# Import libraries and load dataset

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from wordcloud import WordCloud, STOPWORDS
import re
```

## Read Data set

```
 df = pd.read_csv("train.csv")
```

```
df = pd.read_csv("train.csv",index_col="id")
```

```
df.head(5)
```

```
   keyword location                                               text
target
id

1       NaN      NaN  Our Deeds are the Reason of this #earthquake M...
1
4       NaN      NaN             Forest fire near La Ronge Sask. Canada
1
5       NaN      NaN  All residents asked to 'shelter in place' are ...
1
6       NaN      NaN  13,000 people receive #wildfires evacuation or...
1
7       NaN      NaN  Just got sent this photo from Ruby #Alaska as ...
1
```

```
df.tail(5)
```

```
      keyword location
text  \
id

10869     NaN      NaN  Two giant cranes holding a bridge collapse
int...
10870     NaN      NaN  @aria_ahrary @TheTawniest The out of control
w...
10871     NaN      NaN  M1.94 [01:04 UTC]?5km S of Volcano Hawaii.
htt...
10872     NaN      NaN  Police investigating after an e-bike
collided ...
10873     NaN      NaN  The Latest: More Homes Razed by Northern
Calif...
```

```
       target
id           
10869       1
10870       1
10871       1
10872       1
10873       1
```

# Get shape of data

```
df.shape
```

```
(7613, 4)
```

# Get Feature names of dataset

```
df.keys()
```

```
Index(['keyword', 'location', 'text', 'target'], dtype='object')
```

```
df.columns
```

```
Index(['keyword', 'location', 'text', 'target'], dtype='object')
```

# Get full Decription

```
df.describe()
```

```
           target
count  7613.00000
mean      0.42966
std       0.49506
min       0.00000
25%       0.00000
50%       0.00000
75%       1.00000
max       1.00000
```

```
df.describe(include="all")
```

```
           keyword location  \
count         7552     5080   
unique         221     3341   
top     fatalities      USA   
freq            45      104   
mean           NaN      NaN   
std            NaN      NaN   
min            NaN      NaN   
25%            NaN      NaN   
```

```
50%            NaN      NaN
75%            NaN      NaN
max            NaN      NaN
```

```
                                                       text      target

count                                                  7613  7613.00000

unique                                                 7503         NaN

top     11-Year-Old Boy Charged With Manslaughter of T...         NaN

freq                                                     10         NaN

mean                                                    NaN     0.42966

std                                                     NaN     0.49506

min                                                     NaN     0.00000

25%                                                     NaN     0.00000

50%                                                     NaN     0.00000

75%                                                     NaN     1.00000

max                                                     NaN     1.00000
```

# Get full info about all variables

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Index: 7613 entries, 1 to 10873
Data columns (total 4 columns):
 #   Column    Non-Null Count  Dtype 
---  ------    --------------  ----- 
 0   keyword   7552 non-null   object
 1   location  5080 non-null   object
 2   text      7613 non-null   object
 3   target    7613 non-null   int64 
dtypes: int64(1), object(3)
memory usage: 297.4+ KB
```

```
df.isnull()
```

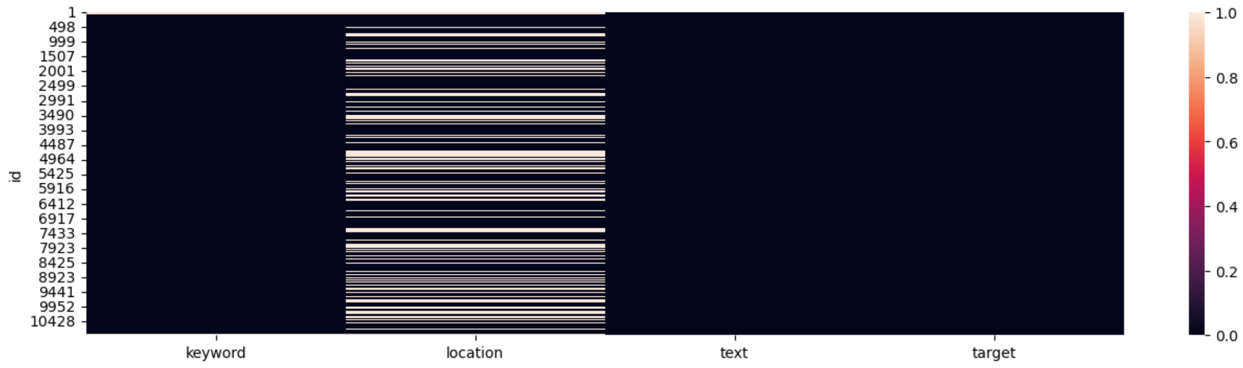
```
       keyword  location   text  target
id                                     
1         True      True  False   False
4         True      True  False   False
```

```
5         True      True  False   False
6         True      True  False   False
7         True      True  False   False
...        ...       ...    ...     ...
10869     True      True  False   False
10870     True      True  False   False
10871     True      True  False   False
10872     True      True  False   False
10873     True      True  False   False

[7613 rows x 4 columns]
```

```
df.isnull().sum()
```

```
keyword       61
location    2533
text           0
target         0
dtype: int64
```

```
plt.figure(figsize=(16,4))
sns.heatmap(df.isnull())
plt.show()
```



```
for k in df.keys():
    print(k,df[k].unique()[:5])
```

```
keyword [nan 'ablaze' 'accident' 'aftershock' 'airplane%20accident']
location [nan 'Birmingham' 'Est. September 2012 - Bristol' 'AFRICA'
 'Philadelphia, PA']
text ['Our Deeds are the Reason of this #earthquake May ALLAH Forgive
us all'
 'Forest fire near La Ronge Sask. Canada'
 "All residents asked to 'shelter in place' are being notified by
officers. No other evacuation or shelter in place orders are expected"
 '13,000 people receive #wildfires evacuation orders in California '
 'Just got sent this photo from Ruby #Alaska as smoke from #wildfires
pours into a school ']
target [1 0]
```

```
df.location.isnull().sum()
```

```
2533
```

```
df.location.unique()
```

```
array([nan, 'Birmingham', 'Est. September 2012 - Bristol', ...,
       'Vancouver, Canada', 'London ', 'Lincoln'], dtype=object)
```

```
df.location.value_counts()
```

```
location
USA                    104
New York                71
United States           50
London                  45
Canada                  29
                      ...
MontrÌ©al, QuÌ©bec       1
Montreal                 1
ÌÏT: 6.4682,3.18287      1
Live4Heed??              1
Lincoln                  1
Name: count, Length: 3341, dtype: int64
```

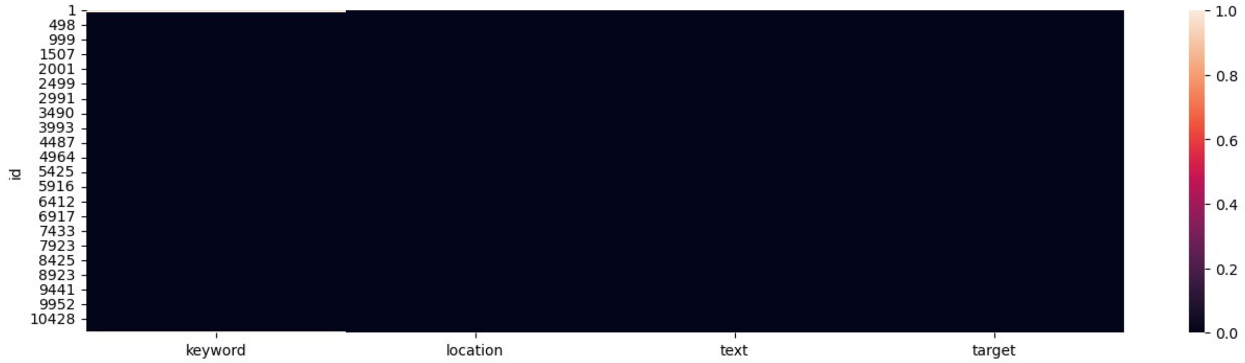
```
df.location.mode()
```

```
0    USA
Name: location, dtype: object
```

```
most_frequent_location = df['location'].mode()[0]
```

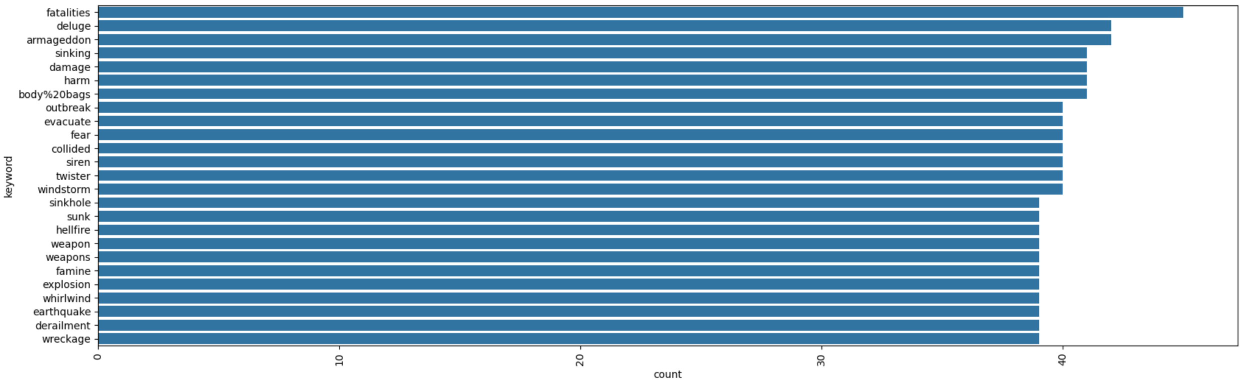
```
df['location'] = df['location'].apply(lambda x: most_frequent_location
if pd.isna(x) else x)
```

```
plt.figure(figsize=(16,4))
sns.heatmap(df.isnull())
plt.show()
```

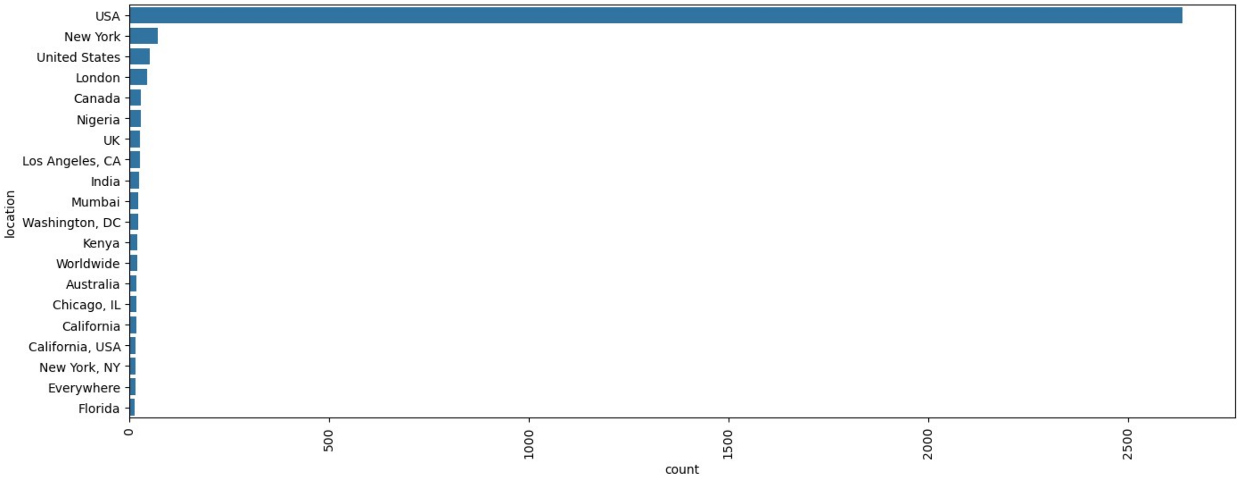


```
df.isnull().sum()

keyword     61
location     0
text         0
target       0
dtype: int64

df.head(2)

   keyword location                                               text
target
id

1      NaN      USA  Our Deeds are the Reason of this #earthquake M...
1
4      NaN      USA             Forest fire near La Ronge Sask. Canada
1

df.text[20]

'Damage to school bus on 80 in multi car crash #BREAKING '

df.text[520]

'.: .: .: .: .: .: .: .: .: .: .: .: .: .: .: .: .: .: .: .: .: RT
DrAyesha4: #IndiaKoMunTorJawabDo\n\nIndian Army ki\x89Û_
http://t.co/WJLJq3yA4g'

df.text[890]

'Bioterrorism public health superbug biolabs epidemics biosurveillance
outbreaks | Homeland Security News Wire http://t.co/cvhYGwcBZv'

df.text[1890]

'Flames visible from fire in Tucson mountains: A lightning-caused fire
burning in steep rocky terrain in mountains\x89Û_
http://t.co/zRTRPL77QV'
```

```
import re
from nltk.corpus import stopwords

import nltk
nltk.download('stopwords')

[nltk_data] Downloading package stopwords to
[nltk_data]     C:\Users\User\AppData\Roaming\nltk_data...
[nltk_data]   Unzipping corpora\stopwords.zip.

True

from nltk.corpus import stopwords

def text_cleaning(text):
    text = re.sub(r"https?://[a-zA-Z0-9./]+", " ", text)
    text = re.sub(r"[^a-zA-Z0-9\s]+", " ", text)
    text = re.sub(r"\b\d+(?:th)?\b", " ", text)
    text = re.sub(r"\b[a-zA-Z0-9]\b", " ", text)
    text = re.sub(r"\s+", " ", text).strip()
    return text
    cleaned_text = text_cleaning(df['text'][300])
df['cleaned_text'] = df['text'].apply(text_cleaning)

df.text = df.text.map(textCleaning)

df.head(3)

   keyword location                                               text  \
id                                                                       
1      NaN      USA  Our Deeds are the Reason of this earthquake Ma...   
4      NaN      USA              Forest fire near La Ronge Sask Canada   
5      NaN      USA  All residents asked to shelter in place are be...   

    target                                       cleaned_text  
id                                                             
1        1  Our Deeds are the Reason of this earthquake Ma...  
4        1              Forest fire near La Ronge Sask Canada  
5        1  All residents asked to shelter in place are be...  

plt.figure(figsize=(20,6))
sns.countplot(df.keyword,order=df.keyword.value_counts().index[:25])
plt.xticks(rotation=90)
plt.show()
```

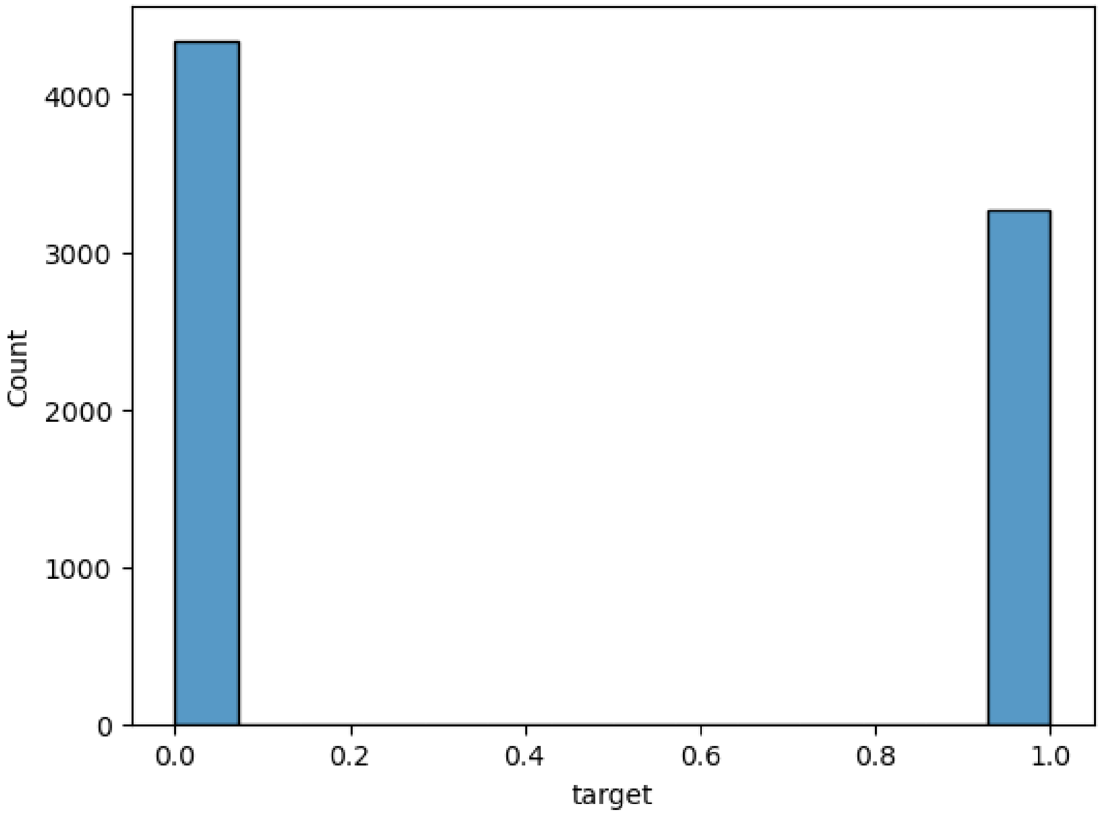


```
plt.figure(figsize=(16,6))
sns.countplot(df.location,order=df.location.value_counts().index[:20])
plt.xticks(rotation=90)
plt.show()
```

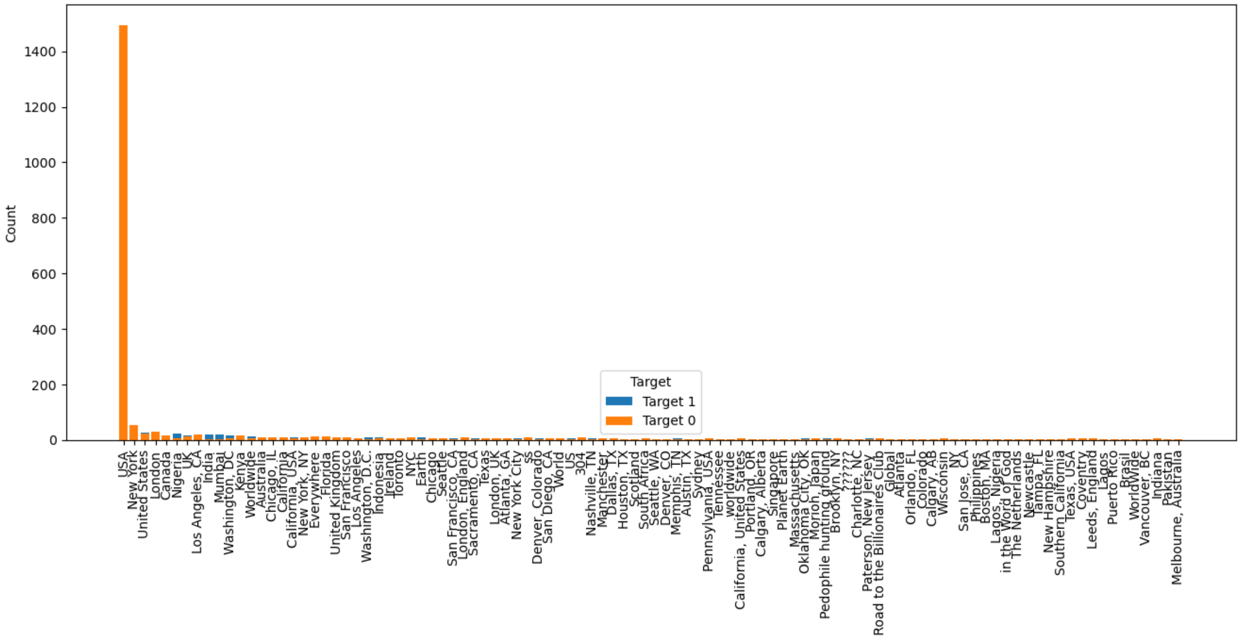


```
sns.histplot(df.target)
```

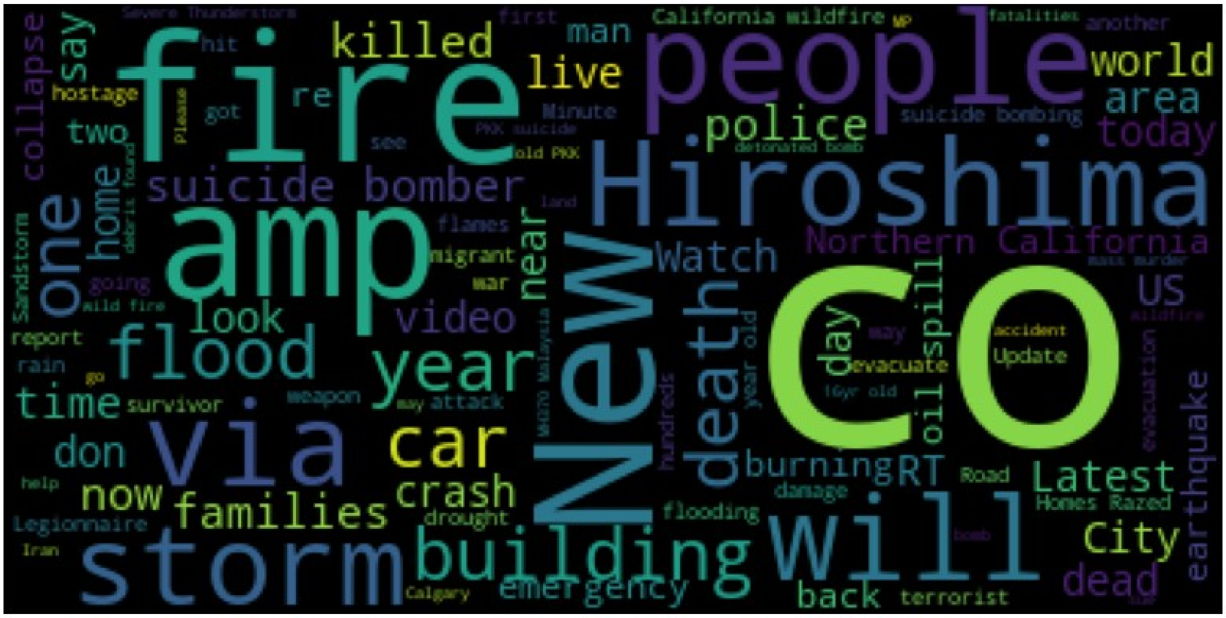
```
<Axes: xlabel='target', ylabel='Count'>
```



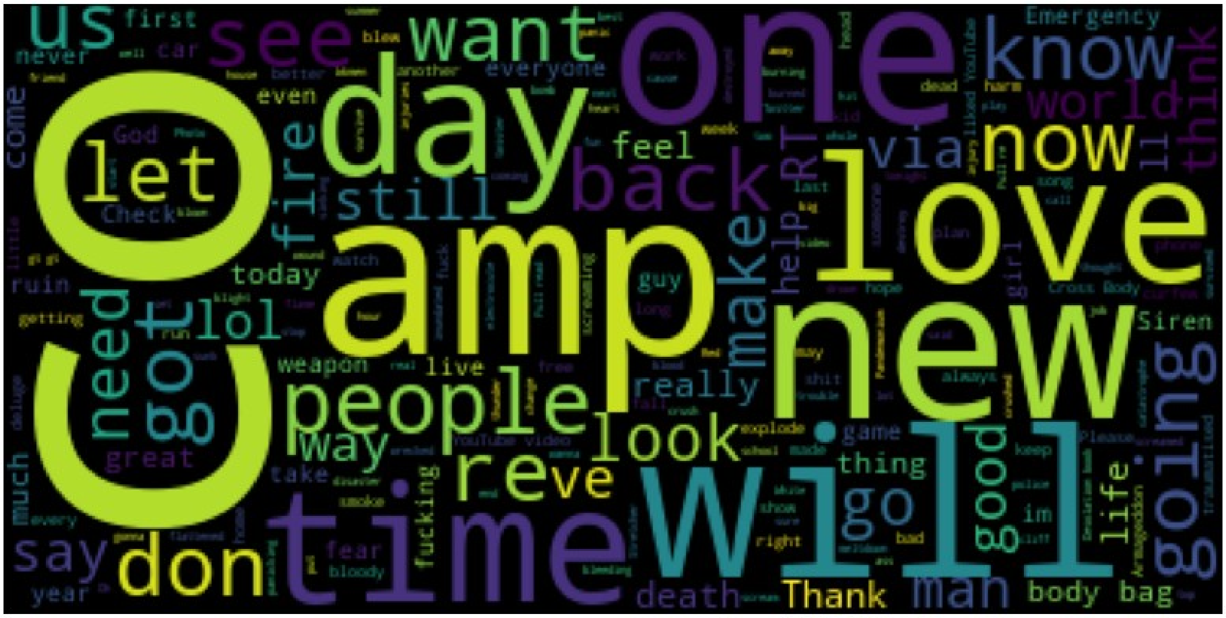
```
df.head(2)

   keyword location                                               text  
\
id

1      NaN      USA  Our Deeds are the Reason of this earthquake Ma...

4      NaN      USA             Forest fire near La Ronge Sask Canada


    target                                 cleaned_text
id
1        1  Our Deeds are the Reason of this earthquake Ma...
4        1             Forest fire near La Ronge Sask Canada

top_locations = df['location'].value_counts().index[:100]

df_top = df[df['location'].isin(top_locations)]
plt.figure(figsize=(16,6))

for target_value in df_top['target'].unique():
    subset = df_top[df_top['target'] == target_value]
    counts = subset['location'].value_counts().reindex(top_locations)
    plt.bar(counts.index, counts.values, label=f'Target
{target_value}')
    plt.xticks(rotation=90)
plt.xlabel('Location')
plt.ylabel('Count')
plt.legend(title='Target')
plt.show()
```



```
df.text

id
1        Our Deeds are the Reason of this earthquake Ma...
4                    Forest fire near La Ronge Sask Canada
5        All residents asked to shelter in place are be...
6         people receive wildfires evacuation orders in...
7        Just got sent this photo from Ruby Alaska as s...
                               ...
10869    Two giant cranes holding bridge collapse into ...
10870     aria ahrary TheTawniest The out of control wi...
10871      M1 UTC 5km of Volcano Hawaii http co zDtoyd8EbJ
10872    Police investigating after an bike collided wi...
10873    The Latest More Homes Razed by Northern Califo...
Name: text, Length: 7613, dtype: object

full_txt = " ".join(df.text[df.target == 1])

wc = WordCloud()
img = wc.generate_from_text(full_txt)
plt.figure(figsize=(10,6))
plt.imshow(img)
plt.axis("off")
plt.show()
```



```
full_txt = " ".join(df.text[df.target == 0])

wc = WordCloud()
img = wc.generate_from_text(full_txt)
plt.figure(figsize=(10,6))
plt.imshow(img)
plt.axis("off")
plt.show()
```

co
amp
new
one
will
time
love
day
let
see
want
know
us
first
back
people
now
go
got
need
don
world
think
fire
still
via
make
lol
look
going
good
feel
come
help
RT
re
ve
way
great
say
today
ruin
weapon
live
really
thing
life
man
death
Thank
body bag
Siren
Emergency
Cross Body
even
everyone
never
car
God
Check
guy
hope
girl
im
fear
bloody
fucking
much
year
take
smoke
explode
game
always
may
Please
getting
deluge
screaming
YouTube video
another
better
dead
harm
plan
last
song
right
bad
show
keep
police
Armageddon
traumatised
crushed
trouble
fall
free
watch
long
hour
run
every
little
ll