adapt-ready-joel

May 3, 2024

1 1. Complaints Data Analysis

The dataset contains 50 lakh rows of which 10 lakh rows are chosen for this analysis to keep computation time and resources user friendly

[11]:

```
#importing necessary packages
import pandas as pd
import matplotlib.pyplot as plt
from collections import Counter
import seaborn as sns
```

[5]:

```
#reading the dataframe
df=pd.read_csv('/newdf.csv',low_memory=False)
```

[6]:

```
df.head()
```

[6]:

```
  Date received                                            Product  \
0    2024-01-23  Credit reporting or other personal consumer re…
1    2024-01-24  Credit reporting or other personal consumer re…
2    2024-01-24  Credit reporting or other personal consumer re…
3    2024-01-23  Credit reporting or other personal consumer re…
4    2024-01-23  Credit reporting or other personal consumer re…

        Sub-product                                 Issue  \
0  Credit reporting  Incorrect information on your report
1  Credit reporting  Incorrect information on your report
2  Credit reporting           Improper use of your report
3  Credit reporting           Improper use of your report
4  Credit reporting           Improper use of your report

                                           Sub-issue  \
0                Information belongs to someone else
1                Information belongs to someone else
2  Credit inquiries on your report that you don't…
3      Reporting company used your report improperly
4      Reporting company used your report improperly

                        Consumer complaint narrative  \
0                                                NaN
1                                                NaN
2                                                NaN
3  In accordance with the Fair Credit Reporting a…
4  I have observed several deviations from mandat…

                             Company public response  \
0  Company has responded to the consumer and the …
1  Company has responded to the consumer and the …
2  Company has responded to the consumer and the …
3  Company has responded to the consumer and the …
4  Company has responded to the consumer and the …

                                  Company State ZIP code Tags  \
0  TRANSUNION INTERMEDIATE HOLDINGS, INC.    ME    04005  NaN
1  TRANSUNION INTERMEDIATE HOLDINGS, INC.    FL    33311  NaN
2  TRANSUNION INTERMEDIATE HOLDINGS, INC.    PA    175XX  NaN
3  TRANSUNION INTERMEDIATE HOLDINGS, INC.    TX    79907  NaN
4  TRANSUNION INTERMEDIATE HOLDINGS, INC.    NY    10075  NaN

  Consumer consent provided? Submitted via Date sent to company  \
0       Consent not provided           Web           2024-01-23
1                      Other           Web           2024-01-24
2                      Other           Web           2024-01-24
3           Consent provided           Web           2024-01-23
4           Consent provided           Web           2024-01-23

      Company response to consumer Timely response? Consumer disputed?  \
0  Closed with non-monetary relief              Yes                NaN
1  Closed with non-monetary relief              Yes                NaN
2  Closed with non-monetary relief              Yes                NaN
3  Closed with non-monetary relief              Yes                NaN
4  Closed with non-monetary relief              Yes                NaN

   Complaint ID
0     8206605.0
1     8211390.0
2     8211362.0
3     8210433.0
4     8209430.0
```

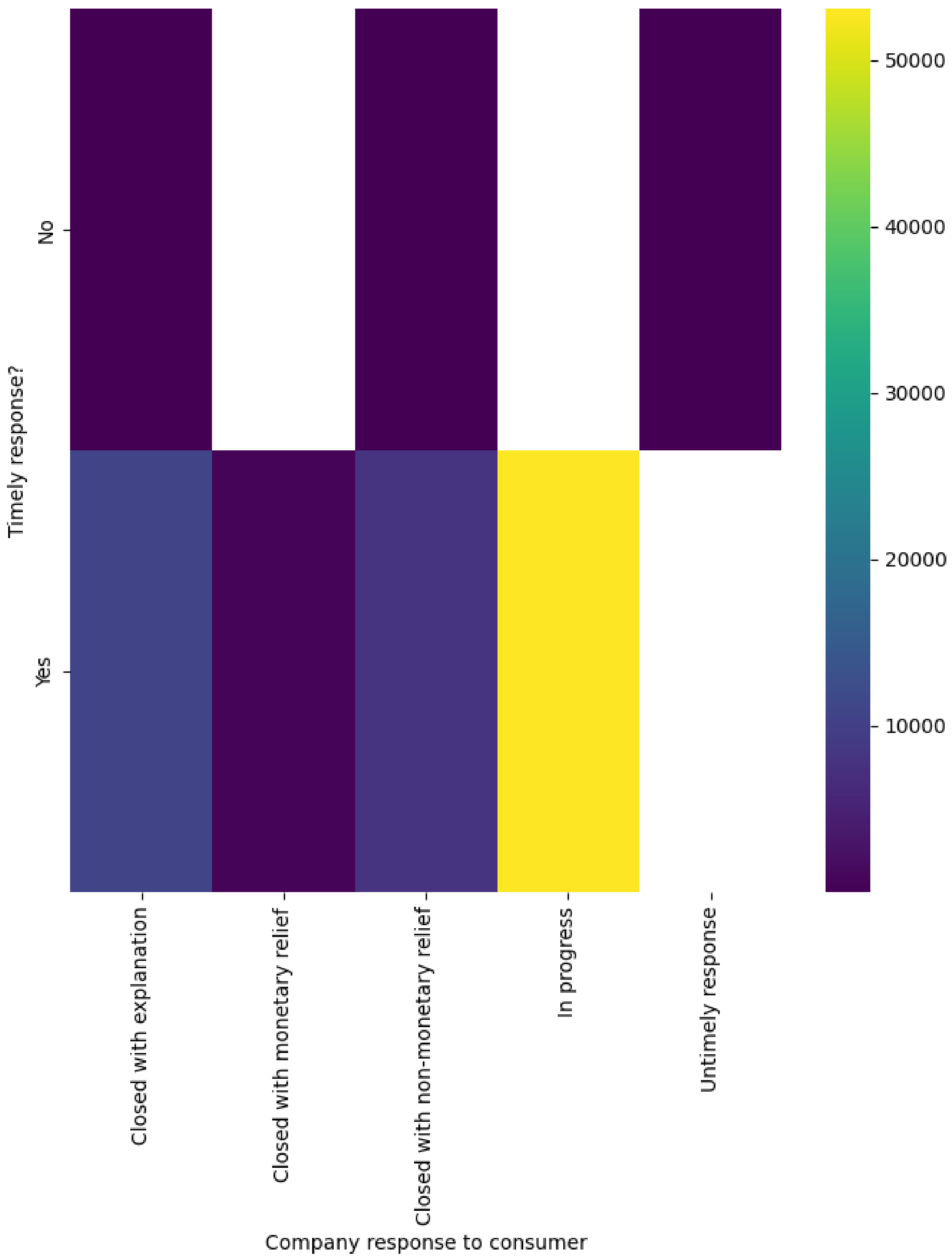
[17]:
```
df.info()#getiing the general idea of the dataset
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 72323 entries, 0 to 72322
Data columns (total 18 columns):
 #   Column                        Non-Null Count  Dtype
```

```
---  ------                       --------------  -----
 0   Date received                72323 non-null  object
 1   Product                      72323 non-null  object
 2   Sub-product                  72323 non-null  object
 3   Issue                        72322 non-null  object
 4   Sub-issue                    71403 non-null  object
 5   Consumer complaint narrative  4601 non-null   object
 6   Company public response      10201 non-null  object
 7   Company                      72322 non-null  object
 8   State                        72154 non-null  object
 9   ZIP code                     72322 non-null  object
 10  Tags                         3033 non-null   object
 11  Consumer consent provided?   15027 non-null  object
 12  Submitted via                72322 non-null  object
 13  Date sent to company         72322 non-null  object
 14  Company response to consumer  72322 non-null  object
 15  Timely response?             72322 non-null  object
 16  Consumer disputed?           2 non-null      object
 17  Complaint ID                 72322 non-null  float64
dtypes: float64(1), object(17)
memory usage: 9.9+ MB
```

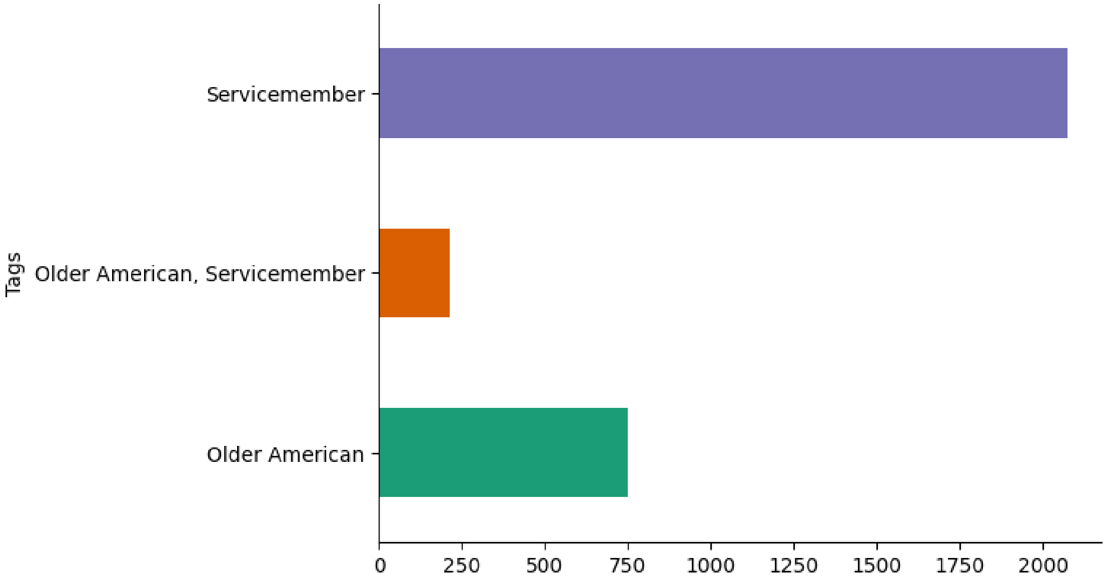
[13]:

```
# @title Company response to consumer vs Timely response?



plt.subplots(figsize=(8, 8))
df_2dhist = pd.DataFrame({
    x_label: grp['Timely response?'].value_counts()
    for x_label, grp in df.groupby('Company response to consumer')
})
sns.heatmap(df_2dhist, cmap='viridis')
plt.xlabel('Company response to consumer')
_ = plt.ylabel('Timely response?')
```



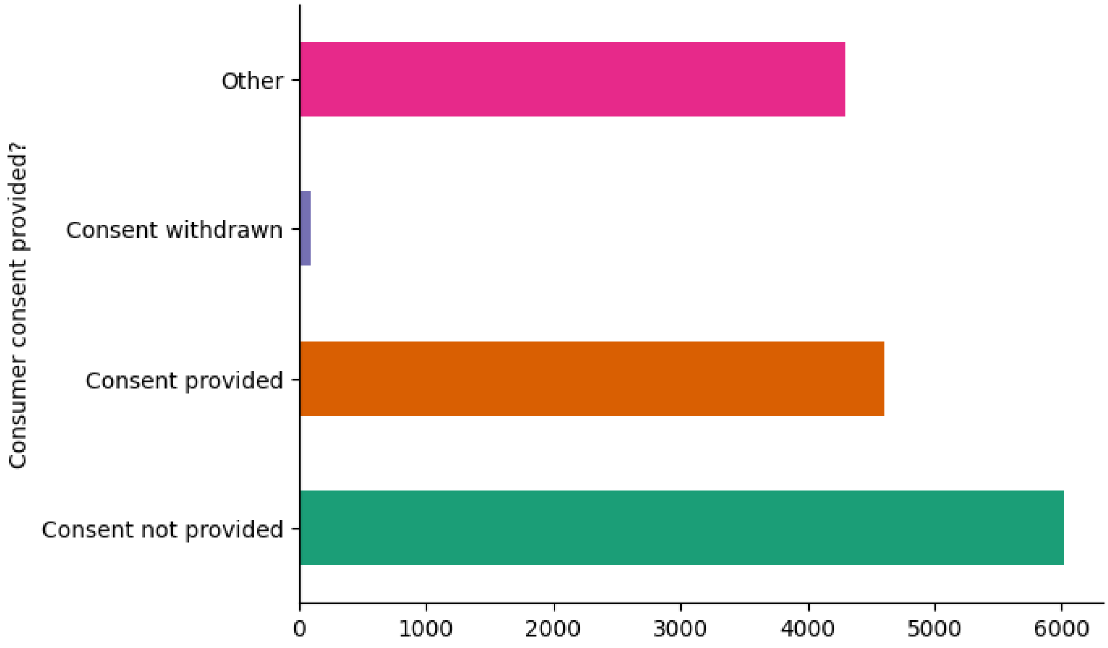
The graph explains the response from the company and analyses wether the response is timely or not

[14]:
```
# @title Tags

df.groupby('Tags').size().plot(kind='barh', color=sns.palettes.
 ↪mpl_palette('Dark2'))
plt.gca().spines[['top', 'right',]].set_visible(False)
```



The graph analyses the tags column and finds the number of different type of customer based on the tags

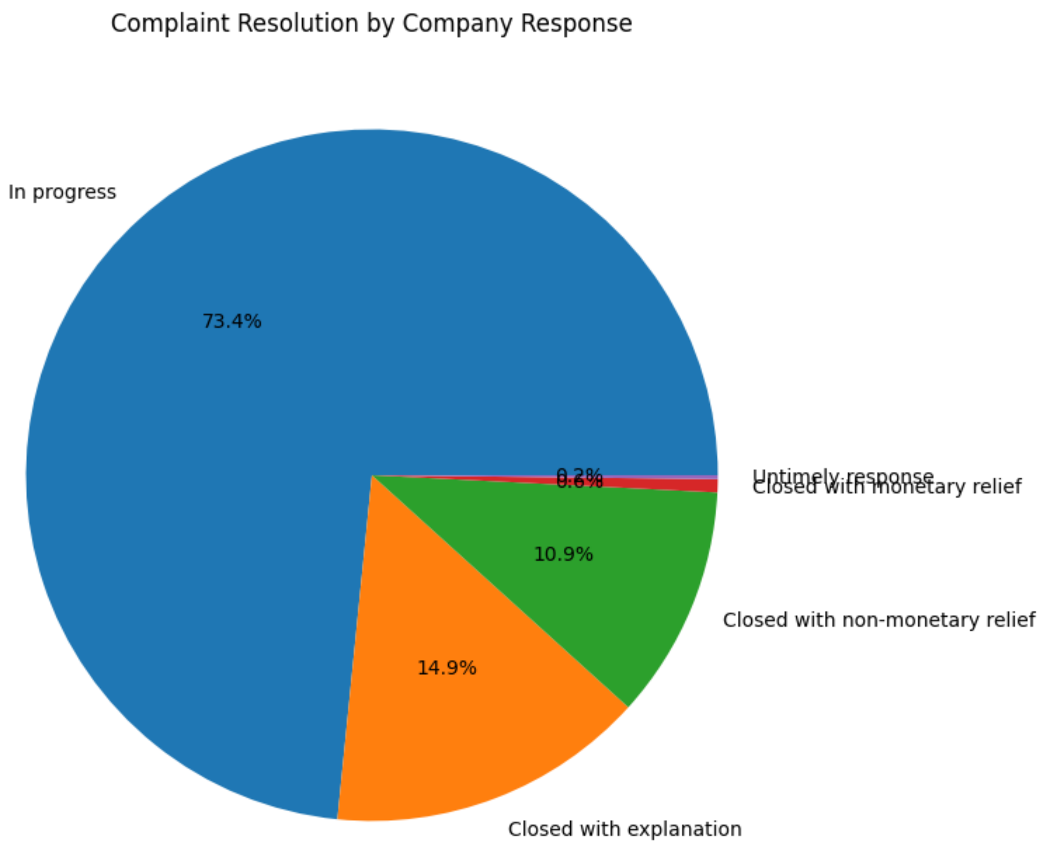
[15]:
```
# @title Consumer consent provided?

df.groupby('Consumer consent provided?').size().plot(kind='barh', color=sns.
 ↪palettes.mpl_palette('Dark2'))
plt.gca().spines[['top', 'right',]].set_visible(False)
```



This graph analyses the consent provided column and visualizes the various types of consents given by the customer

Complaint resolution by company response

[16]:
```
# @title Complaint resolution by company response
response_counts = df['Company response to consumer'].value_counts()

# Create a pie chart
plt.figure(figsize=(8, 8))
plt.pie(response_counts, labels=response_counts.index, autopct='%1.1f%%')
plt.title('Complaint Resolution by Company Response')
plt.show()
```



The pie chart explains the resolutions provided by the company to the issues raised by the customers

2 2. longest continuous increasing subsequence

Given an unsorted array of integers, find the length of the longest continuous increasing subsequence (subarray). Example 1: Input: [1,3,5,4,7] Output: 3 Example 2: Input: [2,2,2,2,2] Output: 1

[21]:

```python
def lon_seq(nums):
  n = len(nums)
  longest_length = 0

  for i in range(n):
    current_length = 1
    for j in range(i + 1, n):
      if nums[j] > nums[i]:
        current_length += 1
    longest_length = max(longest_length, current_length)
  return longest_length
```

[23]:

```
nums = [2,2,2,2,2]
length = lon_seq(nums)
print("Length of LIS:", length)
```

```
Length of LIS: 1
```

3 3.largest number.

Given a list of non negative integers, arrange them such that they form the largest number.

Example 1: Input: [10,2] Output: “210” Example 2:

Input: [3,30,34,5,9] Output: “9534330”

[29]:

```
from functools import cmp_to_key

nums = [3, 30, 34, 5, 9]
nums.sort(key=cmp_to_key(lambda a, b: int(str(b) + str(a)) - int(str(a) +␣
 ↪str(b))))
result = ''.join(map(str, nums))

print(result)
```

```
9534330
```

4 servlet-name and servlet-class

[32]:

```
jsondata={"web-app": {
    "servlet": [
      {
        "servlet-name": "cofaxCDS",
        "servlet-class": "org.cofax.cds.CDSServlet",
        "init-param": {
          "configGlossary:installationAt": "Philadelphia, PA",
          "configGlossary:adminEmail": "ksm@pobox.com",
          "configGlossary:poweredBy": "Cofax",
          "configGlossary:poweredByIcon": "/images/cofax.gif",
          "configGlossary:staticPath": "/content/static",
          "templateProcessorClass": "org.cofax.WysiwygTemplate",
          "templateLoaderClass": "org.cofax.FilesTemplateLoader",
          "templatePath": "templates",
          "templateOverridePath": "",
          "defaultListTemplate": "listTemplate.htm",
          "defaultFileTemplate": "articleTemplate.htm",
          "useJSP": "false",
          "jspListTemplate": "listTemplate.jsp",
          "jspFileTemplate": "articleTemplate.jsp",
          "cachePackageTagsTrack": 200,
          "cachePackageTagsStore": 200,
          "cachePackageTagsRefresh": 60,
          "cacheTemplatesTrack": 100,
          "cacheTemplatesStore": 50,
          "cacheTemplatesRefresh": 15,
          "cachePagesTrack": 200,
          "cachePagesStore": 100,
          "cachePagesRefresh": 10,
          "cachePagesDirtyRead": 10,
          "searchEngineListTemplate": "forSearchEnginesList.htm",
          "searchEngineFileTemplate": "forSearchEngines.htm",
          "searchEngineRobotsDb": "WEB-INF/robots.db",
          "useDataStore": "true",
          "dataStoreClass": "org.cofax.SqlDataStore",
          "redirectionClass": "org.cofax.SqlRedirection",
          "dataStoreName": "cofax",
          "dataStoreDriver": "com.microsoft.jdbc.sqlserver.SQLServerDriver",
          "dataStoreUrl": "jdbc:microsoft:sqlserver://LOCALHOST:1433;
  ↪DatabaseName=goon",
          "dataStoreUser": "sa",
          "dataStorePassword": "dataStoreTestQuery",
          "dataStoreTestQuery": "SET NOCOUNT ON;select test='test';",
          "dataStoreLogFile": "/usr/local/tomcat/logs/datastore.log",
          "dataStoreInitConns": 10,
          "dataStoreMaxConns": 100,
          "dataStoreConnUsageLimit": 100,
          "dataStoreLogLevel": "debug",
          "maxUrlLength": 500}},
      {
        "servlet-name": "cofaxEmail",
        "servlet-class": "org.cofax.cds.EmailServlet",
        "init-param": {
        "mailHost": "mail1",
        "mailHostOverride": "mail2"}},
      {
        "servlet-name": "cofaxAdmin",
        "servlet-class": "org.cofax.cds.AdminServlet"},

      {
        "servlet-name": "fileServlet",
        "servlet-class": "org.cofax.cds.FileServlet"},
      {
        "servlet-name": "cofaxTools",
        "servlet-class": "org.cofax.cms.CofaxToolsServlet",
        "init-param": {
            "templatePath": "toolstemplates/",
            "log": 1,
            "logLocation": "/usr/local/tomcat/logs/CofaxTools.log",
            "logMaxSize": "",
            "dataLog": 1,
            "dataLogLocation": "/usr/local/tomcat/logs/dataLog.log",
            "dataLogMaxSize": "",
            "removePageCache": "/content/admin/remove?cache=pages&id=",
            "removeTemplateCache": "/content/admin/remove?cache=templates&id=",
            "fileTransferFolder": "/usr/local/tomcat/webapps/content/
  ↪fileTransferFolder",
            "lookInContext": 1,
            "adminGroupID": 4,
            "betaServer": "true"}}],
      "servlet-mapping": {
        "cofaxCDS": "/",
        "cofaxEmail": "/cofaxutil/aemail/*",
        "cofaxAdmin": "/admin/*",
        "fileServlet": "/static/*",
        "cofaxTools": "/tools/*"},

      "taglib": {
        "taglib-uri": "cofax.tld",
        "taglib-location": "/WEB-INF/tlds/cofax.tld"}}}
```

[35]:

```python
import json
data=jsondata['web-app']['servlet']
df=pd.json_normalize(data)
df=df[['servlet-name','servlet-class']]
df
```

[35]:

```
  servlet-name                 servlet-class
0     cofaxCDS        org.cofax.cds.CDSServlet
1   cofaxEmail      org.cofax.cds.EmailServlet
2   cofaxAdmin      org.cofax.cds.AdminServlet
3  fileServlet       org.cofax.cds.FileServlet
4   cofaxTools  org.cofax.cms.CofaxToolsServlet
```

[36]:

```python
df.to_csv('servlet.csv',index=False)
```