      "babies"
## [13] "meal"                          "country"
## [15] "market_segment"                "distribution_channel"
## [17] "is_repeated_guest"             "previous_cancellations"
## [19] "previous_bookings_not_canceled" "reserved_room_type"
## [21] "assigned_room_type"            "booking_changes"
## [23] "deposit_type"                  "agent"
## [25] "company"                       "days_in_waiting_list"
## [27] "customer_type"                 "adr"
## [29] "required_car_parking_spaces"   "total_of_special_requests"
## [31] "reservation_status"            "reservation_status_date"
```

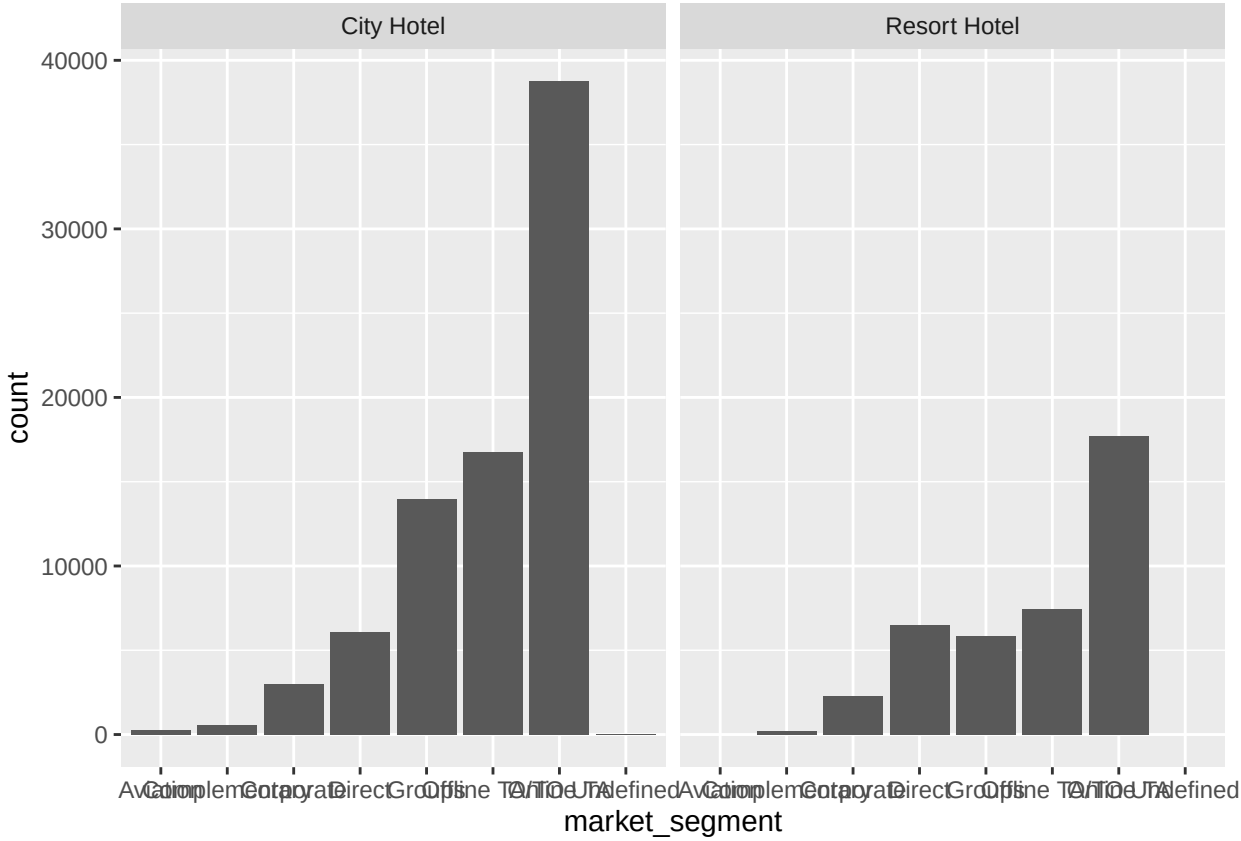
Step 3: Install and load the 'ggplot2' package

This may take a few minutes!

Step 4: Annotating the chart

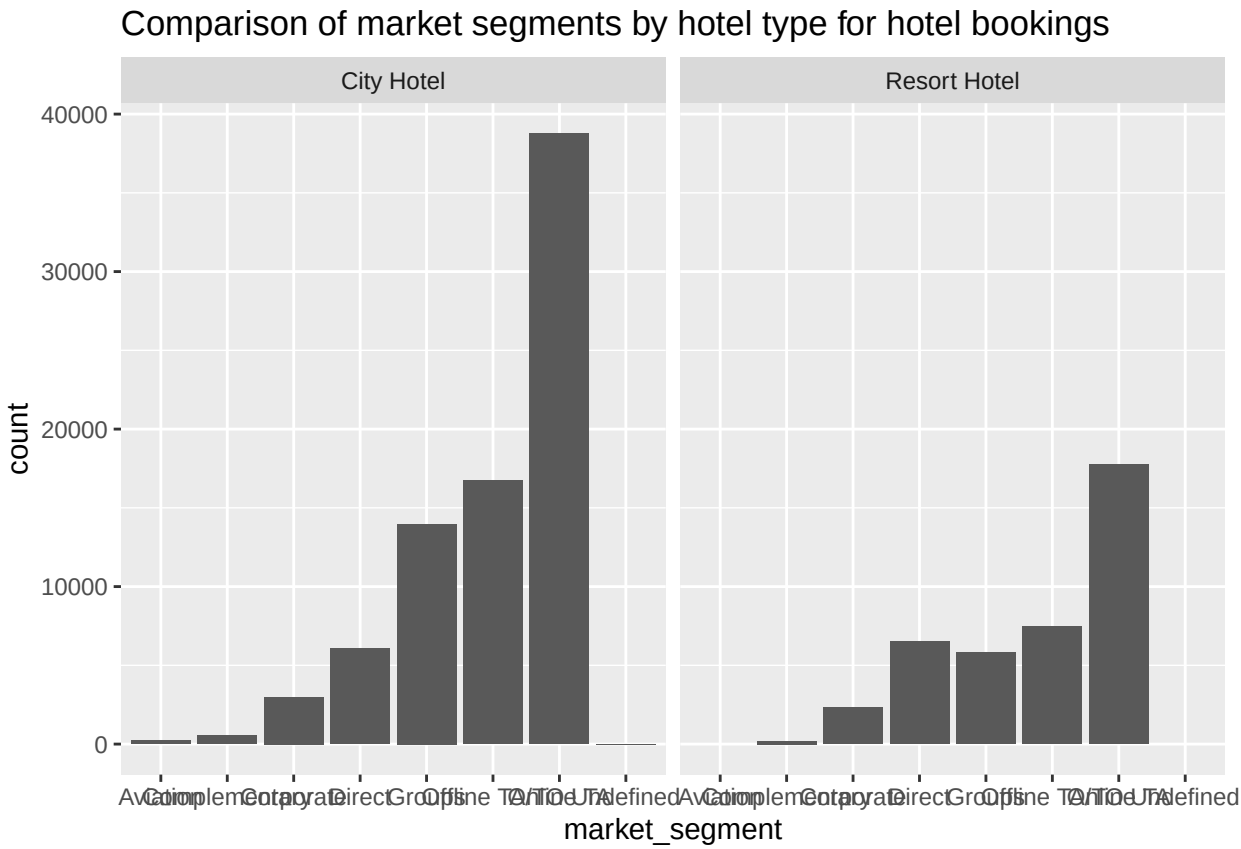
First lets create the chart:

```
ggplot(data = hotel_bookings) +
  geom_bar(mapping = aes(x = market_segment)) +
  facet_wrap(~hotel)
```



Then we will add a title; that is often the first thing people will pay attention to when they encounter a data visualization for the first time. To add a title, you will add `labs()` at the end of your `ggplot()` command and then input a title there:

```
ggplot(data = hotel_bookings) +
  geom_bar(mapping = aes(x = market_segment)) +
  facet_wrap(~hotel) +
  labs(title="Comparison of market segments by hotel type for hotel bookings")
```



You also want to add another detail about what time period this data covers. To do this, you need to find out when the data is from.

You realize you can use the `min()` function on the year column in the data:

```
min(hotel_bookings$arrival_date_year)
```

```
## [1] 2015
```

And the `max()` function:

```
max(hotel_bookings$arrival_date_year)
```

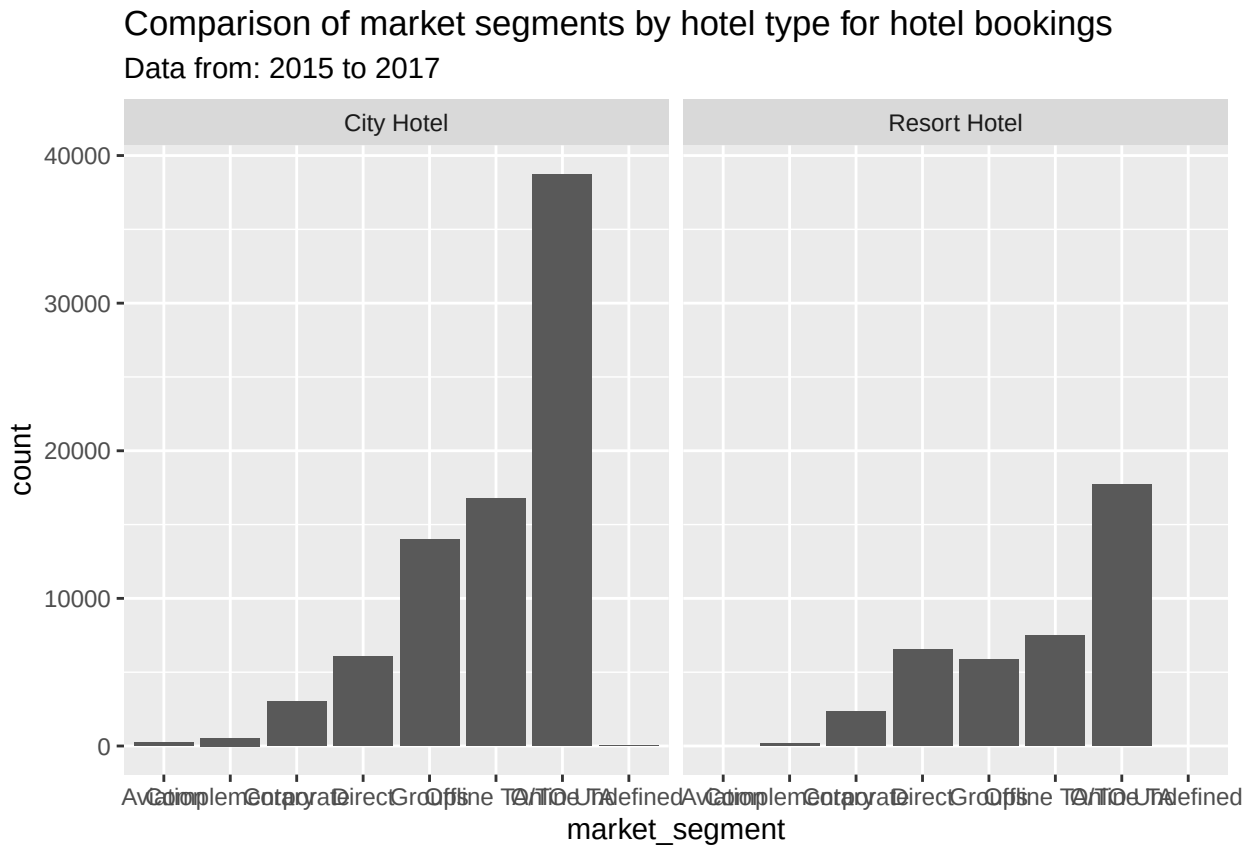
```
## [1] 2017
```

But you will need to save them as variables in order to easily use them in your labeling; the following code chunk creates two of those variables:

```
mindate <- min(hotel_bookings$arrival_date_year)
maxdate <- max(hotel_bookings$arrival_date_year)
```

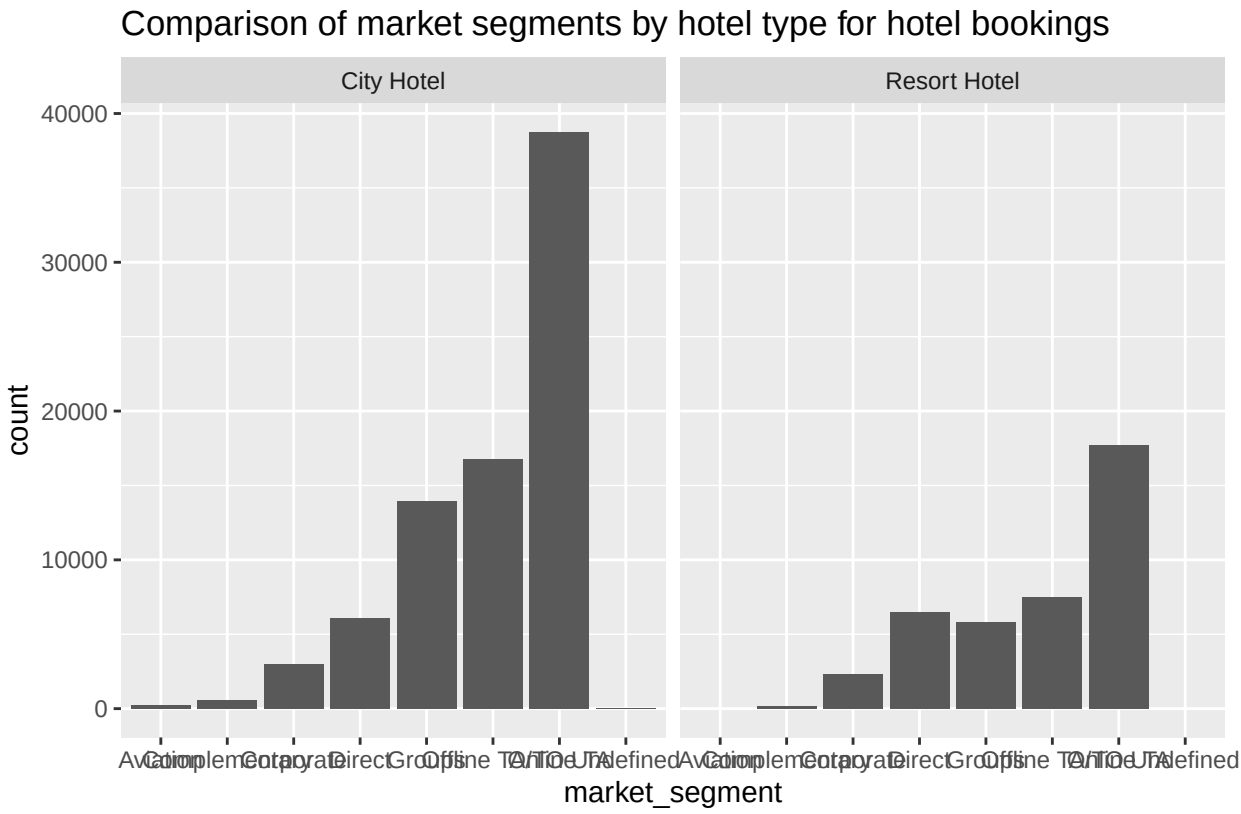
Now, you will add in a subtitle using `subtitle=` in the `labs()` function. Then, you can use the `paste0()` function to use your newly-created variables in your labels. This is really handy, because if the data gets updated and there is more recent data added, you don't have to change the code below because the variables are dynamic:

```
ggplot(data = hotel_bookings) +
  geom_bar(mapping = aes(x = market_segment)) +
  facet_wrap(~hotel) +
  labs(title="Comparison of market segments by hotel type for hotel bookings",
       subtitle=paste0("Data from: ", mindate, " to ", maxdate))
```



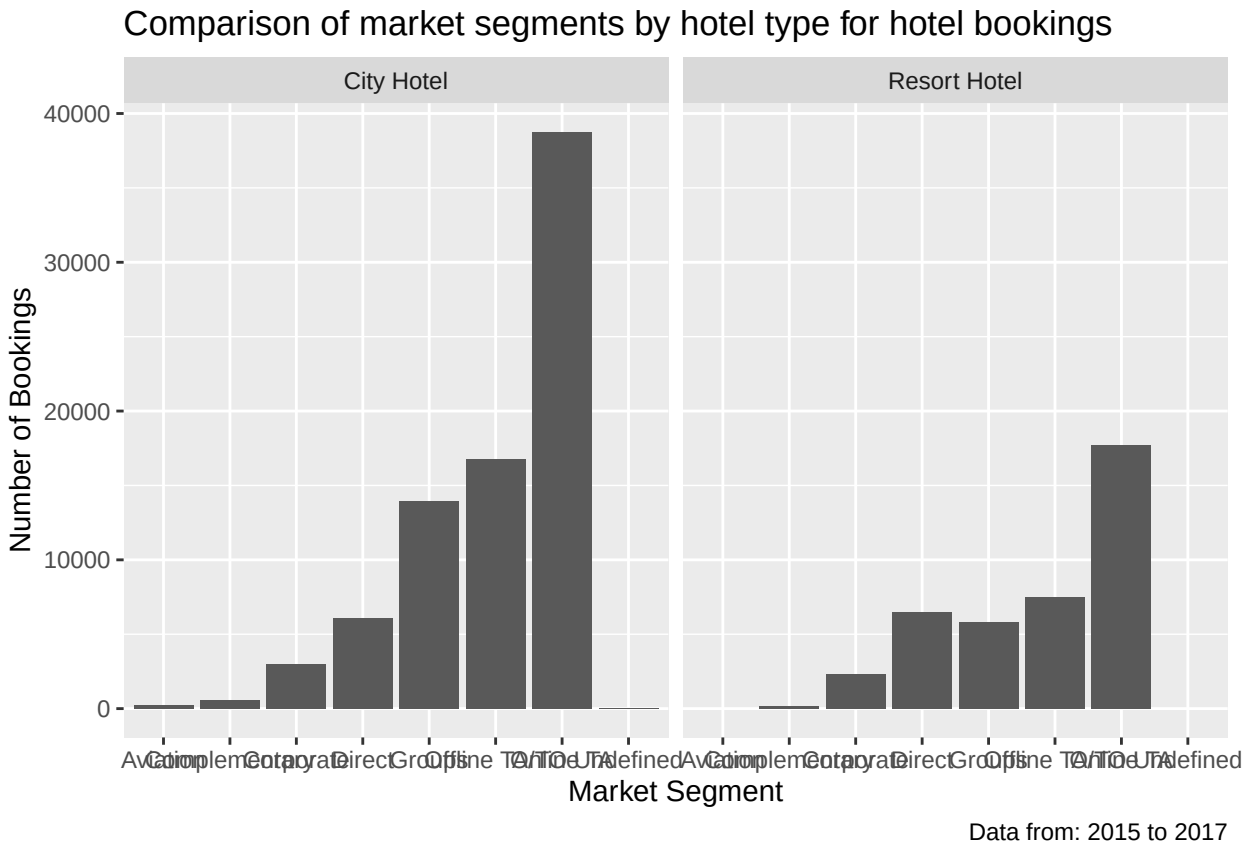
You decide to switch the `subtitle` to a `caption` which will appear in the bottom right corner instead.

```
ggplot(data = hotel_bookings) +
  geom_bar(mapping = aes(x = market_segment)) +
  facet_wrap(~hotel) +
  labs(title="Comparison of market segments by hotel type for hotel bookings",
       caption=paste0("Data from: ", mindate, " to ", maxdate))
```



Now you want to clean up the x and y axis labels to make sure they are really clear. To do that, you can add to the `labs()` function and use `x=` and `y=`. Feel free to change the text of the label and play around with it:

```
ggplot(data = hotel_bookings) +
  geom_bar(mapping = aes(x = market_segment)) +
  facet_wrap(~hotel) +
  labs(title="Comparison of market segments by hotel type for hotel bookings",
       caption=paste0("Data from: ", mindate, " to ", maxdate),
       x="Market Segment",
       y="Number of Bookings")
```



Step 5: Saving your chart

Run the following code chunk to save that plot as a .png file named `city_payment_chart`, which makes it clear to your stakeholders what the .png file contains. Now you should be able to find this file in your 'Files' tab in the bottom right of your screen. Check it out!

```
ggsave('hotel_booking_chart.png')
```

```
## Saving 6.5 x 4.5 in image
```

Practice quiz

What are the default dimensions that `ggsave()` saved your image as?

A: 5x5 B: 10x10 C: 7x7 D: 25x25

Answer: C. The default dimensions of this ggsave() image are 7x7. You can see these dimensions listed after you run the code chunk.

If you wanted to make your chart bigger and more rectangular to fit the slide show presentation, you could specify the height and width of your .png in the `ggsave()` command. Edit the code chunk below to create a 16x8 .png image:

```
ggsave('hotel_booking_chart.png',
       width=16,
       height=8)
```