In [1]:
```
# TASK 8
# FAKE NEWS PREDICTION
# • The Fake News Prediction Dataset features both real and fake news, providing
# basis for predictive modeling to identify misinformation. With columns includi
# Title, Text, and Label (Fake or Real), it addresses the pervasive issue of fal
# misleading information in news.
# • The dataset supports efforts to enhance information integrity, combat fake n
# and promote media literacy
```

In [4]:
```
import pandas as pd
news=pd.read_csv("D:\\intership\\cognoriseinfotech\\TASK 8 FAKE NEWS PREDICTION\
news.head()
```

Out[4]:

	Unnamed: 0	title	text	label
0	8476	You Can Smell Hillary's Fear	Daniel Greenfield, a Shillman Journalism Fello...	FAKE
1	10294	Watch The Exact Moment Paul Ryan Committed Pol...	Google Pinterest Digg Linkedin Reddit Stumbleu...	FAKE
2	3608	Kerry to go to Paris in gesture of sympathy	U.S. Secretary of State John F. Kerry said Mon...	REAL
3	10142	Bernie supporters on Twitter erupt in anger ag...	— Kaydee King (@KaydeeKing) November 9, 2016 T...	FAKE
4	875	The Battle of New York: Why This Primary Matters	It's primary day in New York and front-runners...	REAL

In [5]:
```
news.shape
```

Out[5]:
```
(6335, 4)
```

In [6]:
```
news.columns
```

Out[6]:
```
Index(['Unnamed: 0', 'title', 'text', 'label'], dtype='object')
```

In [7]:
```
news.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6335 entries, 0 to 6334
Data columns (total 4 columns):
 #   Column      Non-Null Count  Dtype 
---  ------      --------------  ----- 
 0   Unnamed: 0  6335 non-null   int64 
 1   title       6335 non-null   object
 2   text        6335 non-null   object
 3   label       6335 non-null   object
dtypes: int64(1), object(3)
memory usage: 198.1+ KB
```

In [8]:
```
news.describe()
```

Out[8]:

	Unnamed: 0
count	6335.000000
mean	5280.415627
std	3038.503953
min	2.000000
25%	2674.500000
50%	5271.000000
75%	7901.000000
max	10557.000000

In [9]:
```
news.count()
```

Out[9]:
```
Unnamed: 0    6335
title         6335
text          6335
label         6335
dtype: int64
```

In [12]:
```
news.dtypes
```

Out[12]:
```
Unnamed: 0     int64
title         object
text          object
label         object
dtype: object
```

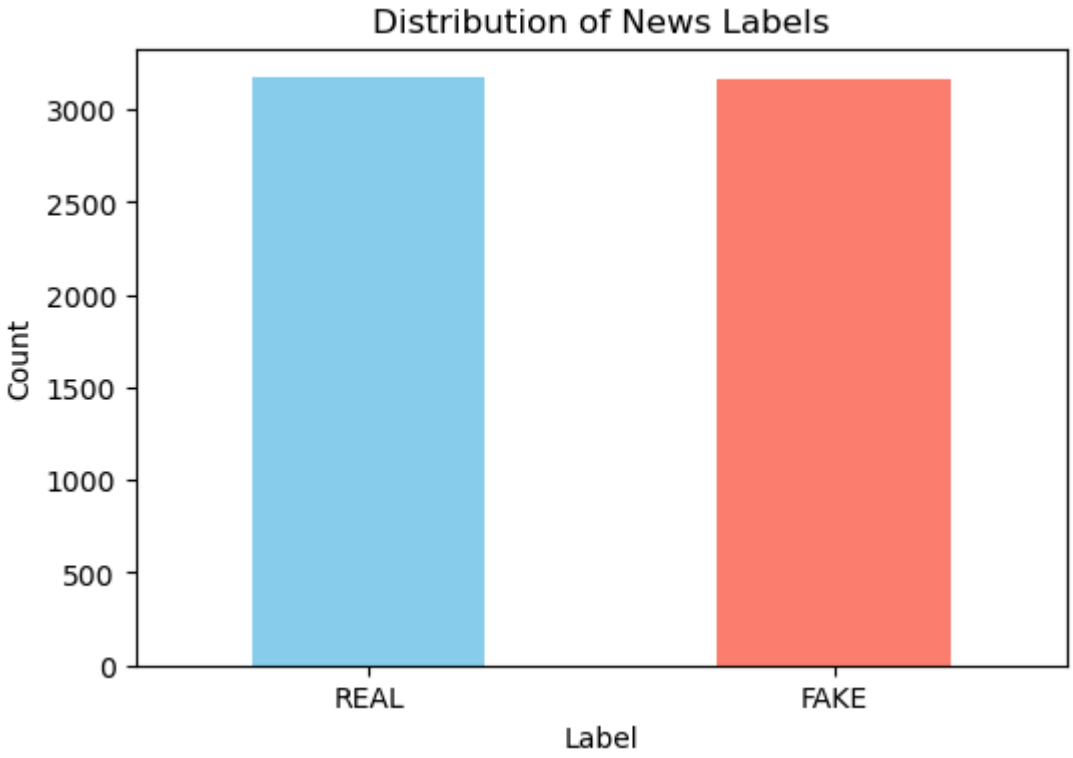
In [11]:
```
from sklearn.pipeline import Pipeline

pipeline = Pipeline([
    ('vectorizer', TfidfVectorizer()),
    ('classifier', LogisticRegression())
])
pipeline.fit(X_train, y_train)
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
Cell In[11], line 4
      1 from sklearn.pipeline import Pipeline
      3 pipeline = Pipeline([
----> 4     ('vectorizer', TfidfVectorizer()),
      5     ('classifier', LogisticRegression())
      6 ])
      7 pipeline.fit(X_train, y_train)

NameError: name 'TfidfVectorizer' is not defined
```

In [13]:
```
# Basic statistics


# Value counts of labels
label_counts = news['label'].value_counts()
print(label_counts)
```

```
label
REAL    3171
FAKE    3164
Name: count, dtype: int64
```

In [14]:
```python
# Plotting the distribution of labels
import matplotlib.pyplot as plt

plt.figure(figsize=(6, 4))
news['label'].value_counts().plot(kind='bar', color=['skyblue', 'salmon'])
plt.title('Distribution of News Labels')
plt.xlabel('Label')
plt.ylabel('Count')
plt.xticks(rotation=0)
plt.show()
```



In [18]:
```python
from wordcloud import WordCloud
import matplotlib.pyplot as plt

# Function to generate word cloud
def generate_wordcloud(text, title):
    wordcloud = WordCloud(width=800, height=400, background_color='white').gener
    plt.figure(figsize=(10, 6))
    plt.imshow(wordcloud, interpolation='bilinear')
    plt.axis('off')
    plt.title(title)
    plt.show()

fake_titles = ' '.join(news[news['label'] == 'Fake']['title'].values)
if len(fake_titles) > 0:
    generate_wordcloud(fake_titles, 'Word Cloud for Fake News Titles')
else:
    print("No fake news titles found.")

real_titles = ' '.join(news[news['label'] == 'Real']['title'].values)
if len(real_titles) > 0:
```

```
    generate_wordcloud(real_titles, 'Word Cloud for Real News Titles')
else:
    print("No real news titles found.")
fake_text = ' '.join(news[news['label'] == 'Fake']['text'].values)
if len(fake_text) > 0:
    generate_wordcloud(fake_text, 'Word Cloud for Fake News Text')
else:
    print("No fake news text found.")

real_text = ' '.join(news[news['label'] == 'Real']['text'].values)
if len(real_text) > 0:
    generate_wordcloud(real_text, 'Word Cloud for Real News Text')
else:
    print("No real news text found.")
```

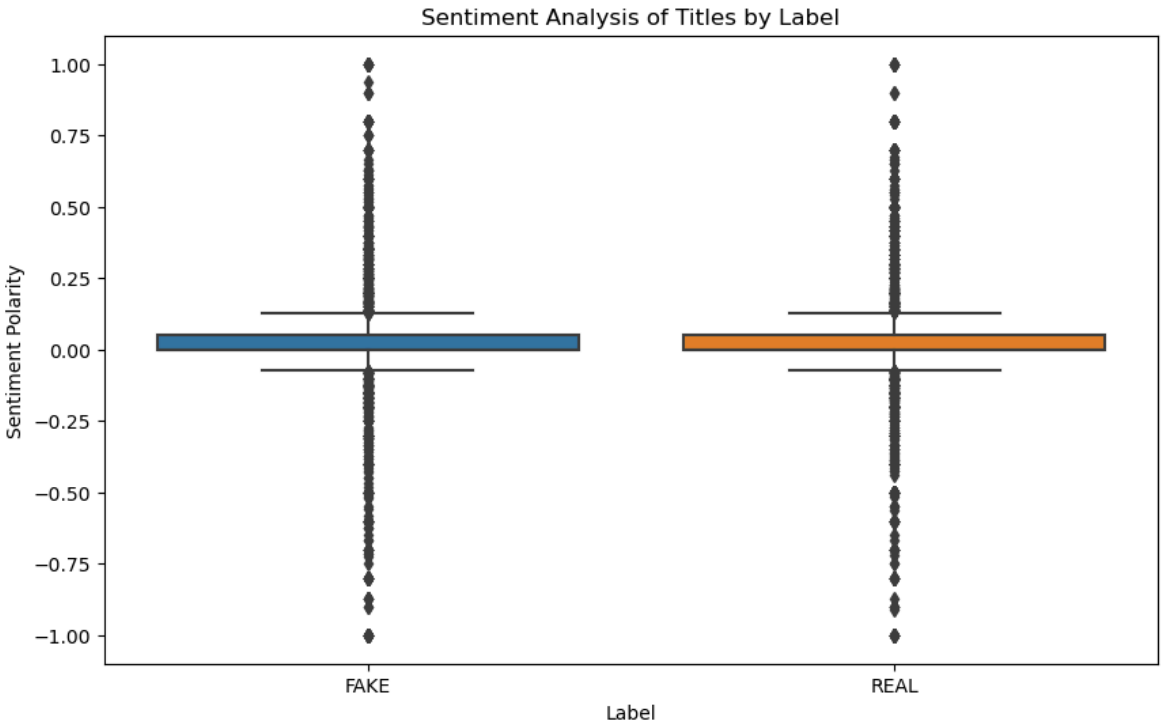
```
No fake news titles found.
No real news titles found.
No fake news text found.
No real news text found.
```

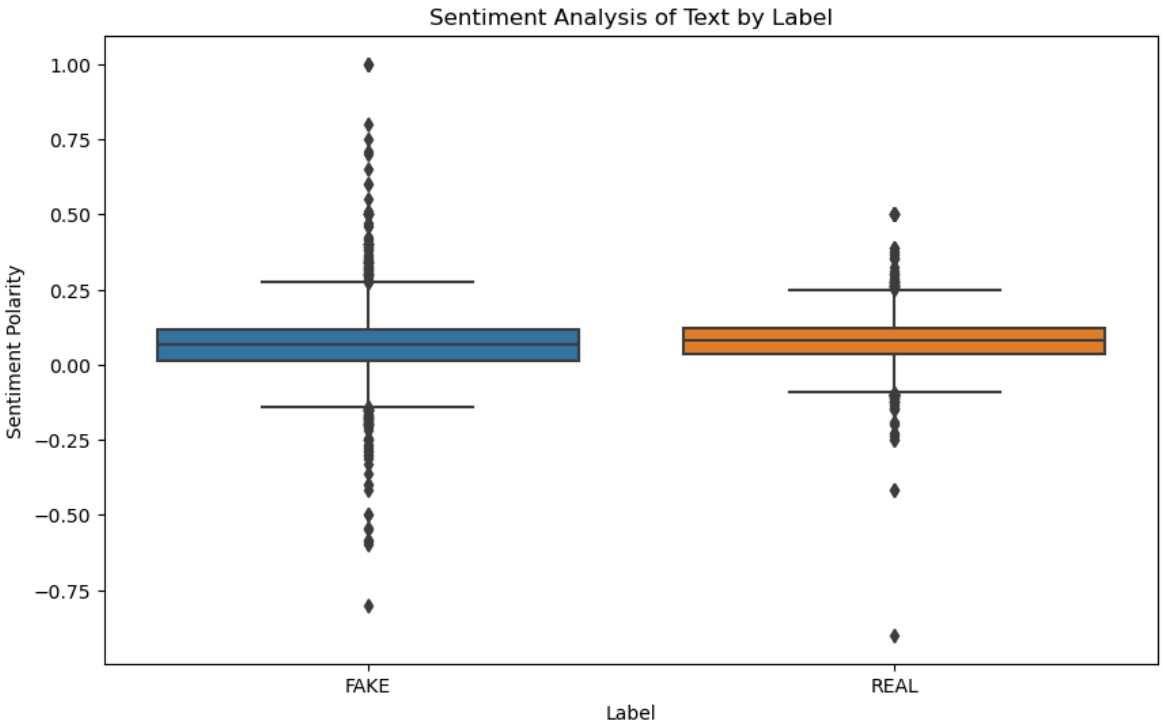
In [16]:
```
pip install  wordcloud
```

```
Collecting wordcloudNote: you may need to restart the kernel to use updated packa
ges.

  Downloading wordcloud-1.9.3-cp311-cp311-win_amd64.whl.metadata (3.5 kB)
Requirement already satisfied: numpy>=1.6.1 in c:\users\admin\anaconda3\lib\site-
packages (from wordcloud) (1.26.4)
Requirement already satisfied: pillow in c:\users\admin\anaconda3\lib\site-packag
es (from wordcloud) (10.2.0)
Requirement already satisfied: matplotlib in c:\users\admin\anaconda3\lib\site-pa
ckages (from wordcloud) (3.8.0)
Requirement already satisfied: contourpy>=1.0.1 in c:\users\admin\anaconda3\lib\s
ite-packages (from matplotlib->wordcloud) (1.2.0)
Requirement already satisfied: cycler>=0.10 in c:\users\admin\anaconda3\lib\site-
packages (from matplotlib->wordcloud) (0.11.0)
Requirement already satisfied: fonttools>=4.22.0 in c:\users\admin\anaconda3\lib
\site-packages (from matplotlib->wordcloud) (4.25.0)
Requirement already satisfied: kiwisolver>=1.0.1 in c:\users\admin\anaconda3\lib
\site-packages (from matplotlib->wordcloud) (1.4.4)
Requirement already satisfied: packaging>=20.0 in c:\users\admin\anaconda3\lib\si
te-packages (from matplotlib->wordcloud) (23.1)
Requirement already satisfied: pyparsing>=2.3.1 in c:\users\admin\anaconda3\lib\s
ite-packages (from matplotlib->wordcloud) (3.0.9)
Requirement already satisfied: python-dateutil>=2.7 in c:\users\admin\anaconda3\l
ib\site-packages (from matplotlib->wordcloud) (2.8.2)
Requirement already satisfied: six>=1.5 in c:\users\admin\anaconda3\lib\site-pack
ages (from python-dateutil>=2.7->matplotlib->wordcloud) (1.16.0)
Downloading wordcloud-1.9.3-cp311-cp311-win_amd64.whl (300 kB)
   ---------------------------------------- 0.0/300.2 kB ? eta -:--:--
   - -------------------------------------- 10.2/300.2 kB ? eta -:--:--
   ----- ---------------------------------- 41.0/300.2 kB 487.6 kB/s eta 0:00:01
   ------------------------ --------------- 194.6/300.2 kB 2.0 MB/s eta 0:00:01
   ---------------------------------------- 300.2/300.2 kB 2.3 MB/s eta 0:00:00
Installing collected packages: wordcloud
Successfully installed wordcloud-1.9.3
```

In [20]:
```
from textblob import TextBlob

def calculate_sentiment(text):
    blob = TextBlob(text)
```

```
    return blob.sentiment.polarity


news['title_sentiment'] = news['title'].apply(calculate_sentiment)
news['text_sentiment'] = news['text'].apply(calculate_sentiment)


import seaborn as sns

plt.figure(figsize=(10, 6))
sns.boxplot(x='label', y='title_sentiment', data=news)
plt.title('Sentiment Analysis of Titles by Label')
plt.xlabel('Label')
plt.ylabel('Sentiment Polarity')
plt.show()

plt.figure(figsize=(10, 6))
sns.boxplot(x='label', y='text_sentiment', data=news)
plt.title('Sentiment Analysis of Text by Label')
plt.xlabel('Label')
plt.ylabel('Sentiment Polarity')
plt.show()
```




Sentiment Analysis of Text by Label
Sentiment Polarity
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
FAKE
REAL
Label

In [ ]: