User Complaints Mining

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Preparing data

Load and clean the customer complaints data

The data should be downloaded from Kaggle's Consumer Complaints Database.

Loading and removing rows with no complaint narrative and unnecessary colimns:

```
df <- read_csv(file="../data/Consumer_Complaints.csv.zip",col_names = TRUE)
df <- df[,-c(1,7,9:18)]
df <- df[!is.na(df[,"Consumer complaint narrative"]),] #199,970
df <- df[!is.na(df[,"Company"]),] # no NA's
df <- df[!is.na(df[,"Product"]),] # no NA's
df <- df[!is.na(df[,"Issue"]),] # no NA's
df <- df[!is.na(df[,"Sub-product"]),] # 147,788 total left
df <- df[!is.na(df[,"Sub-issue"]),]   # 81,940 total left
df
```

```
## # A tibble: 81,940 x 6
##    Product  `Sub-product` Issue `Sub-issue` `Consumer complaint n~ Company
##    <chr>    <chr>         <chr> <chr>       <chr>                 <chr>
##  1 Debt co~ Other (i.e. ~ Disc~ Not given ~ This company refuses ~ The CB~
##  2 Debt co~ Credit card   Impr~ Talked to ~ "This complaint is in~ SQUARE~
##  3 Debt co~ Credit card   Taki~ Sued w/o p~ "I am writing to requ~ Selip ~
##  4 Debt co~ Other (i.e. ~ Cont~ Debt resul~ My identity was stole~ Southw~
##  5 Student~ Federal stud~ Can'~ Can't get ~ "I was dropped from m~ AES/PH~
##  6 Debt co~ Credit card   Disc~ Not given ~ The first communicati~ Blatt,~
##  7 Debt co~ Other (i.e. ~ Comm~ Frequent o~ "My complaint is n't ~ AR Res~
##  8 Debt co~ I do not know Fals~ Attempted ~ In a clearance interv~ SANTAN~
##  9 Student~ Non-federal ~ Can'~ Can't temp~ XXXX University, XXXX~ Navien~
## 10 Student~ Non-federal ~ Deal~ Received b~ I had attended XXXX a~ CITIZE~
## # ... with 81,930 more rows
```

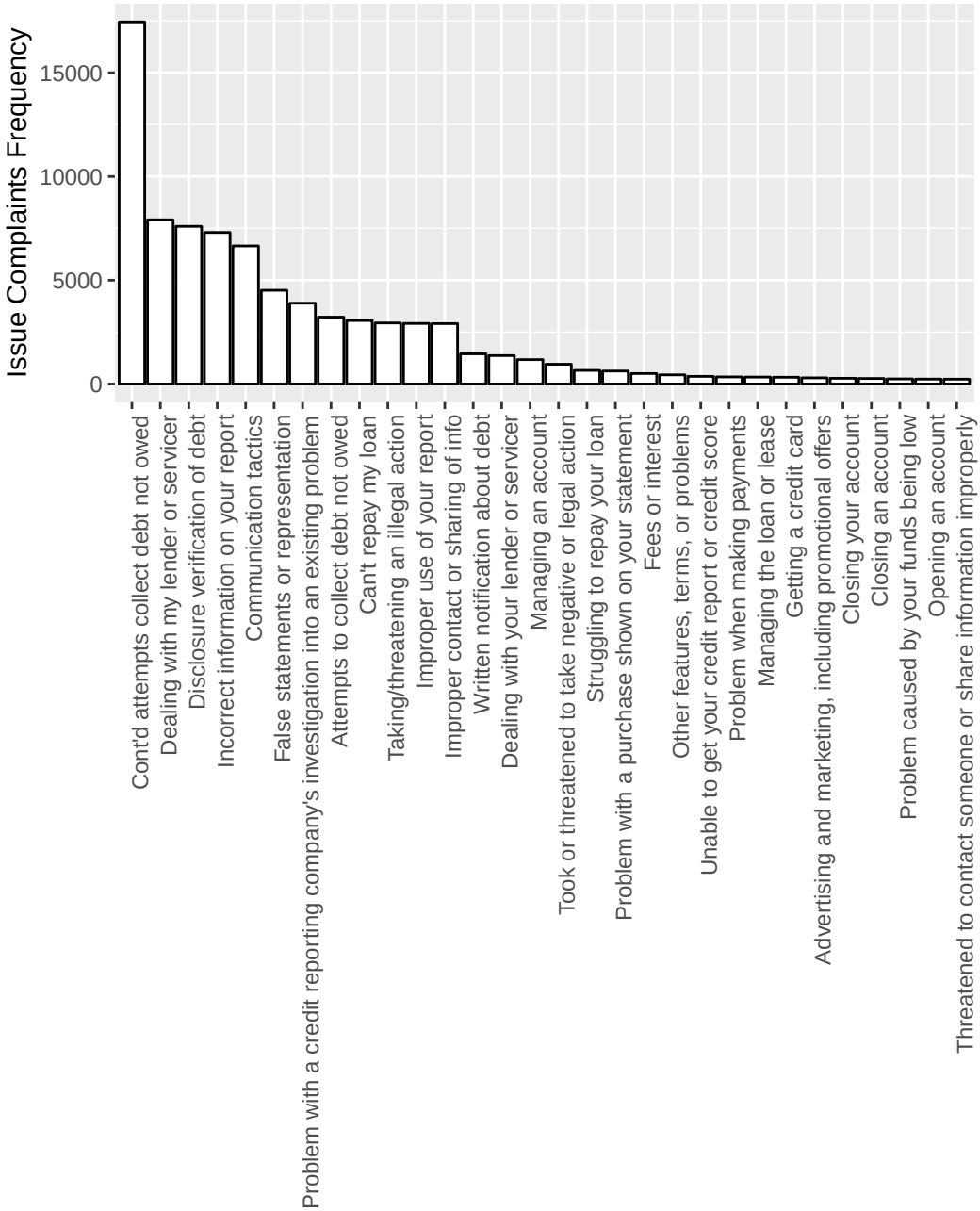
Converting all but narrative columns to factors:

```
df$Product <- as.factor(df$Product)
df$`Sub-product` <- as.factor(df$`Sub-product`)
df$Issue <- as.factor(df$Issue)
df$`Sub-issue` <- as.factor(df$`Sub-issue`)
df$Company <- as.factor(df$Company)
```

Feature engineering

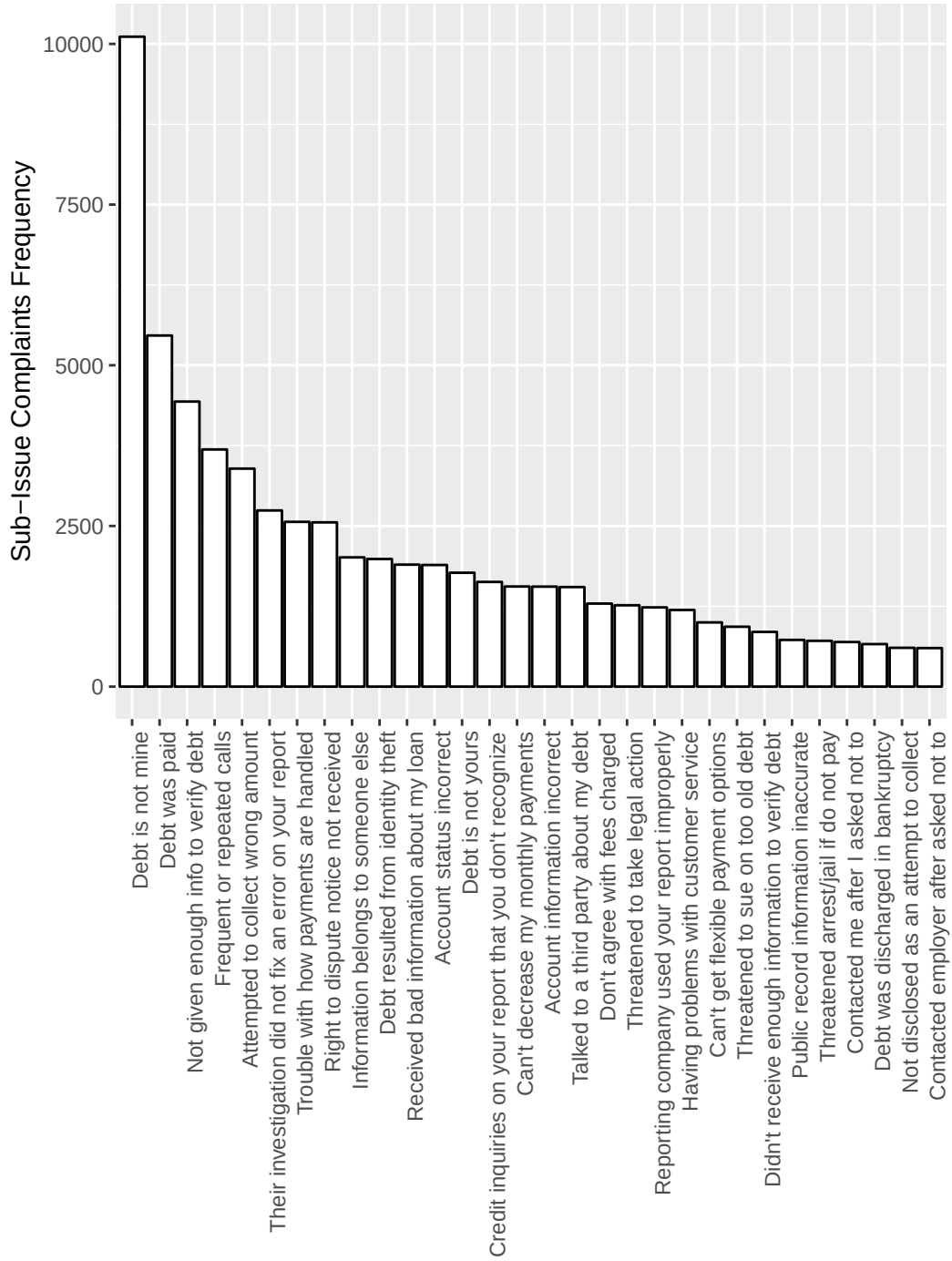
Distribution of the most frequent "Issue" complaints

```
most_freq_issues_list <- levels(fct_infreq(df$Issue))[1:30]
ggplot() + aes(fct_infreq(df[df$Issue %in% most_freq_issues_list,]$Issue))+
  geom_histogram(colour="black", fill="white", stat = "count")+
  ylab("Issue Complaints Frequency") + xlab("")+
  theme(axis.text.x = element_text(angle =90, hjust = 1))
```



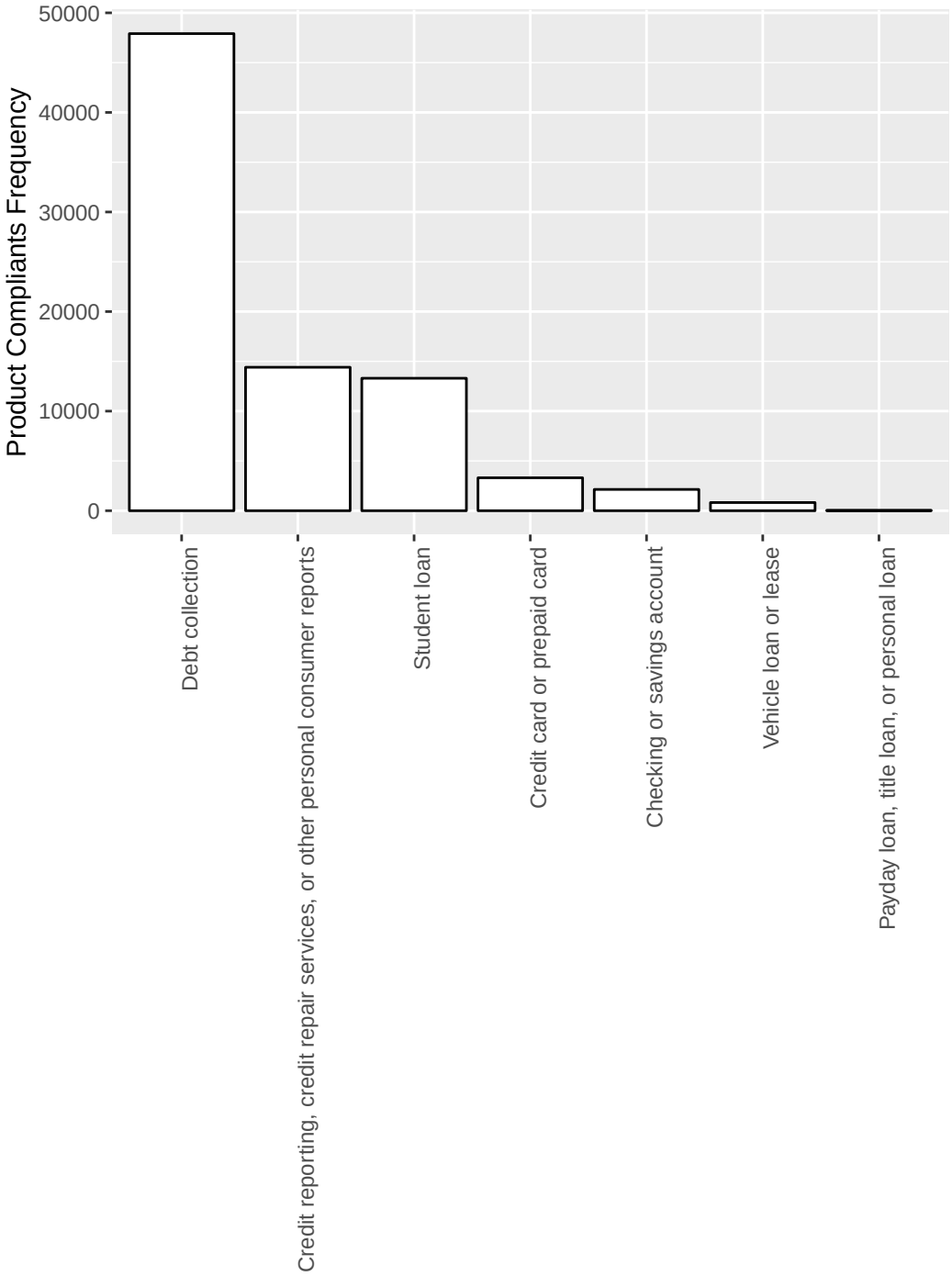
Distribution of the most frequent "Sub-issue" complaints

```
most_freq_subissues_list <- levels(fct_infreq(df$`Sub-issue`))[1:30]
ggplot() + aes(fct_infreq(df[df$`Sub-issue` %in% most_freq_subissues_list,]$`Sub-issue`))+
  geom_histogram(colour="black", fill="white", stat = "count")+
  ylab("Sub-Issue Complaints Frequency") + xlab("")+
  theme(axis.text.x = element_text(angle =90, hjust = 1))
```



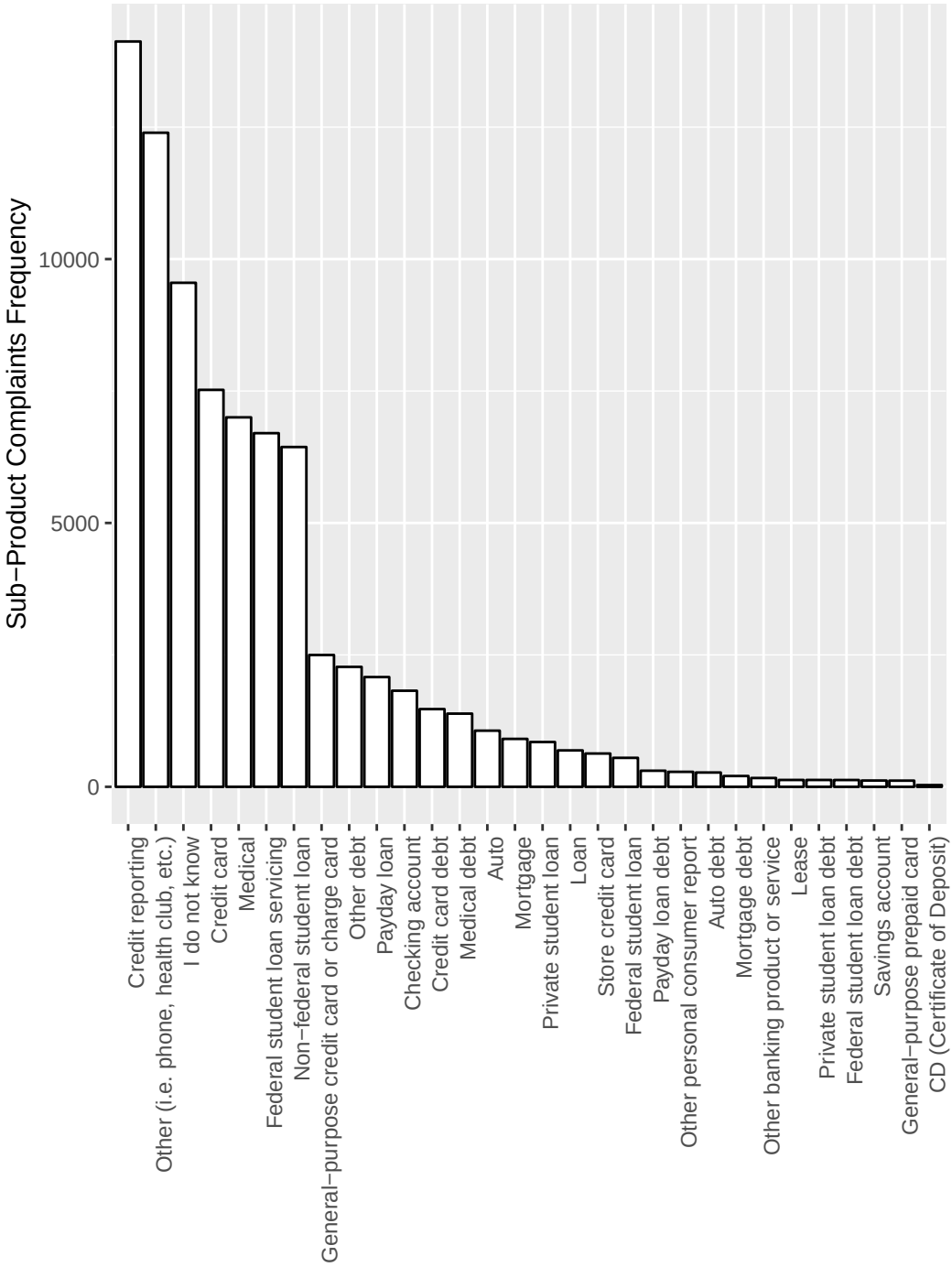
Distribution of the most frequent "Product" complaints

```
most_freq_product_list <- levels(fct_infreq(df$Product))[1:30]
ggplot() + aes(fct_infreq(df[df$Product %in% most_freq_product_list,]$Product))+
  geom_histogram(colour="black", fill="white", stat = "count")+
  ylab("Product Compliants Frequency") + xlab("")+
  theme(axis.text.x = element_text(angle =90, hjust = 1))
```



Distribution of the most frequent "Sub-product" complaints

```
most_freq_subproduct_list <- levels(fct_infreq(df$`Sub-product`))[1:30]
ggplot() + aes(fct_infreq(df[df$`Sub-product` %in% most_freq_subproduct_list,]$`Sub-product`))+
  geom_histogram(colour="black", fill="white", stat = "count")+
  ylab("Sub-Product Complaints Frequency") + xlab("")+
  theme(axis.text.x = element_text(angle =90, hjust = 1))
```



Distribution of the most frequent "Company" complaints

```
most_freq_company_list <- levels(fct_infreq(df$Company))[1:30]
ggplot() + aes(fct_infreq(df[df$Company %in% most_freq_company_list,]$Company))+
  geom_histogram(colour="black", fill="white", stat = "count")+
  ylab("Company Complaints Frequency") + xlab("")+
  theme(axis.text.x = element_text(angle =90, hjust = 1))
```