Comcast Telecom Consumer Complaints

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Comcast is an American global telecommunication company. The firm has been providing terrible customer service. They continue to fall short despite repeated promises to improve. Only last month (October 2016) the authority fined them a $2.3 million, after receiving over 1000 consumer complaints.

The existing database will serve as a repository of public customer complaints filed against Comcast. It will help to pin down what is wrong with Comcast's customer service.

Tasks to be performed:-

- Import data into R environment.
- Provide the trend chart for the number of complaints at monthly and daily granularity levels.
- Provide a table with the frequency of complaint types.
- Which complaint types are maximum i.e., around internet, network issues, or across any other domains.
- Create a new categorical variable with value as Open and Closed. Open & Pending is to be categorized as Open and Closed & Solved is to be categorized as Closed.
- Provide state wise status of complaints in a stacked bar chart. Use the categorized variable from Q3. Provide insights on:
- Which state has the maximum complaints
- Which state has the highest percentage of unresolved complaints
- Provide the percentage of complaints resolved till date, which were received through theInternet and customer care calls.

```
#Importing necessary packages
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(ggplot2)
library(lubridate)
```

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

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

```
#Importing Comcast Dataset
comcast_data<- read.csv("Comcast Telecom Complaints data.csv",header = TRUE)

#Manipulating Field Names
names(comcast_data)<-gsub(pattern = '\\.',replacement = "",x=names(comcast_data))
names(comcast_data)
```

```
##  [1] "Ticket"                  "CustomerComplaint"
##  [3] "Date"                    "Time"
##  [5] "ReceivedVia"             "City"
##  [7] "State"                   "Zipcode"
##  [9] "Status"                  "FilingonBehalfofSomeone"
```

```
View(comcast_data)
```

From the dataset, we can see that the format of Date column is not same throughout, so we need to make it same for analysis.

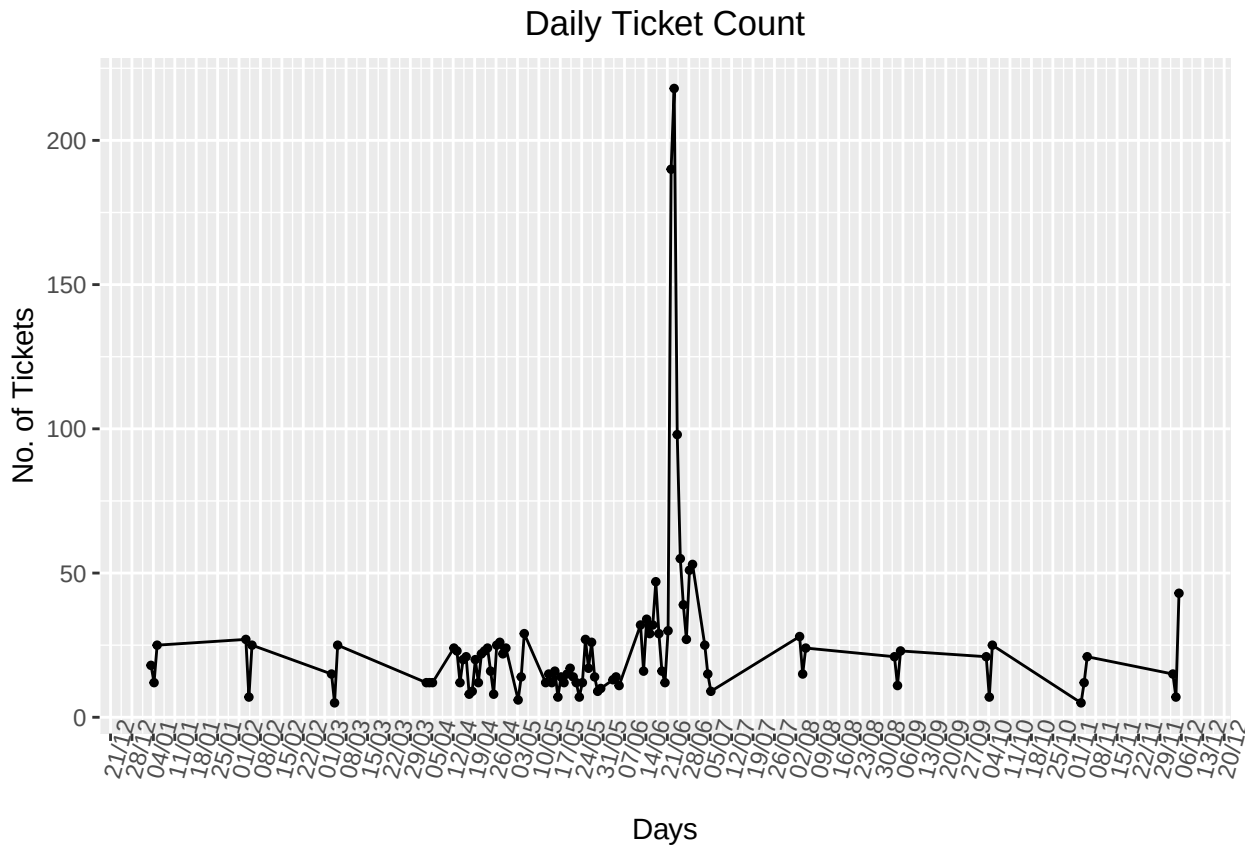
```
#Processing Date
comcast_data$Date<- dmy(comcast_data$Date)
View(comcast_data)
```

- Now we need to get the complaints on a daily level basis and plot a trend chart for it.

```
ans<-comcast_data %>% group_by(Date) %>% summarize(NumOfComplaints=n())
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
#Plotting for daily granularity level
ggplot(data = ans,aes(as.POSIXct(Date),NumOfComplaints))+
  geom_line()+
  geom_point(size = 1)+
  scale_x_datetime(breaks = "1 weeks",date_labels = "%d/%m")+
  labs(title = "Daily Ticket Count",x= "Days",y ="No. of Tickets")+
  theme(axis.text.x = element_text(angle = 75),
        plot.title = element_text(hjust = 0.5))
```

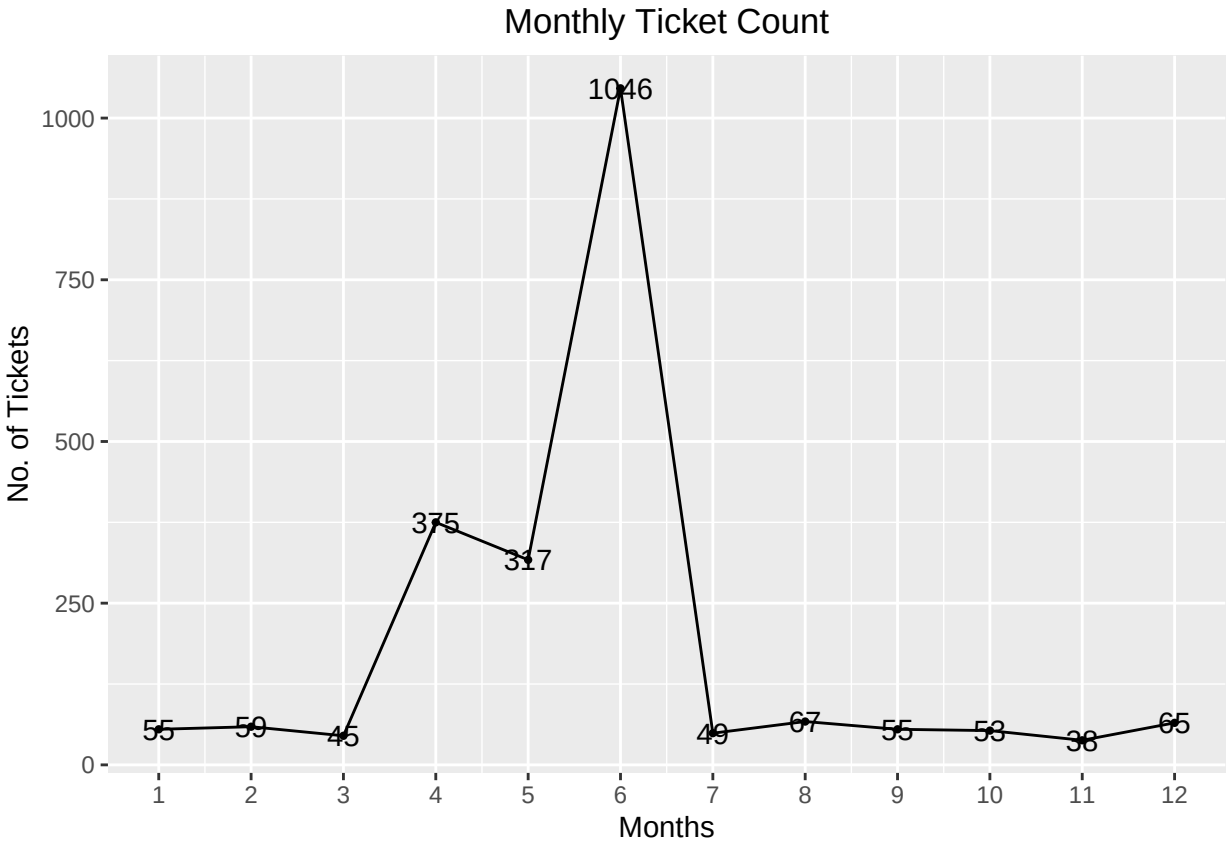


- Now we need to get the complaints on a monthly level basis and plot a trend chart for it.

```
#Making month field
comcast_data$Month<-months(comcast_data$Date)
ans1<-comcast_data %>% group_by(Month =as.integer(month(Date))) %>% summarize(NumOfComplaints=n()) %>% a
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
#Plotting for monthly granularity level
ggplot(data = ans1,aes(Month,NumOfComplaints,label = NumOfComplaints))+
  geom_line()+
  geom_point(size = 0.8)+
  geom_text()+
  scale_x_continuous(breaks = ans1$Month)+
  labs(title = "Monthly Ticket Count",x= "Months",y ="No. of Tickets")+
  theme(plot.title = element_text(hjust = 0.5))
```



INSIGHTS:- From the above trend chart, we can clearly see that complaints for the month of June are maximum i.e.1046.

- Now we need to make a frequency table basis the complaint types.

```
# Complaint Type Processing
network_tickets<- contains(comcast_data$CustomerComplaint,match = 'network',ignore.case = T)
internet_tickets<- contains(comcast_data$CustomerComplaint,match = 'internet',ignore.case = T)
billing_tickets<- contains(comcast_data$CustomerComplaint,match = 'bill',ignore.case = T)
email_tickets<- contains(comcast_data$CustomerComplaint,match = 'email',ignore.case = T)
charges_ticket<- contains(comcast_data$CustomerComplaint,match = 'charge',ignore.case = T)

comcast_data$ComplaintType[internet_tickets]<- "Internet"
comcast_data$ComplaintType[network_tickets]<- "Network"
comcast_data$ComplaintType[billing_tickets]<- "Billing"
comcast_data$ComplaintType[email_tickets]<- "Email"
comcast_data$ComplaintType[charges_ticket]<- "Charges"

comcast_data$ComplaintType[-c(internet_tickets,network_tickets,
                              billing_tickets,charges_ticket,email_tickets)]<- "Others"
table(comcast_data$ComplaintType)
```

```
##
##  Billing  Charges    Email Internet  Network   Others
##      363      139       16      472        1     1233
```

INSIGHTS:- From the above table we can see that the Internet type complaints are maximum.

- Now we need to make a new categorical variable for Complaint Status.

```
open_complaints<-(comcast_data$Status == 'Open' | comcast_data$Status == 'Pending')
closed_complaints<-(comcast_data$Status == 'Closed' | comcast_data$Status == 'Solved')
comcast_data$ComplaintStatus[open_complaints]<-'Open'
comcast_data$ComplaintStatus[closed_complaints]<-'Closed'
```

- Now we need to plot state wise status of complaints in a stacked bar chart.

```
stack<-table(comcast_data$ComplaintStatus,comcast_data$State)
stack
```

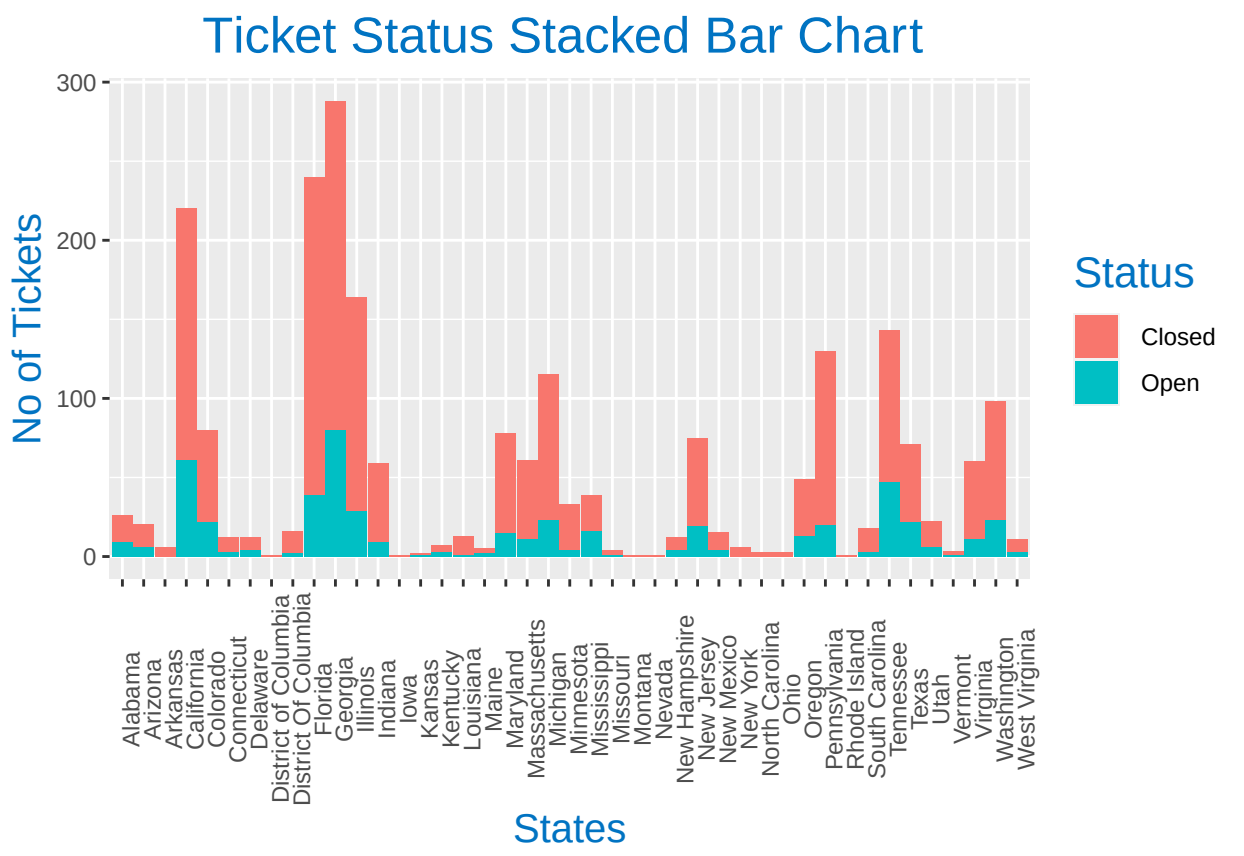
```
##
##          Alabama Arizona Arkansas California Colorado Connecticut Delaware
##   Closed      17      14        6        159       58           9        8
##   Open         9       6        0         61       22           3        4
##
##          District of Columbia District Of Columbia Florida Georgia Illinois
##   Closed                    1                   14     201     208      135
##   Open                      0                    2      39      80       29
##
##          Indiana Iowa Kansas Kentucky Louisiana Maine Maryland Massachusetts
##   Closed      50    1      1        4        12     3       63            50
##   Open         9    0      1        3         1     2       15            11
##
##          Michigan Minnesota Mississippi Missouri Montana Nevada New Hampshire
##   Closed       92        29          23        3       1      1             8
##   Open         23         4          16        1       0      0             4
##
##          New Jersey New Mexico New York North Carolina Ohio Oregon Pennsylvania
##   Closed         56         11        6              3    3     36          110
##   Open           19          4        0              0    0     13           20
##
##          Rhode Island South Carolina Tennessee Texas Utah Vermont Virginia
##   Closed            1             15        96    49   16       2       49
##   Open              0              3        47    22    6       1       11
##
##          Washington West Virginia
##   Closed         75             8
##   Open           23             3
```

```
comcast_data<- group_by(comcast_data,State,ComplaintStatus)
chart_data<- summarise(comcast_data,Count = n())
```

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

```
#Plotting on stacked bar chart
ggplot(as.data.frame(chart_data) ,mapping = aes(State,Count))+
  geom_col(aes(fill = ComplaintStatus),width = 0.95)+
  theme(axis.text.x = element_text(angle = 90),
        axis.title.y = element_text(size = 15),
        axis.title.x = element_text(size = 15),
```

```
      title = element_text(size = 16,colour = "#0073C2FF"),
      plot.title = element_text(hjust =  0.5))+
labs(title = "Ticket Status Stacked Bar Chart ",
     x = "States",y = "No of Tickets",
     fill= "Status")
```



INSIGHTS:- From the above chart, we can clearly see that Georgia has maximum complaints.

- Now we need to see which state has maximum unresolved complaints

```
comcast_data %>% filter(ComplaintStatus=='Open') %>% group_by(State) %>% summarize(NumOfComplaints=n())
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
## # A tibble: 34 x 2
##    State        NumOfComplaints
##    <chr>                  <int>
##  1 Georgia                   80
##  2 California                61
##  3 Tennessee                 47
##  4 Florida                   39
##  5 Illinois                  29
##  6 Michigan                  23
##  7 Washington                23
```

```
##  8 Colorado                  22
##  9 Texas                     22
## 10 Pennsylvania              20
## # ... with 24 more rows
```

INSIGHTS:- From the table generated above we can see that Georgia has maximum unresolved complaints i.e. 80.

- Now we want to see the percentage of resolved complaints.

```
tot<-comcast_data %>% group_by(ComplaintStatus) %>% summarize(NumOfComplaints=n())
```

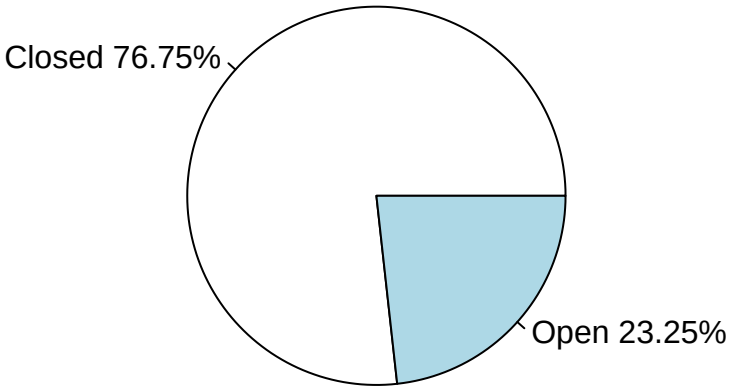
```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
tot
```

```
## # A tibble: 2 x 2
##   ComplaintStatus NumOfComplaints
##   <chr>                     <int>
## 1 Closed                     1707
## 2 Open                        517
```

```
slices<-tot$NumOfComplaints
pct<-round((slices/sum(slices)*100),2)
lbls<-paste(tot$ComplaintStatus," ",pct,"%",sep="")

#Plotting pie chart
pie(slices,labels=lbls)
```



INSIGHTS:- From the above pie chart we can clearly see that there are total 76.75% Complaints resolved.

```
int<-comcast_data %>% filter(ReceivedVia=='Internet',ComplaintStatus=='Closed') %>% group_by(ReceivedVi
```

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

```
ccc<-comcast_data %>% filter(ReceivedVia=='Customer Care Call',ComplaintStatus=='Closed') %>% group_by(
```

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

```
#Percentage of resolved internet Complaints
intpct<-round(int$NumOfComplaints/sum(tot$NumOfComplaints)*100,2)
intpct
```

```
## [1] 37.9
```

```
#Percentage of resolved Customer Care Call Complaints
cccpct<-round(ccc$NumOfComplaints/sum(tot$NumOfComplaints)*100,2)
cccpct
```

```
## [1] 38.85
```

INSIGHTS:- From the above output we can see that of the 76.75% resolved Complaints, 37.9% complaints are Internet type while 38.85% are Customer Care Call type.