

MSMS 106 : Practical 12


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➡ Objective

To simulate and calculate total sales for 4 regions over 5 months and plot the results.

➡ R Program, Plot and Interpretation

 Data simulation

```
sales <- c()
temp <- c(2, 4, 7, 10, 5)

for (i in 1:4) {
  for (j in 1:5) {
    sales <- append(sales, round(rnorm(1, 10*i + 20*temp[j], 1), digits = 2))
  }
}

regions <- rep(c("Region1", "Region2", "Region3", "Region4"), rep(5, 4))
months <- rep(c("Month1", "Month2", "Month3", "Month4", "Month5"), 4)

sales_df <- data.frame(region = as.factor(regions),
                       month = as.factor(months),
                       sales = sales)

# View(sales_df)
```

```
summary(sales_df)
```

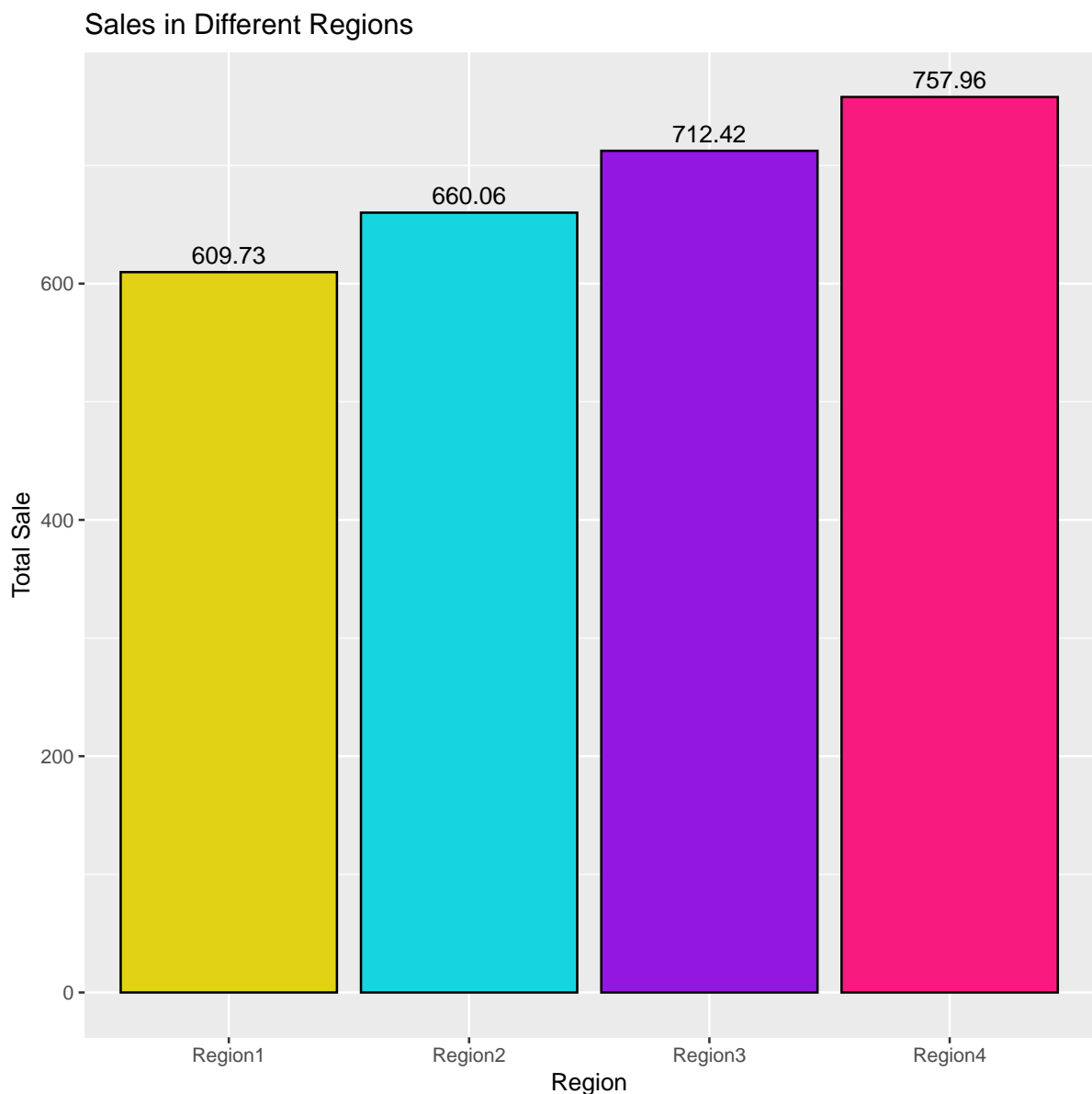
```
##      region      month      sales
## Region1:5 Month1:4 Min.      : 50.64
## Region2:5 Month2:4 1st Qu.: 97.06
## Region3:5 Month3:4 Median   :124.57
## Region4:5 Month4:4 Mean     :137.01
##              Month5:4 3rd Qu.:172.21
##              Max.      :240.31
```

```
library(tidyverse)
```

👉 Region-wise sales

```
region_sale <- sales_df %>%  
  group_by(region) %>%  
  summarise(total_sale = sum(sales))
```

```
region_sale %>%  
  ggplot(aes(x = region, y = total_sale)) +  
  geom_col(fill = c("#e1d216", "#16d5e1", "#9416e1", "#f81a7f"),  
           col = "black") +  
  geom_text(aes(label = total_sale),  
            vjust = -0.5,  
            size = 4) +  
  labs(x = "Region", y = "Total Sale",  
       title = "Sales in Different Regions")
```

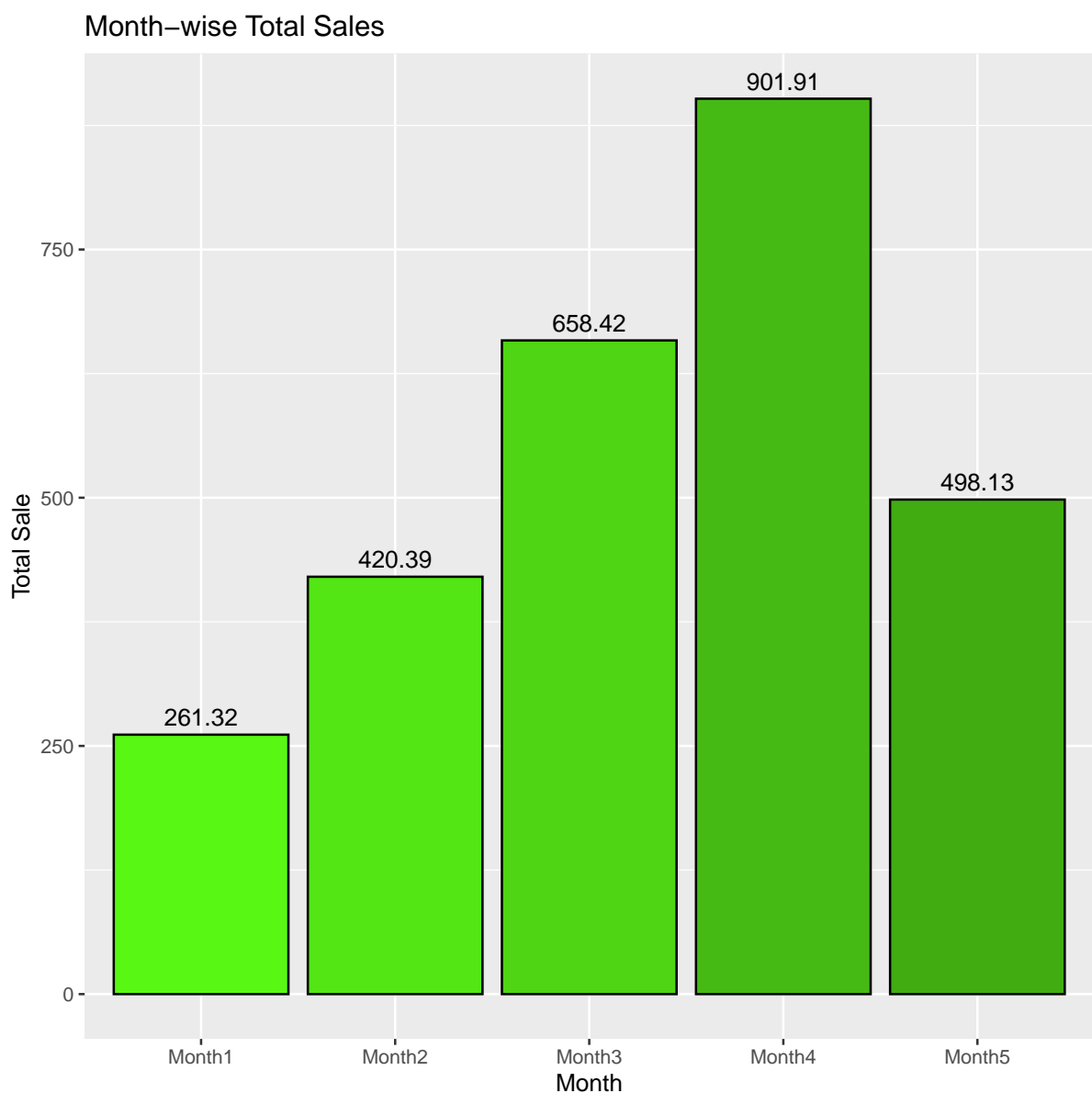


📝 When total sale of all 5 months is considered, Region1 has the lowest sales and Region4 has the highest sales.

👉 Month-wise sales


```
month_sales <- sales_df %>%  
  group_by(month) %>%  
  summarise(total_sale = sum(sales))
```

```
month_sales %>%  
  ggplot(aes(x = month, y = total_sale)) +  
  geom_col(fill = c("#59f814", "#54e614", "#4fd514", "#46ba14", "#41ac12"),  
           col = "black") +  
  geom_text(aes(label = total_sale),  
            vjust = -0.5,  
            size = 4) +  
  labs(x = "Month", y = "Total Sale",  
       title = "Month-wise Total Sales")
```



📝 When we aggregate sales of all the regions over different months, we see that there is a sharp increase in total sales over months.

➡ Conclusion

 Our data have an increasing trend of total sales over months. Also, "Region4" has highest number of sales.