

Name: OLWETHU MATIWANE
Email: jimmyolwethu7@gmail.com
STATISTIC ANALYSIS SYSTEM (SAS)

COMCAST TELECOM CONSUMER COMPLAINTS - PROJECT 1

- Import data into SAS environment.

CODE:

```
/* Importing */  
FILENAME REFFILE '/folders/myfolders/Comcast_telecom_complaints_data.csv';  
  
PROC IMPORT DATAFILE=REFFILE  
    DBMS=CSV  
    OUT=WORK.Complaints;  
    GETNAMES=YES;  
RUN;
```

RESULTS:

This is where we import our dataset. The tables below display some of the variables and observations.

SCREENSHOT:

	Ticket	Customer_Complaint	Date	Date_month_year	Time	Received_Via	City	
1	250635	Comcast Cable Internet Speeds	22/04/2015	22APR2015	15:53:50.0	Customer Care Call	Abingdon	↑
2	223441	Payment disappear - service got disconnected	04/08/2015	04AUG2015	10:22:56.0	Internet	Acworth	↓
3	242732	Speed and Service	18/04/2015	18APR2015	9:55:47.00	Internet	Acworth	↓
4	277946	Comcast Imposed a New Usage Cap of 300GB that punishes streaming.	05/07/2015	05JUL2015	11:59:35.0	Internet	Acworth	↓
5	307175	Comcast not working and no service to boot	26/05/2015	26MAY2015	13:25:26.0	Internet	Acworth	↓
6	338519	ISP Charging for arbitrary data limits with overage fees	06/12/2015	06DEC2015	21:59:40.0	Internet	Acworth	↓
7	361148	Throttling service and unreasonable data caps	24/06/2015	24JUN2015	10:13:55.0	Customer Care Call	Acworth	↓
8	359792	Comcast refuses to help troubleshoot and correct my service.	23/06/2015	23JUN2015	18:56:14.0	Internet	Adrian	↑
9	318072	Comcast extended outages	06/01/2015	06JAN2015	23:46:30.0	Customer Care Call	Alameda	↓
10	371214	Comcast Raising Prices and Not Being Available To Ask Why	28/06/2015	28JUN2015	18:46:31.0	Customer Care Call	Alameda	↓
11	255938	Billing after service was asked to be disconnected	24/04/2015	24APR2015	16:40:36.0	Internet	Albuquerque	↑
12	276409	YAHOO FAILURE TO RESTORE EMAIL SEARCH FEATURE	05/06/2015	05JUN2015	15:09:49.0	Customer Care Call	Albuquerque	↑
13	339282	Comcast Violating Open Internet Rules by Blocking HBO Go Access on Sony	13/06/2015	13JUN2015	16:03:18.0	Internet	Albuquerque	↑
14	360178	Internet speed	23/06/2015	23JUN2015	21:23:23.0	Internet	Albuquerque	↑
15	376268	Internet Disconnects Every Night	30/06/2015	30JUN2015	22:30:02.0	Customer Care Call	Albuquerque	↑

- **Q1** - Provide the trend chart for the number of complaints at monthly and daily granularity levels.

CODE:

```
/* Series Plot */
Proc Sort data=work.Complaints;
    By Date;
Run;

ods graphics / reset width=6.4in height=4.8in imagemap;
proc sort data=WORK.COMPLAINTS out=_SeriesPlotTaskData;
    by Date;
run;

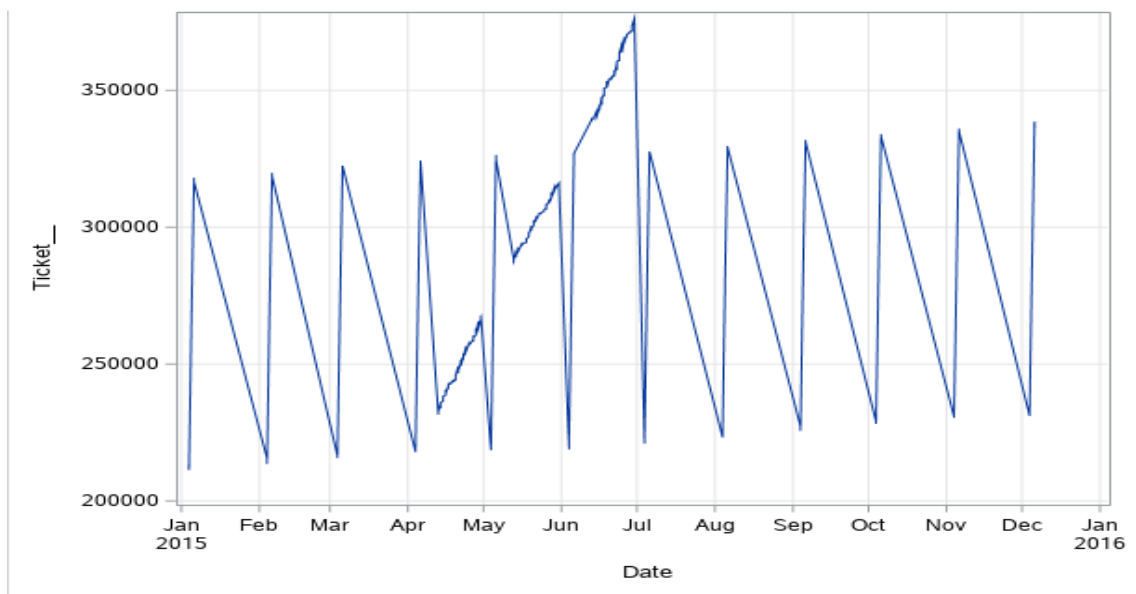
proc sgplot data=_SeriesPlotTaskData;
    series x=Date y=Ticket__ / group=Customer_Complaint curvelabel
        curvelabelpos=max;
    xaxis grid;
    yaxis grid;
run;
ods graphics / reset;

proc datasets library=WORK noprint;
    delete _SeriesPlotTaskData;
run;
```

RESULTS:

Using the codes above the trend chart is displayed below for the number of complaints. Here I have used a series plot.

SCREENSHOT:



- **Q2** - Provide a table with the frequency of complaint types.
 - o Which complaint types are maximum i.e., around internet, network issues, or across any other domains.

CODE:

```
proc sort data=Complaints;
    by Date;
run;

Proc freq data=Complaints;
    tables Customer_Complaint;
run;
```

RESULTS:

The table is displayed below with the frequency of complaint types. Here I have used Proc freq.

SCREENSHOT:

Customer_Complaint	Frequency	Percent	Cumulative Frequency	Cumulative Percent
(Comcast is not my complaint!) Cyber Tele-marketing is my complaint!	1	0.04	1	0.04
10 Days No Service - 12 Appointments Comcast Hasn't Shown Up - Comcast Has Not F	1	0.04	2	0.09
2 months and Comcast has not fixed problem	1	0.04	3	0.13
2+ Day Degraded Services	1	0.04	4	0.18
300 GB monthly allowance	1	0.04	5	0.22
300 gb cap	1	0.04	6	0.27
300GB/month Data Cap	1	0.04	7	0.31
300GB/month data cap 'trial' for several years now	1	0.04	8	0.36
60 day delay in cancelling service agreement	1	0.04	9	0.40
60 days to close my account	1	0.04	10	0.45
95 Palmer Road, Enfield NH Internet Pricing	1	0.04	11	0.49
AT&T	1	0.04	12	0.54
About Comcast	1	0.04	13	0.58
Abysmal customer service, do not approve merger with Time Warner	1	0.04	14	0.63
Access issues have returned	1	0.04	15	0.67
Ad in craigslist was a scam for selling product not owned	1	0.04	16	0.72
Adding services Not Requested and Increasing fees without notification.	1	0.04	17	0.76
Additional Usage @\$10/50GB	1	0.04	18	0.81
Advertised Internet price not honored	1	0.04	19	0.85
Another Fraudulent collection claim from Comcast	1	0.04	20	0.90

- **Q3** - 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.

CODE:

```
/* If-Then-Else Statement */
Data New_Complaints;
Set Complaints;
length New_Status $8.;
if Status="Open" OR Status="Pending" then
    New_Status="Open";
else
    New_Status="Closed";
run;
```

RESULTS:

From the output below it is observed that pending is replaced by open and solved is replaced by close. Here I have created a new categorical variable that and I have used If-then-else statement.

SCREENSHOT:

	Customer_Complaint	Date	Status	New_Status
1	Comcast Cable Internet Speeds	22/04/2015	Closed	Closed
2	Payment disappear - service got disconnected	04/08/2015	Closed	Closed
3	Speed and Service	18/04/2015	Closed	Closed
4	Comcast Imposed a New Usage Cap of 300GB that punishes streaming.	05/07/2015	Open	Open
5	Comcast not working and no service to boot	26/05/2015	Solved	Closed
6	ISP Charging for arbitrary data limits with overage fees	06/12/2015	Solved	Closed
7	Throttling service and unreasonable data caps	24/06/2015	Pending	Open
8	Comcast refuses to help troubleshoot and correct my service.	23/06/2015	Solved	Closed
9	Comcast extended outages	06/01/2015	Closed	Closed
10	Comcast Raising Prices and Not Being Available To Ask Why	28/06/2015	Open	Open
11	Billing after service was asked to be disconnected	24/04/2015	Closed	Closed
12	YAHOO FAILURE TO RESTORE EMAIL SEARCH FEATURE	05/06/2015	Closed	Closed
13	Comcast Violating Open Internet Rules by Blocking HBO Go Access on Sony Console	13/06/2015	Open	Open
14	Internet speed	23/06/2015	Solved	Closed
15	Internet Disconnects Every Night	30/06/2015	Solved	Closed

- Q4 - 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

CODE:

```
/* Stacked Bar Cart */
```

```
ods graphics / reset width=12in height=4.8in imagemap;
```

```
proc sgplot data=WORK.NEW_COMPLAINTS;
```

```
    vbar State / group=New_Status groupdisplay=stack stat=percent;
```

```
    yaxis grid;
```

```
    keylegend / location=inside;
```

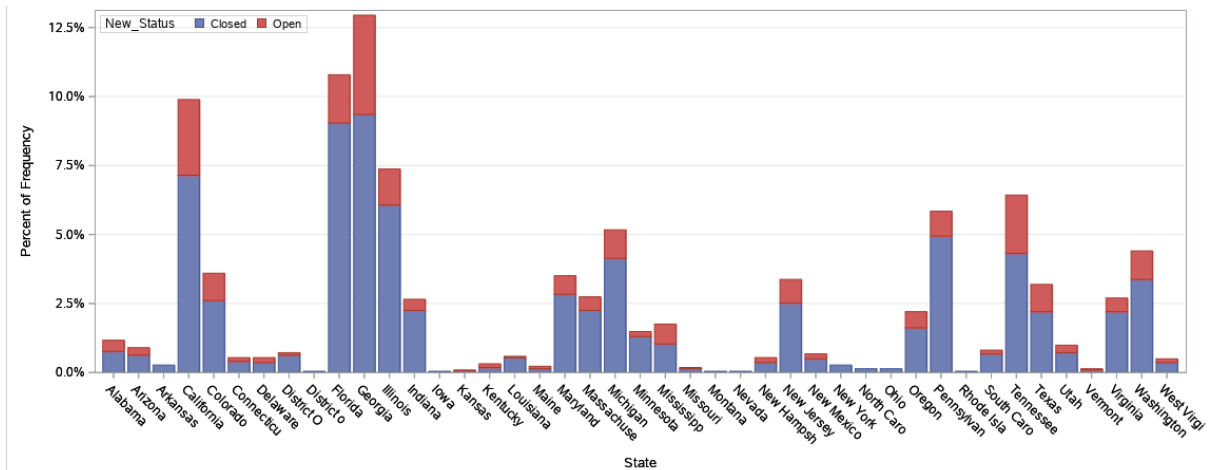
```
run;
```

```
ods graphics / reset;
```

RESULTS:

The bar chart is displayed below using the sgplot procedure.

SCREENSHOT:



- **Q5** - Provide the percentage of complaints resolved till date, which were received through the Internet and customer care calls.

CODE:

```
Proc Sort Data=New_Complaints;
    by Date;
Run;
```

```
Proc Freq Data=New_Complaints;
    Table New_Status*Received_Via;
    Title 'Display Percentage';
```

```
Run;
```

RESULTS:

The table below display the percentage of complaints for closed and open.

SCREENSHOT:

Display Percentage				
The FREQ Procedure				
Frequency Percent Row Pct Col Pct	Table of New_Status by Received_Via			
	New_Status	Received_Via		
		Customer Care Call	Internet	Total
Closed		864	843	1707
		38.85	37.90	76.75
		50.62	49.38	
		77.21	76.29	
Open		255	262	517
		11.47	11.78	23.25
		49.32	50.68	
		22.79	23.71	
Total		1119	1105	2224
		50.31	49.69	100.00