

# Comcast Telecom Consumer Complaints

## 1. Import data

Comcast <- read.csv(file.choose())

## 2. View data

View(Comcast)

Ticket..	Customer.Complaint	Date	Time	Received.Via	City	State	Zip.code	Status	Filing.on.Behalf.of.Someone	Months
1 250635	Comcast Cable Internet Speeds	22-04-2015	5:53:50 PM	Customer Care Call	Abingdon	Maryland	21009	Closed	No	April
2 223441	Payment disappear - service got disconnected	4-8-2015	10:22:56 AM	Internet	Acworth	Georgia	30102	Closed	No	August
3 242732	Speed and Service	18-04-2015	9:55:47 AM	Internet	Acworth	Georgia	30101	Closed	Yes	April
4 277946	Comcast imposed a New Usage Cap of 300GB that punishes...	5-7-2015	11:59:35 AM	Internet	Acworth	Georgia	30101	Open	Yes	July
5 307175	Comcast not working and no service to boot	26-05-2015	1:25:26 PM	Internet	Acworth	Georgia	30101	Closed	No	May
6 338519	ISP Charging for arbitrary data limits with average fees	6-12-2015	9:59:40 PM	Internet	Acworth	Georgia	30101	Solved	No	December
7 361148	Throttling service and unreasonable data cap	24-06-2015	10:15:55 AM	Customer Care Call	Acworth	Georgia	30101	Open	No	June
8 359792	Comcast refuses to help troubleshoot and correct my service.	23-06-2015	6:56:14 PM	Internet	Adrian	Michigan	49221	Solved	No	June
9 318072	Comcast extended outages	6-1-2015	11:46:30 PM	Customer Care Call	Alameda	California	94502	Closed	No	January
10 371214	Comcast Raising Prices and Not Being Available To Ask Why	28-06-2015	6:46:31 PM	Customer Care Call	Alameda	California	94501	Open	Yes	June
11 255938	Billing after service was asked to be disconnected	24-04-2015	4:40:36 PM	Internet	Albuquerque	New Mexico	87106	Closed	No	April
12 276409	VIDEO FAILURE TO RESTORE BUILT IN BACKUP FEATURE	5-8-2015	3:09:49 PM	Customer Care Call	Albuquerque	New Mexico	87108	Closed	No	June
13 339262	Comcast Violating Open Internet Rules by Blocking HBO Go...	13-06-2015	4:05:18 PM	Internet	Albuquerque	New Mexico	87105	Open	Yes	June
14 360178	Internet speed	23-06-2015	9:23:23 PM	Internet	Albuquerque	New Mexico	87113	Solved	No	June
15 376260	Internet Disconnects Every Night	30-06-2015	10:30:02 PM	Customer Care Call	Albuquerque	New Mexico	87116	Closed	No	June
16 370137	Internet complaint	27-06-2015	3:25:03 PM	Customer Care Call	Albuquerque	New Mexico	87102	Pending	No	June
17 363495	Internet Availability and Speed	24-06-2015	11:47:33 PM	Customer Care Call	Alexandria	Indiana	46001	Closed	No	June
18 238694	Comcast owes me \$85 and claims I need to return equipment.	16-04-2015	10:06:57 AM	Internet	Alexandria	Virginia	22304	Closed	No	April
19 230676	Horrible Internet Service	4-11-2015	7:48:05 PM	Customer Care Call	Alexandria	Virginia	22305	Closed	No	November
20 318725	Failure to provide services that I am billed for.	6-2-2015	1:03:52 PM	Customer Care Call	Alexandria	Virginia	22314	Closed	No	February
21 327657	Internet out all the time but they have a monopoly	6-7-2015	8:55:43 PM	Customer Care Call	Alexandria	Virginia	22305	Closed	No	July
22 328742	horrible cable service and customer service	6-8-2015	3:18:58 PM	Internet	Alexandria	Virginia	22312	Solved	No	August
23 328165	Speed	6-8-2015	12:03:37 PM	Customer Care Call	Alexandria	Virginia	22304	Closed	No	August
24 370338	Comcast monopoly bundling practices	27-06-2015	9:04:34 PM	Internet	Alexandria	Virginia	22304	Open	No	June
25 370363	COMCAST	27-06-2015	6:37:29 PM	Internet	Alexandria	Virginia	22305	Closed	No	June
26 270163	bait and switch	5-2-2015	3:55:24 PM	Internet	Algonquin	Illinois	60102	Open	Yes	February
27 355976	Comcast Customer Service	22-06-2015	2:10:39 PM	Internet	Alliquippa	Pennsylvania	15001	Open	No	June
28 260651	Apartment Management's Exclusivity Contract with Comcast	28-04-2015	8:01:46 AM	Customer Care Call	Alston	Massachusetts	2134	Closed	No	April
29 305340	Unable to reach a Comcast agent for internet and billing iss...	24-05-2015	2:57:47 PM	Customer Care Call	Aloha	Oregon	97006	Closed	No	May
30 360759	Wifi internet not working as well	24-06-2015	2:23:23 AM	Internet	Aloha	Oregon	97006	Pending	No	June
31 265487	Comcast data caps	29-04-2015	9:40:19 PM	Internet	Alpharetta	Georgia	30022	Closed	No	April
32 296608	Comcast Internet Data Cap	19-05-2015	10:56:20 AM	Internet	Alpharetta	Georgia	30022	Solved	No	May
33 310990	XFINITY iMovers Edge program	28-05-2015	10:37:11 AM	Customer Care Call	Alpharetta	Georgia	30022	Closed	No	May
34 336543	Comcast Data Internet Issue	6-8-2015	1:05:04 AM	Internet	Alpharetta	Georgia	30023	Solved	No	August

## 3. To check the structure of the data

str(Comcast)

```
'data.frame': 2224 obs. of 11 variables:
 $ Ticket..      : chr "250635" "223441" "242732" "277946" ...
 $ Customer.Complaint : chr "Comcast Cable Internet Speeds" "Payment disappear - service got disconnected" "Speed and Service" "Comcast Imposed a New Usage Cap of 300GB that punishes streaming." ...
 $ Date          : chr "22-04-2015" "4-8-2015" "18-04-2015" "5-7-2015" ...
 $ Time          : chr "3:53:50 PM" "10:22:56 AM" "9:55:47 AM" "11:59:35 AM" ...
 $ Received.via  : chr "Internet" "Internet" "Internet" "Internet" ...
 $ City          : chr "Abingdon" "Acworth" "Acworth" "Acworth" ...
 $ State         : chr "Maryland" "Georgia" "Georgia" "Georgia" ...
 $ Zip.code      : int 21009 30102 30101 30101 30101 30101 30101 49221 94502 94501 ...
 $ Status        : chr "Closed" "Closed" "Closed" "Open" ...
 $ Filing.on.Behalf.of.Someone: chr "No" "No" "Yes" "Yes" ...
 $ Months       : chr "April" "August" "April" "July" ...
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## 4. To set the date pattern

Replaced the "slash" with "dash"

Comcast\$Date<- gsub(pattern="/", replacement="-",Comcast\$Date)

Comcast\$Date

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## 5. To check the months in the data set

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[529] "June" "June" "June" "June" "June" "June" "June" "June" "June" "June" "June"
[540] "April" "June" "April" "May" "May" "May" "October" "October" "June" "June" "June"
[551] "May" "September" "June" "May" "April" "June" "June" "June" "June" "June" "June"
[562] "April" "April" "April" "April" "April" "July" "May" "May" "February" "June" "August"
```

## 6. Daily complaint trend chart

```
daily_complaints<-Comcast%>%group_by(Date)%>% summarize(Numofcomplaints=n()) %>%
  arrange(desc(Numofcomplaints))
daily_complaints
```

```
> daily_complaints<-Comcast%>%group_by(Date)%>% summarize(Numofcomplaints=n()) %>% arrange(desc(Numofcomplaints))
> daily_complaints
# A tibble: 91 x 2
  Date       Numofcomplaints
<chr>      <int>
1 24-06-2015      218
2 23-06-2015      190
3 25-06-2015       98
4 26-06-2015       55
5 30-06-2015       53
6 29-06-2015       51
7 18-06-2015       47
8 6-12-2015        43
9 27-06-2015       39
10 15-06-2015       34
# ... with 81 more rows
```

## 7. Monthly complaint trend chart

```
Comcast%>%group_by(Months)%>% summarize(Numofcomplaints=n()) %>%
  arrange(desc(Numofcomplaints))
> Comcast%>%group_by(Months)%>% summarize(Numofcomplaints=n()) %>% arrange(desc(Numofcomplaints))
# A tibble: 12 x 2
  Months       Numofcomplaints
<chr>      <int>
1 June         1046
2 April         375
3 May          317
4 August         67
5 December       65
6 February       59
7 January        55
8 September       55
9 October        53
10 July          49
11 March         45
12 November      38
> |
```

## 8. Text mining done to get the frequency of complaint types.

```
Comcast_complaints<-(as.factor(Comcast$Customer.Complaint))
library(tm)
library(wordcloud)
cat(Comcast$Customer.Complaint)
```

```
> Comcast_complaints<-(as.factor(Comcast$Customer.Complaint))
> library(tm)
> library(wordcloud)
> cat(Comcast$Customer.Complaint)
Comcast Cable Internet Speeds Payment disappear - service got disconnected Speed and Service Comcast Imposed a New Usage Cap of 300GB that punishes streaming. Comcast not working and no service to boot ISP charging for arbitrary data limits with overage fees Throttling service and unreasonable data caps Comcast refuses to help troubleshoot and correct my service. Comcast extended outages Comcast Raising Prices and Not Being Available To Ask why Billing after service was asked to be disconnected YAHOO FAILURE TO RESTORE EMAIL SEARCH FEATURE Comcast Violating Open Internet Rules by Blocking HBO Go Access on Sony Consoles Internet speed Internet Disconnects Every Night Internet complaint Internet Availability and Speed Comcast owes me $65 and claims I need to return equipment I never had Horrible Internet Service Failure to provide services that I am billed for. Internet out all the time but they have a monopoly horrible cable service and customer service Speed Comcast monopoly bundling practices COMCAST! bait and switch Comcast Customer Service Apartment Management's Exclusivity Contract with Comcast Unable to reach a Comcast agent for internet and billing issues. wifi internet not working as well Comcast data caps Comcast Internet Data Cap XFINITY Movers Edge program Comcast Data Internet Usage Comcast not refunding my credit Comcast No Service Comcast INTERNET , BILLING AND SERVICE ISSUES Comcast blocking DirectTV signals pmts Slow Internet Speed not getting what I am paying for with internet Comcast bandwidth every evening drops to 10% of what is promised to our business isp dishonest about speeds Deceptive sales- change in billing amount etc. Comcast Billing Dispute Comcast Comcast Billing and Service Issues Cable prices rising service issues HBO GO on Playstation 4 Internet connectivity Email issues Monopoly Complaint against Xfinity/comcast Comcast credit after cancellation has not been received after more than a year Comcast False Promises Comcast Blocking UUP Port 443 Issues with Comcast Comcast Refuses to schedule a Future Service stoppage Comcast overbilling Comcast - failure to provide service, refusal to void contract Spotty Comcast service without service despite willingness to pay Issues with Xfinity/comcast Cable Modem rent for Internet access Comcast/Xfinity Speed issues AT&T Fraudulent claims reported to collections agency Comcast using a Data Cap to take however much money they like Comcast Data Cap Speed of service Comcast's Monopolistic Practices and Data capping Comcast data cap "trials" Comcast billing problem Comcast Needs Competition Comcast services/billing issues Incorrect Bill Legality of data caps Data caps Comcast Added Service After I Declined It Comcast Misled with overage Policy Cable service and telephone connect not complete Comcast data cap Comcast won't cancel My Service Data Caps Comcast disconnecting service before due date Comcast data cap Comcast unbelievable Treatment Denial of Comcast Business (Phone and internet) service to my dental practice Comcast's Terrible Service - How are they still in business? they are forcing me for my bank account information by suspending my services for no reason (I also feel like they are committing corporate theft). Comcast discontinuation of service issue Comcast customer service Comcast Comcast bandwidth data caps in Atlanta, GA Comcast won't quit charging me for modem rental Comcast download caps Horrible Comcast Customer Service Data Cap Bad customer Service disconnection of service Comcast Data Usage Charges Comcast refuses service to my address Comcast will not let me discuss my bill or service with a representative Comcast billing frauds Comcast TV/Internet hookup no service for 5+ days Comcast - Billing Comcast Internet Comcast speed integrity Data cap Comcast Atlanta Data Caps Comcast Atlanta Data Caps COMCAST Poor Customer Service Overage on 300GB data plan with Comcast Comcast bill Comcast Data Cap Unfair Billing Practices Comcast data caps Comcast Refusing to Honor Internet Rate speed Not Acceptable Internet Additional Charge. Comcast internet and cable service Comcast deceptive advertising, overage charges Comcast Data Caps Comcast: Xfinity Slamming Comcast support unable to provide accurate information Comcast Data Usage Limits Repeated Erroneous Modem Rental Charge Xfinitytv pricing Comcast monopoly Internet connection both upload and download speeds Internet Available
```

```
txt_corpus <- Corpus(VectorSource(Comcast$Customer.Complaint))
```

```
txt_corpus
```

```
> txt_corpus <- Corpus(VectorSource(Comcast$Customer.Complaint))
> txt_corpus
<<SimpleCorpus>>
Metadata: corpus specific: 1, document level (indexed): 0
Content: documents: 2224
```

```
txt_corpus$content
```

```
> txt_corpus$content
[1] "Comcast Cable Internet Speeds"
[2] "Payment disappear - service got disconnected"
[3] "Speed and Service"
[4] "Comcast Imposed a New Usage Cap of 300GB that punishes streaming."
[5] "Comcast not working and no service to boot"
[6] "ISP charging for arbitrary data limits with overage fees"
[7] "Throttling service and unreasonable data caps"
[8] "comcast refuses to help troubleshoot and correct my service."
[9] "comcast extended outages"
[10] "Comcast Raising Prices and Not Being Available To Ask why"
[11] "Billing after service was asked to be disconnected"
[12] "YAHOO FAILURE TO RESTORE EMAIL SEARCH FEATURE"
[13] "Comcast Violating Open Internet Rules by Blocking HBO Go Access on Sony Consoles"
[14] "Internet speed"
[15] "Internet Disconnects Every Night"
[16] "Internet complaint"
[17] "Internet Availability and Speed"
[18] "Comcast owes me $65 and claims I need to return equipment I never had"
[19] "Horrible Internet Service"
[20] "Failure to provide services that I am billed for."
[21] "Internet out all the time but they have a monopoly"
```

```
dtm<-DocumentTermMatrix(txt_corpus)
```

```
dtm
```

```
dtm<- as.matrix(dtm)
```

```
View(dtm)
```

```
dtm<-t(dtm)
```

```
number_occurrences<-rowSums(dtm)
```

```
number_occurrences<-sort(number_occurrences, decreasing=T)
```

## number\_occurrences

```
> dtm<-DocumentTermMatrix(txt_corpus)
> dtm
<<DocumentTermMatrix (documents: 2224, terms: 1725)>>
Non-/sparse entries: 8979/3827421
Sparsity           : 100%
Maximal term length: 26
weighting          : term frequency (tf)
> dtm<- as.matrix(dtm)
> view(dtm)
> dtm<-t(dtm)
> number_occurrences<-rowSums(dtm)
> number_occurrences<-sort(number_occurrences, decreasing=T)
> number_occurrences
```

comcast	internet	service	and
1160	508	411	277
billing	data	for	speed
273	217	179	112
cap	not	customer	issues
103	97	87	85
with	caps	practices	charges
77	76	70	69

```
Df_occurrences<-data.frame(word=names(number_occurrences),freq=number_occurrences)
```

## Df\_occurrences

```
> Df_occurrences<-data.frame(word=names(number_occurrences),freq=number_occurrences)
warning messages:
1: In doTryCatch(return(expr), name, parentenv, handler) :
  display list redraw incomplete
2: In doTryCatch(return(expr), name, parentenv, handler) :
  invalid graphics state
3: In doTryCatch(return(expr), name, parentenv, handler) :
  invalid graphics state
> Df_occurrences
```

	word	freq
comcast	comcast	1160
internet	internet	508
service	service	411
and	and	277
billing	billing	273
data	data	217
for	for	179
speed	speed	112
cap	cap	103
not	not	97
customer	customer	87
issues	issues	85
with	with	77
caps	caps	76
practices	practices	70
charges	charges	69
complaint	complaint	68
speeds	speeds	65
bill	bill	59
xfinity	xfinity	58
unfair	unfair	58
services	services	52
throttling	throttling	51
slow	slow	49
cable	cable	48
usage	usage	46
the	the	44
poor	poor	43
pricing	pricing	39
from	from	39
price	price	38
over	over	37
connection	connection	33
business	business	32

```
wordcloud(Df_occurrences$word,Df_occurrences$freq,scale=c(4,,5))
```





	Date	Time	Received.Via	City	State	Zip.code	Status	Filing.on.Behalf.of.Someone
needs	22-04-2015	3:53:50 PM	Customer Care Call	Abingdon	Maryland	21009	Closed	No
ce got disconnected	4-8-2015	10:22:56 AM	Internet	Acworth	Georgia	30102	Closed	No
	18-04-2015	9:55:47 AM	Internet	Acworth	Georgia	30101	Closed	Yes
Jstage Cap of 300GB that punishes...	5-7-2015	11:59:35 AM	Internet	Acworth	Georgia	30101	Open	Yes
no service to boot	26-05-2015	1:25:26 PM	Internet	Acworth	Georgia	30101	Closed	No
data limits with overage fees	6-12-2015	8:59:40 PM	Internet	Acworth	Georgia	30101	Closed	No
reasonable data caps	24-06-2015	10:13:55 AM	Customer Care Call	Acworth	Georgia	30101	Open	No
troubleshoot and correct my service...	23-06-2015	6:56:14 PM	Internet	Adrian	Michigan	49221	Closed	No
s	6-1-2015	11:46:30 PM	Customer Care Call	Alameda	California	94502	Closed	No
d Not Being Available To Ask Why	28-06-2015	6:46:31 PM	Customer Care Call	Alameda	California	94501	Open	Yes
ed to be disconnected	24-04-2015	4:40:36 PM	Internet	Albuquerque	New Mexico	87106	Closed	No
ORE EMAIL SEARCH FEATURE	5-6-2015	3:09:49 PM	Customer Care Call	Albuquerque	New Mexico	87109	Closed	No
Internet Rules by Blocking HBO Go...	13-06-2015	4:03:18 PM	Internet	Albuquerque	New Mexico	87105	Open	Yes
	23-06-2015	9:23:23 PM	Internet	Albuquerque	New Mexico	87113	Closed	No
' Night	30-06-2015	10:30:02 PM	Customer Care Call	Albuquerque	New Mexico	87116	Closed	No
	27-06-2015	3:25:03 PM	Customer Care Call	Albuquerque	New Mexico	87102	Open	No
need	24-06-2015	11:47:33 PM	Customer Care Call	Alexandria	Indiana	46001	Closed	No
I claims I need to return equipme...	16-04-2015	10:04:57 AM	Internet	Alexandria	Virginia	22304	Closed	No
	4-11-2015	7:48:05 PM	Customer Care Call	Alexandria	Virginia	22305	Closed	No
that I am billed for.	6-2-2015	1:03:52 PM	Customer Care Call	Alexandria	Virginia	22314	Closed	No
st they have a monopoly	6-7-2015	8:55:43 PM	Customer Care Call	Alexandria	Virginia	22305	Closed	No
customer service	6-8-2015	3:18:58 PM	Internet	Alexandria	Virginia	22312	Closed	No
	6-8-2015	12:03:37 PM	Customer Care Call	Alexandria	Virginia	22304	Closed	No
ing practices	27-06-2015	9:04:34 PM	Internet	Alexandria	Virginia	22304	Open	No
	27-06-2015	6:37:29 PM	Internet	Alexandria	Virginia	22305	Closed	No
	5-2-2015	3:55:24 PM	Internet	Algonquin	Illinois	60102	Open	Yes
I	22-06-2015	2:10:39 PM	Internet	Aliquippa	Pennsylvania	15001	Open	No
Exclusivity Contract with Comcast	28-04-2015	8:01:46 AM	Customer Care Call	Allston	Massachusetts	2134	Closed	No
t agent for internet and billing iss...	24-05-2015	2:57:47 PM	Customer Care Call	Aloha	Oregon	97006	Closed	No
is well	24-06-2015	2:23:23 AM	Internet	Aloha	Oregon	97006	Open	No
	29-04-2015	9:40:19 PM	Internet	Alpharetta	Georgia	30022	Closed	No
o	19-05-2015	10:56:20 AM	Internet	Alpharetta	Georgia	30022	Closed	No
gram	28-05-2015	10:37:13 AM	Customer Care Call	Alpharetta	Georgia	30022	Closed	No

10. State wise complaint status

a. States

```
> Comcast$State
 [1] "Maryland"      "Georgia"        "Georgia"        "Georgia"        "Georgia"        "Georgia"
 [7] "Georgia"       "Michigan"       "California"     "California"     "New Mexico"    "New Mexico"
[13] "New Mexico"    "New Mexico"    "New Mexico"    "New Mexico"    "Indiana"       "Virginia"
[19] "Virginia"      "Virginia"      "Pennsylvania"  "Massachusetts" "Oregon"        "Oregon"
[25] "Virginia"      "Illinois"      "Pennsylvania"  "Massachusetts" "Oregon"        "Oregon"
[31] "Georgia"       "Georgia"       "Georgia"       "Georgia"       "Georgia"       "Georgia"
[37] "Georgia"       "Texas"         "Pennsylvania"  "Pennsylvania"  "Massachusetts" "New Hampshire"
[43] "Minnesota"    "California"    "Michigan"      "Michigan"      "Michigan"      "Michigan"
[49] "Michigan"     "Michigan"     "Maryland"     "Pennsylvania"  "Minnesota"    "California"
[55] "Tennessee"    "California"    "Virginia"     "Virginia"     "Virginia"     "Virginia"
[61] "Virginia"     "Virginia"     "Virginia"     "Virginia"     "Virginia"     "Virginia"
[67] "Illinois"    "Illinois"    "Colorado"     "Virginia"     "Tennessee"    "Georgia"
[73] "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"
[79] "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"
[85] "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"
[91] "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"
[97] "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"
[103] "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"
[109] "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"
[115] "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"
[121] "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"
[127] "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"     "Georgia"
[133] "Georgia"     "Georgia"     "Florida"      "Alabama"      "Indiana"      "Michigan"
[139] "Georgia"     "Pennsylvania" "Washington"   "Washington"   "Washington"   "Georgia"
[145] "Georgia"     "Georgia"     "Georgia"     "Colorado"     "Colorado"     "Colorado"
[151] "Illinois"    "Illinois"    "Georgia"     "Georgia"     "Georgia"     "Texas"
[157] "Colorado"    "Massachusetts" "Pennsylvania" "Washington"   "Washington"   "Pennsylvania"
[163] "Pennsylvania" "New York"    "Maryland"    "Maryland"    "Maryland"    "Maryland"
[169] "Maryland"    "Maryland"    "Maryland"    "Maryland"    "Maryland"    "Maryland"
[175] "Maryland"    "Maryland"    "Maryland"    "Maryland"    "Maryland"    "Maryland"
[181] "Maryland"    "Maryland"    "Maryland"    "Indiana"     "New Jersey"   "Illinois"
[187] "Tennessee"   "Tennessee"   "Illinois"    "Maine"       "Washington"   "New Jersey"
[193] "New Jersey"  "California"  "Pennsylvania" "Oregon"      "Oregon"      "Indiana"
[199] "Pennsylvania" "Maryland"   "Maryland"   "Michigan"    "Washington"   "Washington"
[205] "Washington"  "Washington" "California"  "Michigan"    "Missouri"     "Maryland"
[211] "Illinois"    "Illinois"   "Pennsylvania" "Pennsylvania" "Pennsylvania" "California"
[217] "California"  "California" "Georgia"    "West Virginia" "Pennsylvania" "Maryland"
[223] "Virginia"    "New Jersey" "New Jersey" "Washington"  "New Jersey"  "Michigan"
[229] "Georgia"     "Georgia"    "Illinois"   "Illinois"    "Illinois"     "Illinois"
[235] "Indiana"     "Indiana"    "Indiana"    "Minnesota"   "Minnesota"    "Illinois"
[241] "Florida"     "Florida"    "Florida"    "Florida"     "Florida"     "Florida"
[247] "Florida"     "Florida"    "Florida"    "Florida"     "Florida"     "Massachusetts"
[253] "Massachusetts" "New Jersey" "Massachusetts" "Massachusetts" "Massachusetts" "Massachusetts"
[259] "Massachusetts" "Massachusetts" "Washington" "Washington" "Colorado"     "Colorado"
[265] "Colorado"    "Colorado"   "Illinois"   "Illinois"    "Florida"     "Montana"
[271] "Massachusetts" "Mississippi" "Mississippi" "Mississippi" "Connecticut"  "Georgia"
[277] "California"   "Tennessee"  "New Jersey" "New Jersey"  "New Jersey"  "New Jersey"
[283] "New Jersey"  "Washington" "New Jersey" "Colorado"    "Colorado"    "Michigan"
[289] "Michigan"     "Connecticut" "Pennsylvania" "Virginia"    "Virginia"    "Massachusetts"
[295] "Massachusetts" "Georgia"    "Pennsylvania" "Pennsylvania" "Massachusetts" "Massachusetts"
[301] "Colorado"    "Colorado"   "Colorado"   "Colorado"    "Colorado"    "Colorado"
[307] "Georgia"     "Georgia"    "Maine"      "Georgia"     "Georgia"     "Washington"
```

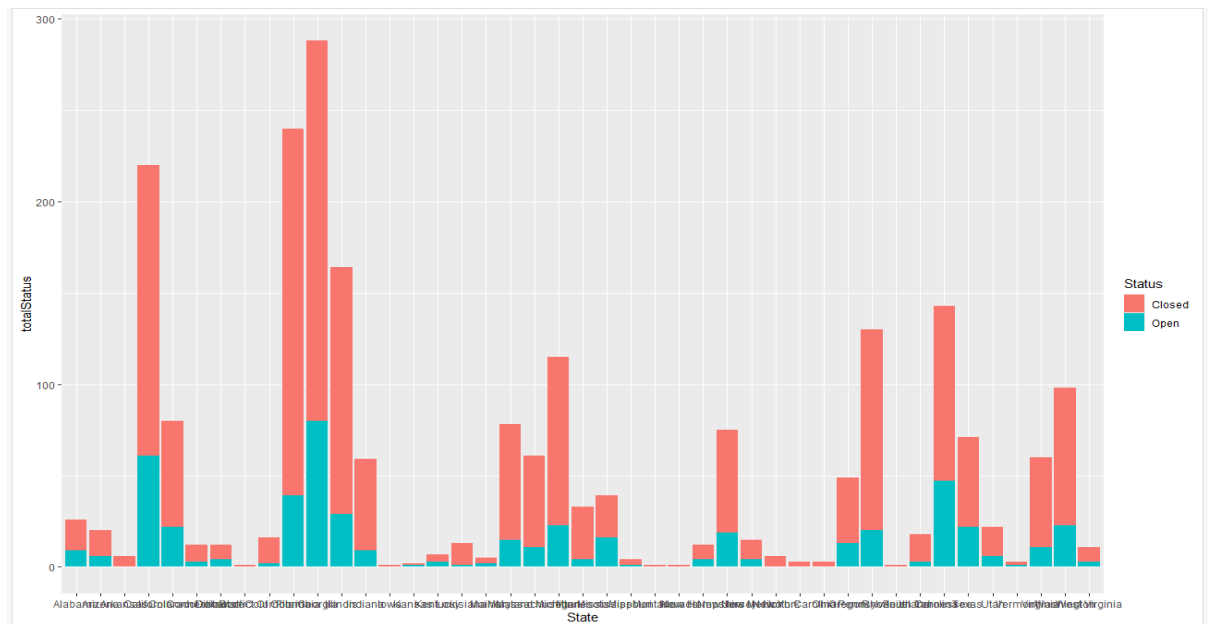
b. Data frame with State and Status variables

```
state_wise_status<-
data.frame(Comcast)%>%select(State,Status)%>%group_by(State,Status)%>%
summarise(totalStatus=n())
```

	State	Status	totalStatus
1	Alabama	Closed	17
2	Alabama	Open	9
3	Arizona	Closed	14
4	Arizona	Open	6
5	Arkansas	Closed	6
6	California	Closed	159
7	California	Open	61
8	Colorado	Closed	58
9	Colorado	Open	22
10	Connecticut	Closed	9
11	Connecticut	Open	3
12	Delaware	Closed	8
13	Delaware	Open	4
14	District of Columbia	Closed	1
15	District Of Columbia	Closed	14
16	District Of Columbia	Open	2
17	Florida	Closed	201
18	Florida	Open	39
19	Georgia	Closed	208
20	Georgia	Open	80
21	Illinois	Closed	135
22	Illinois	Open	29
23	Indiana	Closed	50
24	Indiana	Open	9
25	Iowa	Closed	1
26	Kansas	Closed	1
27	Kansas	Open	1
28	Kentucky	Closed	4
29	Kentucky	Open	3
30	Louisiana	Closed	12
31	Louisiana	Open	1
32	Maine	Closed	3
33	Maine	Open	2

**c. Stacked chart**

```
p<-ggplot(data=state_wise_status,aes(x= State,
                                     y= totalStatus,
                                     fill= Status))
p+geom_bar(stat="identity")
```



### 11. Total number of complaints State wise

```
state_wise_status<-data.frame(Comcast)%>%group_by(State)%>%summarize(Status=n())
View(state_wise_status)
```

State	Status
1 Alabama	26
2 Arizona	20
3 Arkansas	6
4 California	220
5 Colorado	80
6 Connecticut	12
7 Delaware	12
8 District of Columbia	1
9 District Of Columbia	16
10 Florida	240
11 Georgia	288
12 Illinois	164
13 Indiana	59
14 Iowa	1
15 Kansas	2
16 Kentucky	7
17 Louisiana	13
18 Maine	5
19 Maryland	78
20 Massachusetts	61
21 Michigan	115
22 Minnesota	33
23 Mississippi	39
24 Missouri	4
25 Montana	1
26 Nevada	1
27 New Hampshire	12
28 New Jersey	75
29 New Mexico	15
30 New York	6
31 North Carolina	3
32 Ohio	3
33 Oregon	49

### 12. State with maximum number of complaints



```
> which.max(state_wise_status$Status)
[1] 11
> state_wise_status[11,]
# A tibble: 1 x 2
  State      Status
  <chr>    <int>
1 Georgia    288
```

State Georgia has maximum number of complaints i. e 288.

### 13. State with highest percentage of unresolved complaints

a. Created a data frame with only Open cases

```
> open_status<-data.frame(Comcast)%>%select(State,Status)%>%filter(Status=="Open")
> open_status
   State Status
1  Georgia  Open
2  Georgia  Open
3 California  Open
4 New Mexico  Open
5 New Mexico  Open
6  Virginia  Open
7  Illinois  Open
8 Pennsylvania  Open
9  Oregon  Open
10 Pennsylvania  Open
11 Pennsylvania  Open
12 Massachusetts  Open
13 New Hampshire  Open
14  Virginia  Open
15  Virginia  Open
16  Georgia  Open
17  Georgia  Open
18  Georgia  Open
19  Georgia  Open
20  Georgia  Open
21  Georgia  Open
22  Georgia  Open
23  Georgia  Open
```

b. State wise total count of open cases

```
> open_status<-open_status%>%group_by(State)%>%count(Status)
> open_status
# A tibble: 34 x 3
# Groups:   State [34]
   State      Status      n
  <chr>    <chr> <int>
1 Alabama  Open      9
2 Arizona  Open      6
3 California  Open     61
4 Colorado  Open     22
5 Connecticut  Open      3
6 Delaware  Open      4
7 District of Columbia  Open      2
8 Florida   Open     39
9 Georgia   Open     80
10 Illinois  Open     29
# ... with 24 more rows
> |
```

c. State wise percentage calculation

```

> Open_status$Percent=Open_status$n/sum(Open_status$n)
> Open_status
# A tibble: 34 x 4
# Groups:   State [34]
  State      Status      n Percent
  <chr>      <chr> <int> <dbl>
1 Alabama    open      9 0.0174
2 Arizona    open      6 0.0116
3 California open     61 0.118
4 Colorado   open     22 0.0426
5 Connecticut open      3 0.00580
6 Delaware   open      4 0.00774
7 District of Columbia open    2 0.00387
8 Florida    open     39 0.0754
9 Georgia    open     80 0.155
10 Illinois  open     29 0.0561
# ... with 24 more rows
> Open_status$Percent=Open_status$Percent*100
> Open_status
# A tibble: 34 x 4
# Groups:   State [34]
  State      Status      n Percent
  <chr>      <chr> <int> <dbl>
1 Alabama    open      9  1.74
2 Arizona    open      6  1.16
3 California open     61 11.8
4 Colorado   open     22  4.26
5 Connecticut open      3  0.580
6 Delaware   open      4  0.774
7 District of Columbia open    2  0.387
8 Florida    open     39  7.54
9 Georgia    open     80 15.5
10 Illinois  open     29  5.61
# ... with 24 more rows

```

d. State with highest percentage of unresolved complaints

```

> which.max(Open_status$Percent)
[1] 9
> Open_status[9,]
# A tibble: 1 x 4
# Groups:   State [1]
  State      Status      n Percent
  <chr>      <chr> <int> <dbl>
1 Georgia    Open     80  15.5

```

Therefore, state of Georgia has high percentage of unresolved complaints i.e 15.5%.

#### 14. Percentage of complaints resolved which were received through Internet and Customer Care Call

```

[961] "Customer Care Call" "Internet" "Customer Care Call" "Internet" "Customer Care Call" "Internet"
[967] "Internet" "Customer Care Call" "Internet" "Customer Care Call" "Customer Care Call" "Internet"
[973] "Customer Care Call" "Customer Care Call" "Customer Care Call" "Internet" "Customer Care Call" "Customer Care Call"
[979] "Customer Care Call" "Internet" "Customer Care Call" "Internet" "Customer Care Call" "Customer Care Call"
[985] "Internet" "Customer Care Call" "Customer Care Call" "Customer Care Call" "Customer Care Call" "Customer Care Call"
[991] "Customer Care Call" "Customer Care Call" "Customer Care Call" "Internet" "Customer Care Call" "Internet"
[997] "Internet" "Internet" "Customer Care Call" "Internet" "Customer Care Call" "Internet"
[ reached getOption("max.print") -- omitted 1224 entries ]
> complaints_received_via_internet_customer_call<-data.frame(Comcast)%>%group_by(Received.Via)%>%
+ filter(Received.Via ==c("Internet","Customer Care Call"))%>%count(Status)
Warning messages:
1: In Received.Via == c("Internet", "Customer Care Call") :
  longer object length is not a multiple of shorter object length
2: In Received.Via == c("Internet", "Customer Care Call") :
  longer object length is not a multiple of shorter object length
> complaints_received_via_internet_customer_call
# A tibble: 4 x 3
# Groups:   Received.Via [2]
  Received.Via      Status      n
  <chr>      <chr> <int>
1 Customer Care Call Closed  428
2 Customer Care Call Open   131
3 Internet     Closed  430
4 Internet     Open   123
> sum(complaints_received_via_internet_customer_call$n)
[1] 1112
> closed_count<-complaints_received_via_internet_customer_call%>%filter(Status=="Closed")
> closed_count
# A tibble: 2 x 3
# Groups:   Received.Via [2]
  Received.Via      Status      n
  <chr>      <chr> <int>
1 Customer Care Call Closed  428
2 Internet     Closed  430
> sum(closed_count$n)
[1] 858
> resolved_complaints_Percent<-858/1112*100
> resolved_complaints_Percent
[1] 77.15827

```

Therefore, the percentage of the complaints resolved which were received via internet and customer care call is 77.16.