Reddit_Group_Dynamics

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1 Analysis of Reddit Comment Sentiments

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1.0.1 Provide your credentials to the runtime

```
In [454]: from google.colab import auth
          auth.authenticate_user()
          print('Authenticated')
```

```
Authenticated
```

1.0.2 Use Classic DataFrame Display

```
In [455]: %unload_ext google.colab.data_table
```

```
The google.colab.data_table extension is not loaded.
```

1.0.3 Declare the Cloud project ID which will be used throughout this notebook

```
In [456]: project_id = 'mindful-marking-297202'
```

1.0.4 Sample approximately 2000 random rows

```
In [457]: from google.cloud import bigquery
          client = bigquery.Client(project=project_id)

          sample_count = 2000
          row_count = client.query('''
            SELECT
              COUNT(*) as total
            FROM `fh-bigquery.reddit_comments.2010`''').to_dataframe().total[0]

          df = client.query('''
            SELECT
              *
```

```
            FROM
              `fh-bigquery.reddit_comments.2010`
            WHERE RAND() < %d/%d
        ''' % (sample_count, row_count)).to_dataframe()

        print('Full dataset has %d rows' % row_count)
```

```
Full dataset has 48489057 rows
```

1.0.5 Remove Deleted Comments

```
In [458]: df = df[df['body'] != '[deleted]']
```

```
In [459]: from textblob import TextBlob
          import pandas as pd
          import numpy as np
          from numpy import random
          import nltk
          import matplotlib.pyplot as plt
          from nltk.corpus import stopwords
          import re
          get_ipython().run_line_magic('matplotlib', 'inline')
          from nltk import word_tokenize, download
          import string
          nltk.download('punkt')
```

```
[nltk_data] Downloading package punkt to /root/nltk_data...
[nltk_data]   Package punkt is already up-to-date!
```

```
Out[459]: True
```

1.0.6 Remove Stopwords

```
In [460]: from tqdm import tqdm
          nltk.download('stopwords')
          nltk.download('punkt')

          comments = df['body']
          comments_processed = []
          for sentence in tqdm(comments):
              comments_processed.append(' '.join(token.lower() for token in nltk.word_tokenize
```

```
  1%|          | 14/1805 [00:00<00:12, 139.87it/s]
```

```
[nltk_data] Downloading package stopwords to /root/nltk_data...
[nltk_data]   Package stopwords is already up-to-date!
[nltk_data] Downloading package punkt to /root/nltk_data...
[nltk_data]   Package punkt is already up-to-date!
```

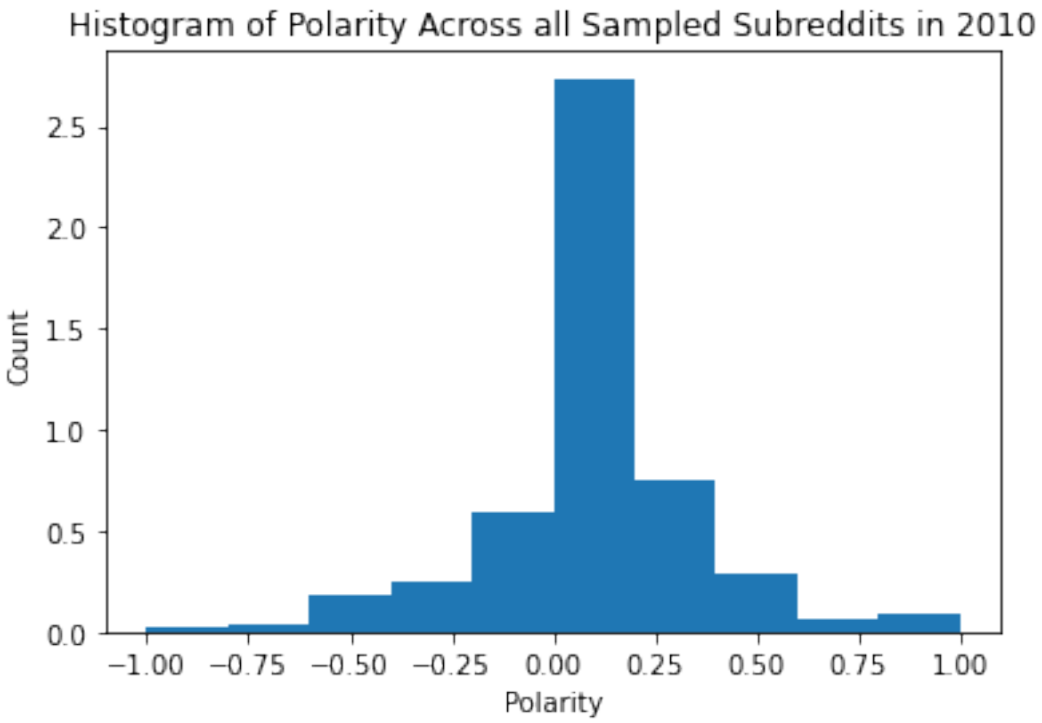
```
100%|| 1805/1805 [00:08<00:00, 206.73it/s]
```

1.0.7 Format Comments

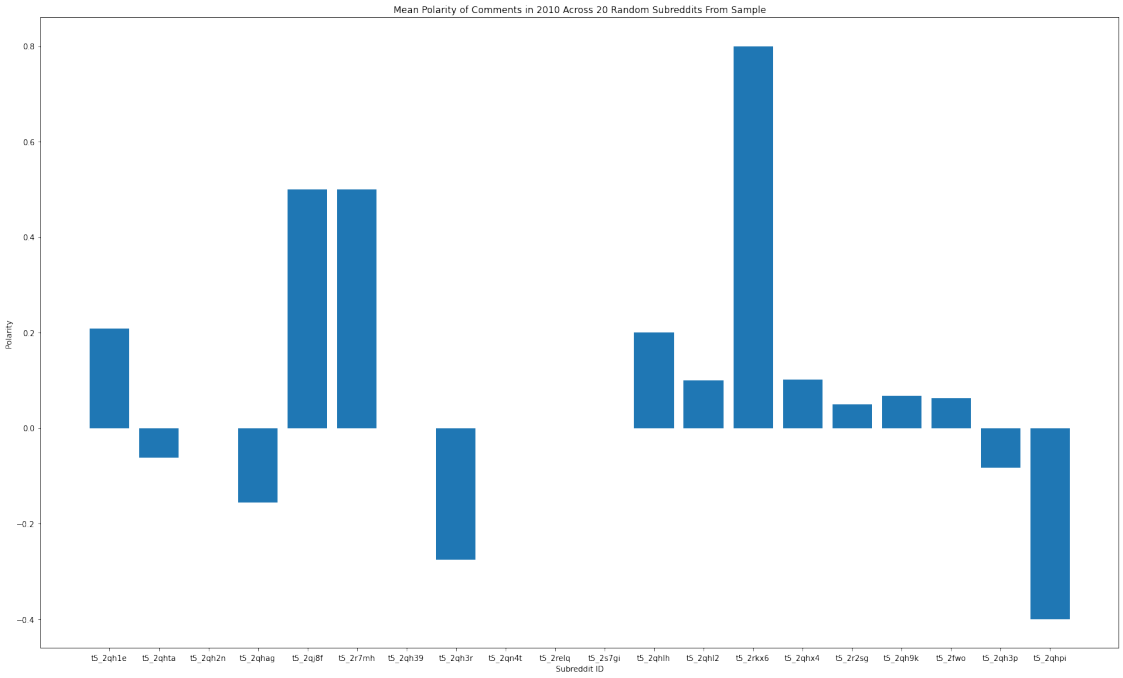
```
In [462]: from collections import Counter

          # split() returns list of all the words in the string
          total_comments = [0] * len(comments_processed)
          i = 0
          for comment in comments_processed:
            split_comment = comment.split()
            total_comments[i] = split_comment
            i = i+1

In [464]: punc = '''!()-[]{};:'"\, <>./?@#$%^&*_~`'''
          # Removing punctuations in string
          # Using loop + punctuation string
          for i in range(len(total_comments)):
            for j in range(len(total_comments[i])):
              for ele in total_comments[i][j]:
                if ele in punc:
                  total_comments[i][j] = 'None'
            total_comments[i] = np.array(total_comments[i])[np.array(total_comments[i]) != 'Non

In [465]: string_comments = [str(comment).replace('[', '').replace(']', '').replace('\'', '') :
```

1.0.8 Determine Comment Polarities

```
In [466]: def detect_polarity(text):
            return TextBlob(text).sentiment.polarity

In [467]: polarity = [detect_polarity(comment) for comment in string_comments]

In [469]: comments_processed_df = pd.DataFrame({'body': comments_processed, 'polarity': polarit

In [515]: plt.hist(comments_processed_df['polarity'], density = True)
          plt.xlabel('Polarity')
          plt.ylabel('Count')
          plt.title('Histogram of Polarity Across all Sampled Subreddits in 2010');
```




```
In [472]: import seaborn as sns

In [510]: aggregated = comments_processed_df.groupby('subreddit_id').agg(np.mean).sample(20)

In [514]: plt.figure(figsize=(25,15))
          plt.bar(x=aggregated.index, height = aggregated['polarity'])
          plt.xlabel('Subreddit ID')
          plt.ylabel('Polarity')
          plt.title('Mean Polarity of Comments in 2010 Across 20 Random Subreddits From Sample
          plt.show();
```



1.0.9 Analyze Word Frequencies

In [474]:
```
from collections import Counter

# split() returns list of all the words in the string
split_comments = np.array([])
for i in comments_processed:
  split_comments = np.append(split_comments, i.split())
```

In [476]:
```
punc = '''!()-[]{};:'"\, <>./?@#$%^&*_~`'''
# Removing punctuations in string
# Using loop + punctuation string
for i in range(len(split_comments)):
  for ele in split_comments[i]:
    if ele in punc:
        split_comments[i] = None
```

In [477]:
```
split_comments = split_comments[split_comments != 'None']
```

In [479]:
```
from collections import Counter
# Pass the split_it list to instance of Counter class.
Counter = Counter(split_comments)

# most_common() produces k frequently encountered
# input values and their respective counts.
most_occur = Counter.most_common(51)
```

```
print(most_occur)
```

```
[('like', 269), ('would', 225), ('one', 208), ('get', 181), ('http', 180), ('people', 177), ('
```

```
In [516]: def return_words(words_and_occurances):
              words = np.array([tup[0] for tup in words_and_occurances])
              return words


          # In[6]:


          def return_occurances(words_and_occurances):
              occurances = np.array([tup[1] for tup in words_and_occurances])
              return occurances


          # In[7]:


          """
          Plot 20 words and their counts for comparison
          """
          words = return_words(most_occur)
          occurances = return_occurances(most_occur)
          plt.figure(figsize=(15,9))
          plt.bar(x = words[0:20], height = occurances[0:20]);
```