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Social Network Analysis - Amber Heard Case - Instagram

Adel Abu Hashim & Mahmoud Nagy - November 2021

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Introduction

This case study aims to help **Amber Heard**
By analyzing new accounts posting/ commenting against a victim of a Social Bot Disinformation/Influence Operation.

We have two main datasets:
(The datasets scraped from **Instagram**).

- 1- A dataset with posts data.
- 2- A dataset with comments data.

```
In [978]: import pandas as pd
import os
from datetime import datetime
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sb
import plotly.express as px
import plotly.graph_objects as go
import warnings
import re
import seaborn as sb
import re
import pickle

warnings.filterwarnings("ignore")

import plotly.io as pio
from helpers import barh, pie, get_top, handler, isnull, bar, bar_peaks, draw_heatmap, facet_heat, facet_days, SameText

pio.renderers
# pio.renderers.default = "svg"
svg_renderer = pio.renderers["svg"]
svg_renderer.width = 950
svg_renderer.height = 550

%matplotlib inline
```

```
In [979]: os.chdir("../Data")
```

```
In [980]: ls
```

```
1Mil Instagram AH SNA comments.zip
Instagram Posts - AH 2018-2021 study 193K.zip
Instagram SNA AH comments.zip
comments.csv
comments_cleaned.csv
comments_text.csv
negative_text.pkl
negative_users.pkl
posts.csv
posts_cleaned.csv
```

```
In [981]: original_comments = pd.read_csv('comments.csv')
```

```
In [982]: original_comments.head()
```

	message	timestamp	id	n_replies	n_likes	media_id	in_reply_to	from.id	from.username	from.is_verified
0	#scarlettjohansson #alexandradaddario #emiliac...	1.592888e+09	1.791523e+16	0.0	0.0	2.337635e+18	NaN	3.988264e+09	scarlettjohansonofficial	False
1	舱舱舱	1.592888e+09	1.784587e+16	0.0	0.0	2.337635e+18	NaN	3.988264e+09	scarlettjohansonofficial	False
2	Very beautiful 😊 I love you very much 😍	1.592888e+09	1.788947e+16	0.0	0.0	2.337635e+18	NaN	1.230201e+10	fr.ederic2368	False
3	舱舱舱舱舱舱舱	1.592889e+09	1.786950e+16	0.0	0.0	2.337635e+18	NaN	2.490417e+09	muataz_87	False
4	Bombón bello ❤️ ❤️	1.592889e+09	1.806608e+16	0.0	0.0	2.337635e+18	NaN	1.521544e+09	jorgero122129	False

Exploratory Data Analysis

- Introduction
- Exploratory Data Analysis
- Conclusions

Posts

- Posts
- Comments
 - Top posted users
 - Captions
 - Image or Video
 - Locations

```
In [983]: df_posts = pd.read_csv("posts_cleaned.csv")
print(df_posts.shape)
df_posts.head()
```

(193967, 7)

	id	is_video	caption	location	user_id	username	account_url
0	2312672024680952662	False	According to the Digital trends: Visual effect...	Hollywood	32529918546	cinescenes_	https://www.instagram.com/cinescenes_
1	2337634847974873162	False	My girl ❤️	NaN	3988263563	scarlettjohansonofficial	https://www.instagram.com/scarlettjohansonofficial
2	2383123126627446477	False	❤️ ❤️ ❤️\n#elizagonzalez #alexandradaddario\n#jennif...	Los Angeles, California	38331031416	divine.hollywood.women	https://www.instagram.com/divine.hollywood.women
3	2389292367830952143	False	Use #KarenGillanslover \nThe smile kills me.😊😊	NaN	18754453450	karen_gillans_lover	https://www.instagram.com/karen_gillans_lover
4	2484525220804152653	False	أی جدید جوتے\u200c جانی دب به دبیا بروزجا نش...	NaN	7105766142	cinemafars.official	https://www.instagram.com/cinemafars.official

```
In [984]: df_posts["id"] = df_posts["id"].astype("str")
df_posts["user_id"] = df_posts["user_id"].astype("str")
df_posts.info()
```

```
<class 'pandas.core.frame.DataFrame'\>
RangeIndex: 193967 entries, 0 to 193966
Data columns (total 7 columns):
 #   Column       Non-Null Count  Dtype  
 --- 
 0   id           193967 non-null   object 
 1   is_video     193967 non-null   bool    
 2   caption      193586 non-null   object 
 3   location     22682 non-null   object 
 4   user_id      193967 non-null   object 
 5   username     193967 non-null   object 
 6   account_url  193967 non-null   object 
dtypes: bool(1), object(6)
memory usage: 9.1+ MB
```

```
In [985]: isnull(df_posts)
```

```
The number of NaNs in id: 0
The number of NaNs in is_video: 0
The number of NaNs in caption: 381
The number of NaNs in location: 171285
The number of NaNs in user_id: 0
The number of NaNs in username: 0
The number of NaNs in account_url: 0
```

```
In [986]: total_posts = df_posts.shape[0]
total_posted_users = df_posts["username"].nunique()
```

```
In [987]: print(f"total number of posts {total_posts} by {total_posted_users} users")
```

total number of posts 193967 by 36137 users

Top posted users

- Top posted users
- Captions
- Image or Video
- Locations

```
In [988]: df_top_users_posts = get_top(
    df_posts, col="username", n=10, column_name="username", count_name="n_posts"
)
df_top_users_posts
```

	username	n_posts
0	ijasonmomoa	2639
1	queenamberheard	2622
2	master_clondike	2464
3	heard_addicted	2285
4	amberheardit	2010
5	amber_heard_diehard_fans_india	1797
6	_actor_movie	1569
7	amberheardaily	1497
8	ashleytisdale6_	1390
9	instaupdatestess	1346

In []:

```
In [989...]: print("\nInvestigated --> These Users are Posting Normal Comments\n")  
barh(df_top_users_posts, "Most posted users")
```

Investigated --> These Users are Posting Normal Comments

Captions

- Top posted users
 - **Captions**
 - Image or Video
 - Locations

```
In [990]: df.posts.query("username == 'instaupdatestess'").caption.value_counts().head(20)
```

erodriguez #annehathaway #lucilleball #katemiddleton
 9
 ♡ Amber Heard 💜💛💙\n•\n[I do not own these images, credits to their respective owners]\n•\n•\n•\n•\n•\n•\n•\n•\n•\n•\n•\n#amberheard #gal
 gadot #nicolekidman #kristenstewart #bri larson #jenniferlawrence #margotrobbie #briebella #KateBeckinsale #LucilleBall #SandraBullock #ScarlettJohansso
 n #kristenstewart #selenagomez #kateupton #meganfox #sophieturner #reesewitherspoon #charlizetheron #milakunis #jessicaalba #emmastone #salmahayek #jenn
 iferlopez #demilovato #kaleycuoco #jessicaalba #leeliesobieski #kristenstewart #jenniferaniston #emmaroberts #emmawatson #arielwinter
 9
 ❤\n----- Jennifer Lawrence ♥\n•\n#jenniferlawrence #scarlettjohansson #katnisseverdeen #emmawatson #emmastone #selenagomez #elizabethol
 sen #joshhutcherson #margotrobbie #kristenstewart #peeta mellark #love #bri larson #milakunis #alexandradaddario #victoriajustice #mockingjay #catchingfi
 re #kateupton #emiliaclarke #meganfox #amberheard #katebeckinsale #gemmaarterton #penelopercuz #katewinslet #hollywoodcelebrity #bbfyp #throwback #queen
 9
 ❤\n----- Emilia Clarke ♥\n•\n#emiliaclarke #daenerystargaryen #sophieturner #sansastark #aryastark #kitharington #maisiewilliams
 #motherofdragons #stark #lenaheadey #bbfyp #throwback #hollywood #love #queen #girl #victoriajustice #jenniferlawrence #scarlettjohansson #margotrobbie
 #emmastone #emiliaclarke #emmawatson #meganfox #amberheard #ellefanning #selenagomez #kristenstewart #milakunis #emmanuellechriqui #evagreen #milakunis
 8
 ❤ #annehathaway\n----- Anne Hathaway ♥\n•\n•\n•\n•\n•\n•\n•\n•\n#annehathaway #scarlettjohansson #jenniferlawrence
 #margotrobbie #angelinajolie #emmastone #emmawatson #milakunis #jenniferaniston #elizabetholsen #meganfox #emiliaclarke #rachelmcadams #salmahayek #gal
 adot #jessicaalba #alexandradaddario #bri larson #amberheard #penelopercuz #victoriajustice #selenagomez #jenniferlopez #kateupton #katebeckinsale #gem
 aarterton #girl #jessicabiel #love #bbfyp♥
 8
 #alexandradaddario ❤\n-- I do not own these images/pictures. The contents are respective owners. Message me for credit/removal\n•\n•\n•\n•\n•\n#instaupdatess #alexandradaddario #anadearmas #amberheard #margotrobbie #meganfox #emiliaclarke #bri larson #dakotajohnson #amyadams #ezagonzalez #el
 izabetholsen #emmawatson #milakunis #scarlettjohansson #victoriajustice #gal gadot #jenniferlawrence #kristenstewart #naomiscott #jessicaalba #millajovov
 ich #kateupton #angelinajolie #phoebetokin #shailennewoodley #lilireinhart #lilyreinhart #michelleerodriguez
 8
 ♦ #amberheard ♦\n----- Mila Kunis ♥\n•\n•\n#mila #milakunis #millajovovich #meganfox #margotrobbie #michelleerodriguez #annehathaway #vi
 ctoriajustice #jenniferlawrence #scarlettjohansson #angelinajolie #emmastone #emiliaclarke #emmawatson #elizabetholsen #jenniferaniston #jessicaalba #em
 maroberts #rachelmcadams #jessicabiel #anadearmas #amberheard #alexandradaddario #bri larson #ezagonzalez #jessicaalba #lauprepon #laurencohan #kateu
 pton #kristenstewart #selenagomez
 7
 Name: caption, dtype: int64

In [991]: df_posts.caption.value_counts().head()
 Out[991]:
 #jason #jasonmomoa #khaldrogo #aquaman #prideofgypsies #jasonmomoafans #jasonmomoanews #jasonmomoaupdates #jasonmomoafanpage #jasonmomoaedit #jasonmomoa
 official #arthurcurry #lisabonet #emiliaclarke #momoa #jasonmomoaaquaman #aquamanmovie #conanthebarbarian #amberheard #alohaj #gameofthrones #khaldrogo
 2569
 ❤❤❤\n#ezagonzalez #alexandradaddario\n#jenniferlawrence #katebeckinsale #sexyactress #jenniferaniston #scarlettjohansson #amberheard #nicolekidman #
 emmastone #emmawatson #kyliejenner #kareenakapoor #katrinakaiif #kimkardashian #katherine langford #kendalljenner #kattyperry #aliabhatt #shreddhakapoor
 #dishapatanai #deepikapadukone #priyankachopra #kendalljenner #shreddhakapoor #dishapatanai #naomiscott #angelinajolie #annehathaway #hollywoodactress #h
 otactress #hotactressaddicts
 1619
 Available for sale.....Paypal payment accepted ...For worldwide delivery ... DM me if you are interested\nHigh quality stone\diamond\n#rockhound #stonefor
 rsale #cabforsale #jewelrymaker #jewelry #wirework #wireworkjewelry #canada #lapidary #lapidaryart #jasper #minerals #stonecollection #cabochoh #chaboc
 hons #silversmithing #wirework #wireworkjewelry #canada #lapidary #lapidaryart #jasper #minerals #stonecollection #cabochoh #chabochons #silversmithing
 #wireartists #wirolljewelry #wireartists # wireverschons #workmith #metalsmith #wireartists #gemstonejewelry #amberheard #bumblebee #bumblebeejasper #bu
 mblebees #instajewelry #gemstonejewelry 1026
 #amberheard
 947
 @amberheard.0\n•\n•\n•\n•\n•\n•\n#amberheard #alexandradaddario\x0#katemiddleton\x0#katebeckinsale\x0#lucilleball\x0#sandrabullock\x0#love\x0
 #queen\x0#\n#scarlettjohansson\x0#\n#carlettwitch\x0#\n#kristenstewart\x0#\n#selenator\x0#\n#selenagomez\x0#\n#jenniferlopez\x0#\n#jenniferlawrence\x0#\n#kateupton\x0#\n
 #arianagrande\x0#\n#meganfox\x0#\n#salmahayek\x0#\n#kyliejenner\x0#\n#kendalljenner\x0#\n#kimkardashian\x0#\n#kourtneykardashian\x0#\n#emmawatson\x0#\n
 #emmastone\x0#\n#rihanna\x0#\n#katyperry\x0#\n#demilovato
 897
 Name: caption, dtype: int64

#jason #jasonmomoa #khaldrogo #aquaman #prideofgypsies #jasonmomoafans #jasonmomoanews
 #jasonmomoaupdates #jasonmomoafanpage #jasonmomoaedit #jasonmomoaofficial #arthurcurry #lisabonet
 #emiliaclarke #momoa #jasonmomoaaquaman #aquamanmovie #conanthebarbarian #amberheard #alohaj
 #gameofthrones #khaldrogo

In [992]: df_posts.query(" caption == @df_posts.caption.value_counts().index[0] ")[
 "username"]
].value_counts()
 Out[992]:
 i jasonmomoa 2566
 thegameoflaughs 2
 ompriscila 1
 Name: username, dtype: int64

In [993]: df_posts.query(" caption == @df_posts.caption.value_counts().index[0] ")[
 "location"]
].value_counts()
 Out[993]: Series([], Name: location, dtype: int64)

In [994]:
 img_video = get_top(
 df_posts.query(" caption == @df_posts.caption.value_counts().index[0] "),
 col="is_video",
 n=0,
 column_name="type",
 count_name="n_posts",
)
 img_video["type"] = ["image", "video"]
 img_video
 Out[994]:
 type n_posts
 0 image 2546
 1 video 23

In [995]: pie(img_video, "Image or Video")

This text was made by 3 users

```
- i jasonmomoa      2566
- thegameoflaughs 2
- .....
```

99.1% of posts are images

No locations for those images

♥ ♥ ♥\n#eizagonzalez #alexandradaddario\n#jenniferlawrence #katebeckinsale #sexyactress #jenniferaniston
#scarlettjohansson #amberheard #nicolekidman #emmastone #emmawatson #kyliejenner #kareenakapoor
#katrinakai #kimkardashian #katherinelangford #kendalljenner #kattyperry #aliabhatt #shradhakapoor
#dishapatani #deepikapadukone #priyankachopra #kendalljenner #shradhakapoor #dishapatani #naomiscott
#angelinajolie #annehathaway #hollywoodactress #hotactress #hottness #hotactressaddicts

```
In [996]: df_posts.query(" caption == @df_posts.caption.value_counts().index[1] ")[  
      "username"]  
      ].value_counts()
```

```
Out[996]:  
divine.hollywood.women    713  
divine.bollywood.women    558  
glambeauty2964            332  
divine.women12964          13  
imoviral                   2  
rinkuchoudhary5457        1  
Name: username, dtype: int64
```

```
In [997]: df_posts.query(" caption == @df_posts.caption.value_counts().index[1] ")[  
      "location"]  
      ].value_counts()
```

```
Out[997]:  
New York, New York           768  
Los Angeles, California     567  
Paris, France                178  
New York City , USA         19  
Frankfurt, Germany          18  
New York City U.S.A.        15  
California                  5  
Long Beach, California     5  
Dabboo Ratnani Studio       4  
London, United Kingdom      4  
California, USA              3  
New Downtown, Los Angeles, California 2  
Philippines                 2  
Dubai, United Arab Emirates 2  
Philippines Boracay Island   1  
Bangkok, Thailand            1  
New York City                1  
Mexico                      1  
Maharashtra Mumbai           1  
Los Angeles County Hall of Records 1  
Dubai                        1  
Goa Beach                   1  
Italy                        1  
Canada                       1  
Name: location, dtype: int64
```

```
In [998]: img_video = get_top(  
      df_posts.query(" caption == @df_posts.caption.value_counts().index[1] "),  
      col="is_video",  
      n=0,  
      column_name="type",  
      count_name="n_posts",  
      )  
img_video["type"] = ["image", "video"]  
img_video
```

```
Out[998]:  
type  n_posts  
0  image    1591  
1  video      28
```

```
In [999]: pie(img_video, "Image or Video")
```

This text was made by 6 users

```
- divine.hollywood.women    713  
- divine.bollywood.women    558  
- glambeauty2964            332  
- divine.women12964          13  
- imoviral                   2  
- rinkuchoudhary5457        1
```

98.3% of posts are images

Top Locations are

```
- New York, New York           768  
- Los Angeles, California     567  
- Paris, France                178
```

Available for sale.....Paypal payment accepted ...For worldwide delivery ... DM me if you are interested\nHigh quality stone
stone\nrockhound #stoneforsale #cabsforsale #jewelrymaker #jewelry #wirework #wireworkjewelry #canada
#lapidary #lapidaryart #jasper #minerals #stonecollection #cabochon #chabochons #silversmithing #wirework
#wireworkjewelry #canada #lapidary #lapidaryart #jasper #minerals #stonecollection #cabochon #chabochons
#silversmithing #wireartists #wirolljewelry #wireartists # wireverschons #workmith #metalsmith #wireartists
#gemstonejewelry #amberheard #bumblebee #bumblebeejasper #bumblebees #instajewelry #gemstonejewelry

```
In [100]: df_posts.query(" caption == @df_posts.caption.value_counts().index[2] ")[  
      "username"]  
      .nunique()
```

```
Out[100... 24

In [100... df_posts.query(" caption == @df_posts.caption.value_counts().index[2] ")[
      "username"
    ].value_counts()

Out[100... junot_aji           188
naturecrystal_wholeseler   145
crystalstone_natural       124
cv.alifa_gamstone          110
crystals_wholesaler        107
cv.alifa_permata            68
aisha_alifa280917          54
crystals.snow_              48
usman_stone_natural         33
pairuz6                      27
momsadeli                   25
crystal_stone03             21
bengbeng_crystal98          17
crystal_stone255             14
moms_crystal                10
paul_rich_walker             9
the.brilliant.stones_11      7
dogol_gemstone               5
rindiicrystalstone          4
crystalhasby_id              3
akbartrodriguezzi           3
natural_stone_mason          2
hapipah891                  1
perdian_crazy_crystal        1
Name: username, dtype: int64
```

```
In [100... df_posts.query(" caption == @df_posts.caption.value_counts().index[2] ")[
      "location"
    ].value_counts()

Out[100... Cipamingkis, Jawa Barat, Indonesia     1
Name: location, dtype: int64
```

```
In [100... img_video = get_top(
    df_posts.query(" caption == @df_posts.caption.value_counts().index[2] "),
    col="is_video",
    n=0,
    column_name="type",
    count_name="n_posts",
)
img_video["type"] = ["image", "video"]
img_video
```

```
Out[100... type  n_posts
0  image    977
1  video     49
```

```
In [100... pie(img_video, "Image or Video")
```

This text was made by 24 users

```
- junot_aji           188
- naturecrystal_wholeseler   145
- crystalstone_natural       124
- cv.alifa_gamstone          110
- crystals_wholesaler        107
- cv.alifa_permata            68
- aisha_alifa280917          54
- ...
```

95.2% of posts are images

```
@amberheard.0\n.\n.\n.\n.\n.\n.\n.\n.\n#amberheard
#alexandradaddario\xA0#\nkatemiddleton\xA0#\nkatebeckinsale\xA0#\nlucilleball\xA0#\nsandrabullock\xA0#\nlove\xA0#\nqueen\xA0#\n
```

```
In [100... df_posts.query(" caption == @df_posts.caption.value_counts().index[3] ")[
      "username"
    ].unique()

Out[100... 265
```

```
In [100... df_posts.query(" caption == @df_posts.caption.value_counts().index[3] ")[
      "username"
    ].value_counts()
```

```
Out[100... iconicambers           96
nigeldoublloon               56
ladies_and_gentlemen11        49
gooners_az                     48
amberjjheard                   44
...
filmes_e_series.br              1
monekerr                         1
modacollection                  1
cinecapitol                      1
jon_erik_chedid                 1
Name: username, Length: 265, dtype: int64
```

```
In [100... df_posts.query(" caption == @df_posts.caption.value_counts().index[3] ")[
```

```

    "location"
].value_counts()

Out[100... Paris, France      2
Brazil          1
Columbus, Ohio  1
GYM             1
Kerala         1
明治神宮 (Meiji Jingu) 1
Beijing         1
New York, New York 1
United States   1
Donetsk, Ukraine 1
Name: location, dtype: int64

```

```

In [100... img_video = get_top(
    df_posts.query(" caption == @df_posts.caption.value_counts().index[3] "),
    col="is_video",
    n=0,
    column_name="type",
    count_name="n_posts",
)
img_video["type"] = ["image", "video"]
img_video

```

```

Out[100... type  n_posts
0  image     929
1  video      18

```

```

In [100... pie(img_video, "Image or Video")

```

This text was made by 265 users

```

- iconicambers           96
- nigeldouloon          56
- ladies_and_gentlemen11 49
- gooners_az             48
- amberjjheard            44
- ...

```

98.1% of posts are images

Image or Video

- Top posted users
- Captions
- **Image or Video**
- Locations

```

In [101... df_posts["is_video"].value_counts()

Out[101... False    175010
True     18957
Name: is_video, dtype: int64

```

```

In [101... image_video = df_posts["is_video"].value_counts().to_frame().reset_index()
image_video["index"] = ["image", "video"]
image_video.rename(columns={"index": "type", "is_video": "n_posts"}, inplace=True)
image_video

```

```

Out[101... type  n_posts
0  image    175010
1  video     18957

```

```

In [101... pie(image_video, "Image or Video")

```

Locations

- Top posted users
- Captions
- Image or Video
- **Locations**

```

In [101... top_locations = get_top(
    df_posts, col="location", n=10, column_name="location", count_name="n_posts"
)

```

```

In [101... top_locations

```

```

Out[101...          location  n_posts
0  Los Angeles, California    1786
1  New York, New York        1370
2  Jakarta, Indonesia       1087
3  Adana, Turkey             842
4  Hollywood                  415

```

5	London, United Kingdom	309
6	Paris, France	292
7	Moscow, Russia	245
8	Mexico City, Mexico	210
9	Atlantis	203

```
In [101]: barh(top_locations, "Top Locations", 500)
```

Comments

- Posts
- Comments
 - Comments Created OVER TIME
 - Investigate Peaks
 - Comments on Peak Days
 - Comments on Peak Hours
 - Comments on Peak Times
 - -----
 - Top Commented Users
 - Users with the Most Likes
 - Users with the Most Replies
 - Most Repeated Comments
 - Same Text Same Date
 - Deeper Investigations

```
In [101]: df_comments = pd.read_csv("comments_cleaned.csv")
print(df_comments.shape)
df_comments.head()
```

```
(1751113, 16)
```

	message	datetime	id	n_replies	n_likes	media_id	parent_id	user_id	username	is_verified	account_url
0	#scarlettjohansson #alexandradaddario #emilia...	2020-06-06:50:19	17915232430430980	0.0	0.0	2337634847974873088	n	3988263563	scarlettjohansonofficial	False	https://www.instagram.com/scarlettjohansonofficial
1	🔥🔥	2020-06-06:50:20	17845867817208020	0.0	0.0	2337634847974873088	n	3988263563	scarlettjohansonofficial	False	https://www.instagram.com/scarlettjohansonofficial
2	very beautiful 😍 I love you very much 😍	2020-06-06:54:04	17889474637566402	0.0	0.0	2337634847974873088	n	12302008022	fr.frederic2368	False	https://www.instagram.com/fr.frederic2368
3	❤️❤️❤️❤️❤️	2020-06-07:12:28	17869498675832482	0.0	0.0	2337634847974873088	n	2490417195	muataz_87	False	https://www.instagram.com/muataz_87
4	bombón bello ❤️ ❤️❤️❤️	2020-06-07:14:40	18066076495222844	0.0	0.0	2337634847974873088	n	1521544054	jorgero122129	False	https://www.instagram.com/jorgero122129

```
In [101]: df_comments["datetime"] = pd.to_datetime(df_comments["datetime"])
df_comments.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1751113 entries, 0 to 1751112
Data columns (total 16 columns):
 #   Column      Dtype  
 --- 
 0   message     object  
 1   datetime    datetime64[ns]
 2   id          int64   
 3   n_replies   float64 
 4   n_likes     float64 
 5   media_id   int64   
 6   parent_id   object  
 7   user_id    int64   
 8   username    object  
 9   is_verified bool    
 10  account_url object  
 11  year        int64   
 12  month       object  
 13  dayofmonth int64   
 14  date        object  
 15  hour        int64   
dtypes: bool(1), datetime64[ns](1), float64(2), int64(6), object(6)
memory usage: 202.1+ MB
```

```
In [101]: isnan(df_comments)
```

```
The number of NaNs in message: 0
The number of NaNs in datetime: 0
The number of NaNs in id: 0
The number of NaNs in n_replies: 335514
The number of NaNs in n_likes: 0
The number of NaNs in media_id: 0
The number of NaNs in parent_id: 0
The number of NaNs in user_id: 0
The number of NaNs in username: 0
The number of NaNs in is_verified: 0
```

```
The number of NaNs in account_url: 0
The number of NaNs in year: 0
The number of NaNs in month: 0
The number of NaNs in dayofmonth: 0
The number of NaNs in date: 0
The number of NaNs in hour: 0
```

Exploring Comments Created OVER TIME

- [Comments Created OVER TIME](#)
- [Investigate Peaks](#)
- [Comments on Peak Days](#)
- [Comments on Peak Hours](#)
- [Comments on Peak Times](#)
- [-----](#)
- [Top Commented Users](#)
- [Users with the Most Likes](#)
- [Users with the Most Replies](#)
- [Most Repeated Comments](#)
- [Same Text Same Date](#)
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Comments Created in Each Year

- [Comments Created in Each Year](#)
- [Comments Created in Each Month](#)
- [Comments Created in Each Day](#)
- [Comments Created in Each Day of 2018](#)
- [Comments Created in Each Day of 2019](#)
- [Comments Created in Each Day of 2020](#)
- [Comments Created in Each Day of 2021](#)

```
In [101...]: df_years = (
    df_comments.groupby(df_comments["year"])["message"]
    .count()
    .reset_index(name="n_comments")
)
df_years
```

```
Out[101...]:   year  n_comments
0  2014          4
1  2015          1
2  2016         15
3  2017        116
4  2018      227847
5  2019      333197
6  2020      711339
7  2021      478594
```

```
In [102...]: pie(df_years, "Comments Created in Each Year")
```

```
In [102...]: bar(df_years, "year", "n_comments", "Comments Created in Each Year", margin=700000)
```

Instagram/ Initial release date: October 2010

Comments Created in Each Month

- [Comments Created in Each Year](#)
- [**Comments Created in Each Month**](#)
- [Comments Created in Each Day](#)
- [Comments Created in Each Day of 2018](#)
- [Comments Created in Each Day of 2019](#)
- [Comments Created in Each Day of 2020](#)
- [Comments Created in Each Day of 2021](#)

```
In [102...]: # df_monthly_counts = df_comments.groupby(['year', 'month']).count()['message']
# .reset_index(name='n_comments').rename(columns={'index': 'date'})

# Convert month into an ordered categorical type
# months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']
# mord = pd.api.types.CategoricalDtype(ordered=True, categories=months) # mord --> months ordered
# df_monthly_counts['month'] = df_monthly_counts['month'].astype(mord)

# df_monthly_counts.sort_values(['year', 'month'], inplace=True)
# df_monthly_counts
```

```
In [102...]: # total comments over years
df_comments.year.value_counts()
```

```
Out[102...]: 2020    711339
2021    478594
2019    333197
```

```

2018    227847
2017     116
2016      15
2014       4
2015       1
Name: year, dtype: int64

```

```

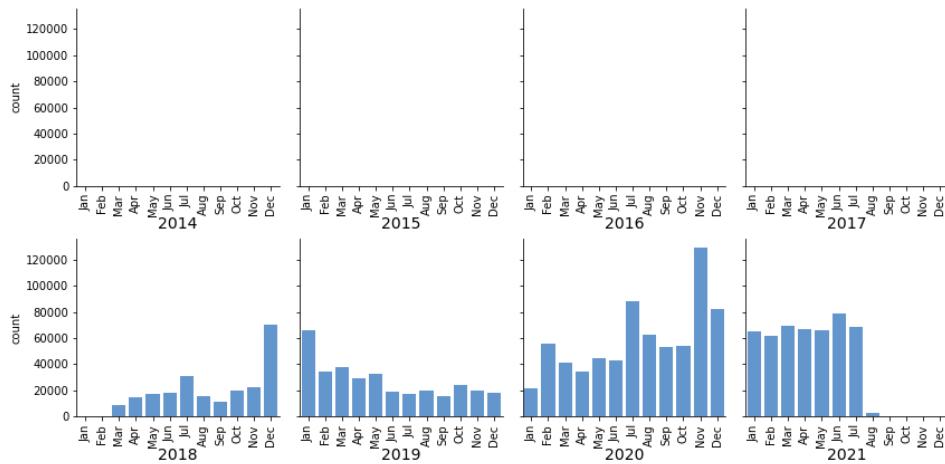
In [102]: month_ord = [
    "Jan",
    "Feb",
    "Mar",
    "Apr",
    "May",
    "Jun",
    "Jul",
    "Aug",
    "Sep",
    "Oct",
    "Nov",
    "Dec",
]
g = sb.FacetGrid(data=df_comments, col="year", col_wrap=4)
g.map(sb.countplot, "month", order=month_ord, palette="#5296dd")

g.set_xticklabels(rotation=90)
g.set_titles("{col_name}", size=14, y=-0.28)
g.fig.suptitle("Comments Created in Each Month", fontsize=18, y=1.06)

g.fig.subplots_adjust(wspace=0.1, hspace=0.3)
g.set_xlabels("")
for axis in g.axes.flat:
    axis.tick_params(labelbottom=True)

```

Comments Created in Each Month



NOTE:

- 2018 Peaks --> Dec
- 2019 Peaks --> Jan
- 2020 Peaks --> Nov, Jul
- 2021 Peaks --> Jun

Comments Created in Each Day

- Comments Created in Each Year
- Comments Created in Each Month
- **Comments Created in Each Day**
- Comments Created in Each Day of 2018
- Comments Created in Each Day of 2019
- Comments Created in Each Day of 2020
- Comments Created in Each Day of 2021

```

In [102]: daily_counts = df_comments.groupby(['year', 'dayofmonth', 'month']).size().reset_index(name='count')
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']

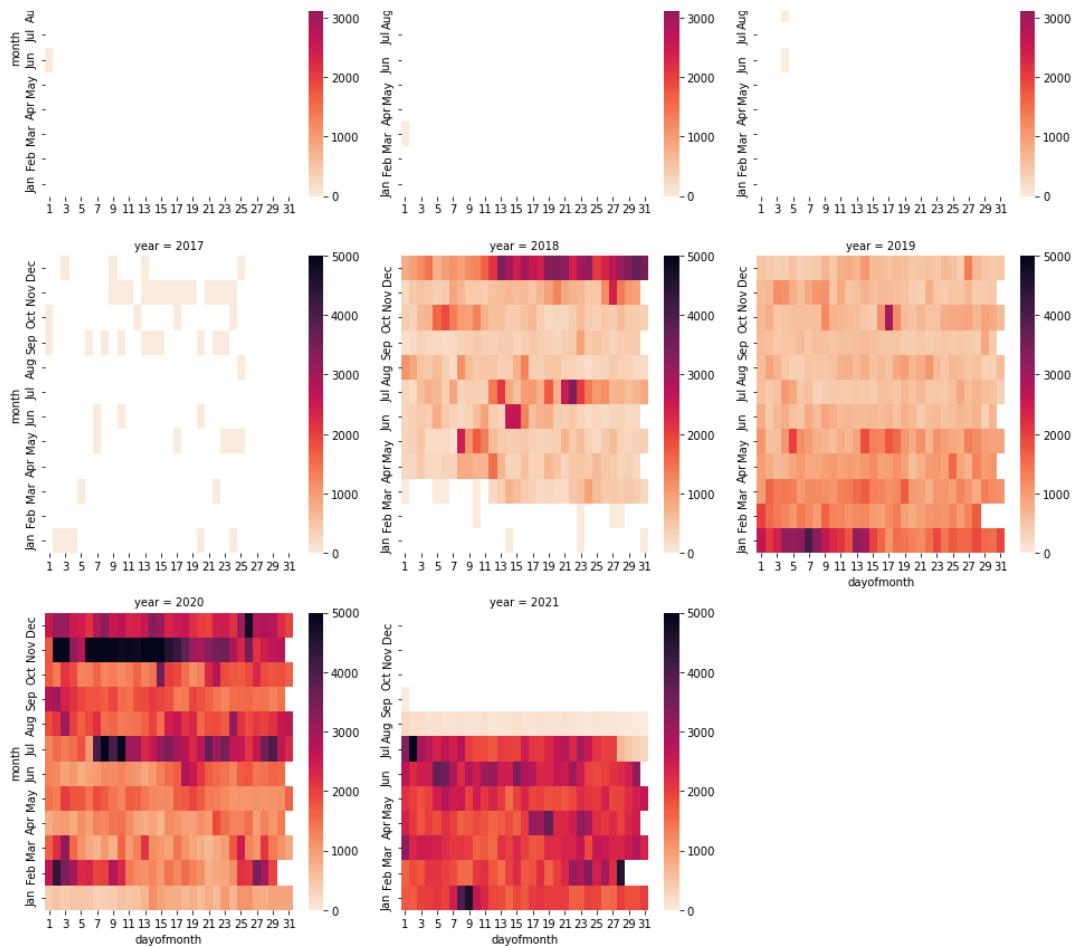
def draw_heatmap(*args, **kwargs):
    data = kwargs.pop('data')
    d = data.pivot(index=args[1], columns=args[0], values=args[2])
    d = d.reindex(index=months[::-1])
    sb.heatmap(d, **kwargs)

g = sb.FacetGrid(daily_counts, col='year', col_wrap=3, height=4.5)
g.map_dataframe(draw_heatmap, 'dayofmonth', 'month', 'count', cmap='rocket_r', vmin=0, vmax=5000);

g.fig.subplots_adjust(wspace=0.15, hspace=0.2)
for axis in g.axes.flat:
    axis.tick_params(labelbottom=True, labelleft=True)

```





```
In [102]: # d = daily_counts[daily_counts.year==2020].pivot(index='month', columns='dayofmonth', values='count')
# d
```

```
In [102]: # d = d.reindex(index=months[::-1])
# d
```

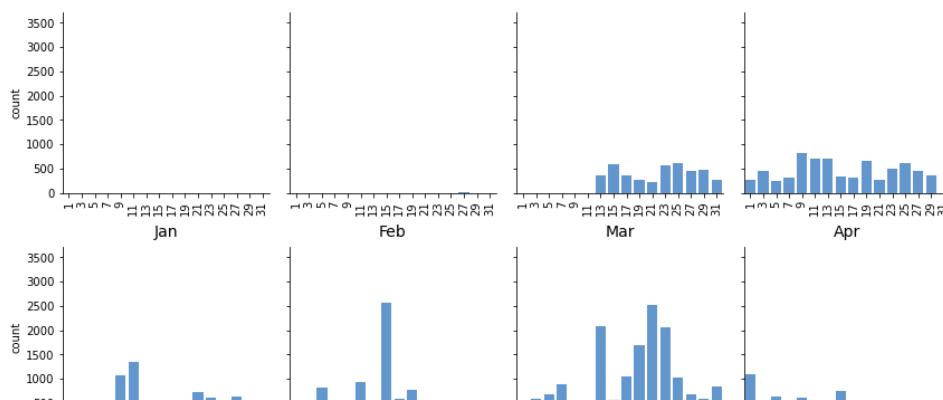
```
In [102]: df_comments_18 = df_comments[df_comments["year"] == 2018]
df_comments_19 = df_comments[df_comments["year"] == 2019]
df_comments_20 = df_comments[df_comments["year"] == 2020]
df_comments_21 = df_comments[df_comments["year"] == 2021]
```

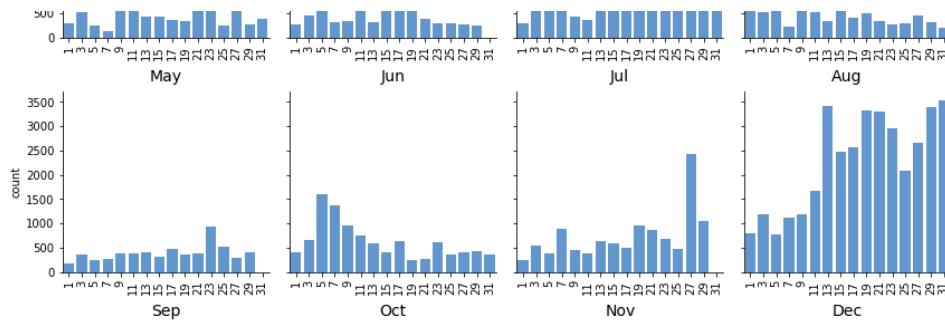
Comments Created in Each Day of 2018

- Comments Created in Each Year
- Comments Created in Each Month
- Comments Created in Each Day
- **Comments Created in Each Day of 2018**
- Comments Created in Each Day of 2019
- Comments Created in Each Day of 2020
- Comments Created in Each Day of 2021

```
In [102]: facet_days(df_comments_18, "2018")
```

Comments Created in Each Day of 2018





NOTE:

- The peak on Jun 15, 2018
- The peaks in Jul 2018
- The peak on Nov 27, 2018
- The peaks in Dec 2018

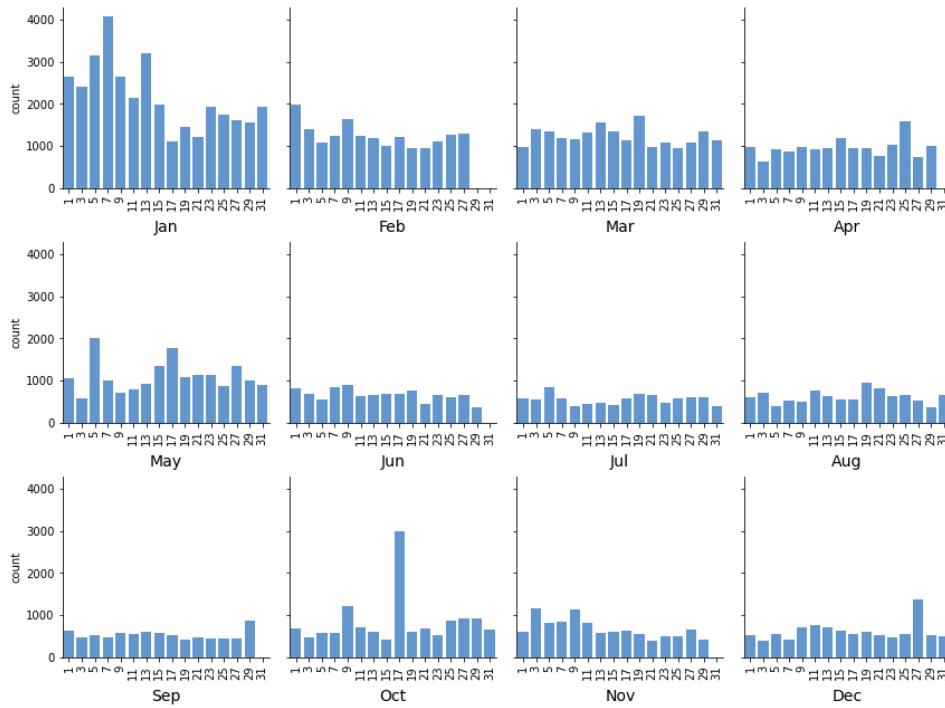
Comments Created in Each Day of 2019

- Comments Created in Each Year
- Comments Created in Each Month
- Comments Created in Each Day
- Comments Created in Each Day of 2018
- **Comments Created in Each Day of 2019**
- Comments Created in Each Day of 2020
- Comments Created in Each Day of 2021

In [103]:

facet_days(df_comments_19, "2019")

Comments Created in Each Day of 2019



NOTE:

- The peaks on Jan 2019
- The peak on Oct 17, 2019

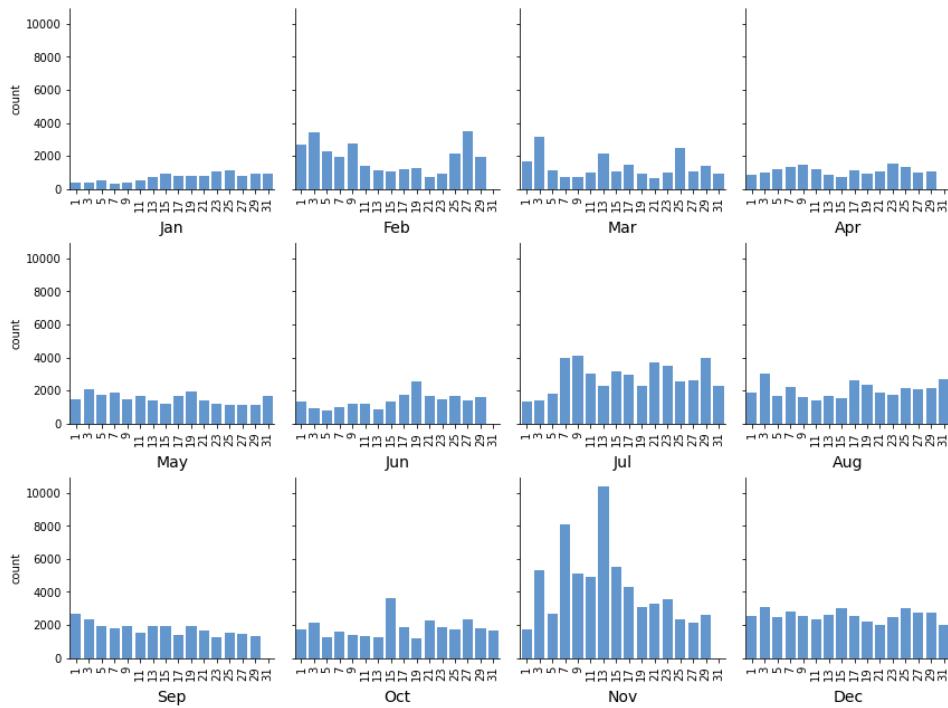
Comments Created in Each Day of 2020

- Comments Created in Each Year
- Comments Created in Each Month
- Comments Created in Each Day
- Comments Created in Each Day of 2018
- Comments Created in Each Day of 2019
- **Comments Created in Each Day of 2020**
- Comments Created in Each Day of 2021

In [103]:

facet_days(df_comments_20, "2020")

Comments Created in Each Day of 2020



NOTE:

- 13 November is a peak in 2020

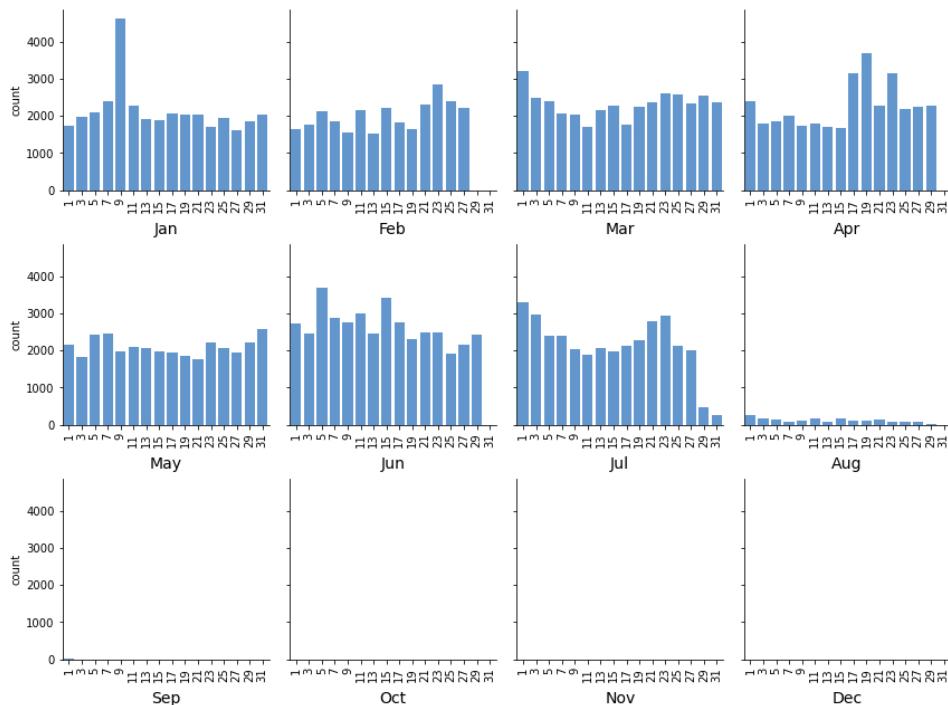
Comments Created in Each Day of 2021

- Comments Created in Each Year
- Comments Created in Each Month
- Comments Created in Each Day
- Comments Created in Each Day of 2018
- Comments Created in Each Day of 2019
- Comments Created in Each Day of 2020
- **Comments Created in Each Day of 2021**

In [103]:

```
facet_days(df_comments_21, "2021")
```

Comments Created in Each Day of 2021



NOTE:

- The peak on Jan 9, 2021

Investigate Peaks

- Comments Created OVER TIME
- **Investigate Peaks**
- Comments on Peak Days
- Comments on Peak Hours
- Comments on Peak Times
- -----
- Top Commented Users
- Users with the Most Likes
- Users with the Most Replies
- Most Repeated Comments
- Same Text Same Date
- Deeper Investigations

```
In [103]: # Create a data frame with the number of comments in each date
df_ncomments = df_comments.groupby(['date']).agg({'message':'count', 'n_replies': 'sum', 'n_likes': 'sum'}).reset_index()
df_ncomments.rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

df_ncomments["date"] = pd.to_datetime(df_ncomments["date"])
df_ncomments.head(15)
```

```
Out[103]:
```

	date	n_comments	n_replies	n_likes
1047	2020-11-13	10407	5020.0	155110.0
1036	2020-11-02	8659	4083.0	83069.0
1041	2020-11-07	8123	2890.0	82691.0
1048	2020-11-14	6086	1138.0	51965.0
919	2020-07-08	6068	2263.0	74994.0
1278	2021-07-02	5767	1764.0	85995.0
1049	2020-11-15	5551	1254.0	54036.0
1037	2020-11-03	5303	1324.0	55976.0
1042	2020-11-08	5130	960.0	28951.0
1043	2020-11-09	5101	1263.0	37681.0
1040	2020-11-06	5012	1410.0	41605.0
921	2020-07-10	4938	1747.0	58890.0
1045	2020-11-11	4907	1037.0	41643.0
1046	2020-11-12	4841	1302.0	41759.0
1044	2020-11-10	4829	1034.0	40325.0

Peaks in All Years

- **All Years**
- 2018
- 2019
- 2020
- 2021

```
In [103]: # filter on dates with peaks
df_peaks = df_ncomments[['date', 'n_comments']]
df_peaks_18 = df_peaks[df_peaks.date.dt.year == 2018]
df_peaks_19 = df_peaks[df_peaks.date.dt.year == 2019]
df_peaks_20 = df_peaks[df_peaks.date.dt.year == 2020]
df_peaks_21 = df_peaks[df_peaks.date.dt.year == 2021]
```

```
In [103]: bar_peaks(df_peaks.head(4), "Dates with the Highest Number of Comments in All Years")
```

NOTE:

- 2018 Peaks --> Dec
- 2019 Peaks --> Jan
- 2020 Peaks --> Nov, Jul

```
In [103]: df_dec_18 = df_ncomments[
    (df_ncomments["date"].dt.year == 2018) & (df_ncomments["date"].dt.month == 12)
]
df_jan_19 = df_ncomments[
    (df_ncomments["date"].dt.year == 2019) & (df_ncomments["date"].dt.month == 1)
]
df_nov_20 = df_ncomments[
    (df_ncomments["date"].dt.year == 2020) & (df_ncomments["date"].dt.month == 11)
]
df_jul_20 = df_ncomments[
    (df_ncomments["date"].dt.year == 2020) & (df_ncomments["date"].dt.month == 7)
]
```

2018 Peaks

- All Years
- **2018**
- 2019

- 2020
- 2021

```
In [103]: bar_peaks(df_peaks_18.head(3), "Dates with the Highest Number of Comments in 2018")
```

```
In [103]: def bar_dates(df, title, threshold=float("inf")):
    fig = px.bar(df, x="date", y="n_comments", text="n_comments")

    fig.update_layout(
        title={"text": title, "x": 0.5, "xanchor": "center", "yanchor": "top"}
    )
    fig.update_layout(xaxis=dict(title="Comments Creation Date", tickmode="linear"))

    clrs = ["red" if (y > threshold) else "#5296dd" for y in df["n_comments"]]
    fig.update_traces(
        marker_color=clrs, marker_line_width=1.5, opacity=1, textposition="auto"
    )
    fig.update_xaxes(tickangle=45)
    fig.show("svg")
```

```
In [103]: bar_dates(df_dec_18, "Comments Created in Each Day of Dec 2018", 2600)
```

2019 Peaks

- All Years
- 2018
- **2019**
- 2020
- 2021

```
In [104]: bar_peaks(df_peaks_19.head(6), "Dates with the Highest Number of Comments in 2019")
```

```
In [104]: bar_dates(df_jan_19, "Comments Created in Each Day of Jan 2019", 2600)
```

2020 Peaks

- All Years
- 2018
- 2019
- **2020**
- 2021

```
In [104]: bar_peaks(df_peaks_20.head(4), "Dates with the Highest Number of Comments in 2020")
```

```
In [104]: bar_dates(df_nov_20, "Comments Created in Each Day of Nov 2020", 2600)
```

```
In [104]: bar_dates(df_jul_20, "Comments Created in Each Day of Jul 2020", 2600)
```

2021 Peaks

- All Years
- 2018
- 2019
- 2020
- **2021**

```
In [104]: bar_peaks(df_peaks_21.head(3), "Dates with the Highest Number of Comments in 2021")
```

Comments on Peak Days

- Comments Created OVER TIME
- Investigate Peaks
- **Comments on Peak Days**
- Comments on Peak Hours
- Comments on Peak Times
- -----
- Top Commented Users
- Users with the Most Likes
- Users with the Most Replies
- Most Repeated Comments
- Same Text Same Date
- Deeper Investigations

Tn [104]:

```

... 47
# Create an empty set of negatively commenting users
neg_users = set()

In [104... # Create an empty set of negative text
neg_text = set()

In [104... df_comments.head(1)

Out[104... message datetime id n_replies n_likes media_id parent_id user_id username is_verified
0 #scarlettjohansson 2020-06-23 17915232430430980 0.0 0.0 2337634847974873088 n 3988263563 scarlettjohansonofficial False https://www.instagram.com/scarle...
```

Users with The Most Contributions on Each Date

```

In [104... df = df_comments.groupby(['date', 'username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
.rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

print("\nInvestigated --> These Users are Posting Normal Comments\n")
df.head(15)

Investigated --> These Users are Posting Normal Comments
```

	date	username	n_comments	n_likes	n_replies
709442	2020-08-24	sinasbutterfly	836	17.0	2.0
1168335	2021-06-05	anaww_ogi	359	20.0	0.0
1170715	2021-06-06	hasti_mm90	302	14.0	4.0
1169236	2021-06-05	maral_kp99	292	15.0	2.0
1171113	2021-06-06	maral_kp99	250	11.0	6.0
1168863	2021-06-05	hasti_mm90	215	9.0	1.0
1170141	2021-06-06	anaww_ogi	189	14.0	3.0
999503	2021-02-11	angel_amber_heard	183	200.0	0.0
162874	2018-12-24	missdanicosplay	175	166.0	3.0
1168735	2021-06-05	fateme.hoseinzadeh66	156	7.0	0.0
1031975	2021-03-03	jenniferlowrence.ex_	152	167.0	0.0
1139657	2021-05-16	bhuvanhritish	135	0.0	0.0
974175	2021-01-20	thecombatclinic_	134	139.0	0.0
937384	2020-12-28	angel_amber_heard	129	131.0	0.0
637093	2020-07-12	thatsfabofficial	127	602.0	0.0

Peak Dates

```

In [105... df_ncomments.head()

Out[105... date n_comments n_replies n_likes
1047 2020-11-13 10407 5020.0 155110.0
1036 2020-11-02 8659 4083.0 83069.0
1041 2020-11-07 8123 2890.0 82691.0
1048 2020-11-14 6086 1138.0 51965.0
919 2020-07-08 6068 2263.0 74994.0
```

2020-11-13

```

In [105... df_comments[df_comments.datetime.dt.date.astype(str) == "2020-11-13"][
    "username"]
].value_counts().head(10)
```

```

Out[105... visannelutu 48
universe_.marvel 44
lks_ctm 41
netos.k 36
v4l3ntinlo1 30
becauseitsjohnnydepp 28
di22mendez 25
notdiko 23
sonnetorio 21
cris.chichenol 19
Name: username, dtype: int64
```

di22mendez

negative comments | newly created

- Account created on FEBRUARY 6, 2021
- 12 posts
- 235 followers
- 5,163 following

```

In [105... neg_users = neg_users|{'di22mendez'}
neg_text = neg_text|{'remove amber', 'remove-amber', 'removed'}
```

```
In [105]: df_comments.query("username == 'di22mendez'")['message'].value_counts().head(15)

Out[105]:
@avarilardoj https://www.change.org/p/dc-entertainment-remove-amber-heard-from-aquaman-2 1
@soyjosebruges https://www.change.org/p/dc-entertainment-remove-amber-heard-from-aquaman-2 1
@black_myram_oks 1
@lautaro.g.barrios https://www.change.org/p/dc-entertainment-remove-amber-heard-from-aquaman-2 1
@gftg5062442 te lo paso jsjsjs 😊 1
@galarzivan https://www.change.org/p/dc-entertainment-remove-amber-heard-from-aquaman-2 1
@josh_emeef aah, creí que decías que ya había ganado :) 1
@josh_emeef no ganó el juicio aún. johnny perdió contra un portal de noticias, no contra amber. 1
@mmaaxxi_oks 1
@mqueen_2905 https://www.change.org/p/dc-entertainment-remove-amber-heard-from-aquaman-2 1
@triocomix claro 🙃 1
@lorelin_nevare https://www.change.org/p/dc-entertainment-remove-amber-heard-from-aquaman-2 1
@jonymirart https://www.change.org/p/dc-entertainment-remove-amber-heard-from-aquaman-2 1
@elcachofasjuanito433 de hecho amber ya consiguió un papel en una película, y en una serie de stephen king :( 1
@fatima23serrano https://www.change.org/p/dc-entertainment-remove-amber-heard-from-aquaman-2 1
Name: message, dtype: int64
```

```
In [105]: bar_peaks(get_top(df_comments[df_comments.username == "di22mendez"], 'date', 8, 'date', 'n_comments'),
            'Commenting dates for "di22mendez"')
```

becauseitsjohnnydepp

negative comments

- first posted on Aug 23, 2016
- has a total of 10,810 posts
- 35.7k followers
- 1,968 following
- becauseitsjohnnydepp ^ created around September 2016

```
In [105]: neg_users = neg_users[['becauseitsjohnnydepp']]
neg_text = neg_text[['amber lunge', 'assaulted johnny', 'amberheardisanabuser', 'clawing', 'tugging',
                     'aggressively pull', 'amber-heard-abus', 'amber heard abus', 'amber abus']]
```

```
In [105]: df_comments.query("username == 'becauseitsjohnnydepp'")['message'].value_counts().head(15)
```

```
Out[105]:
#justiceforjohnnydepp
55
#justiceforjohnnydepp https://www.change.org/p/the-people-warner-bros-bring-johnny-depp-back-as-gellert-grindelwald
29
https://www.change.org/p/the-people-warner-bros-bring-johnny-depp-back-as-gellert-grindelwald #justiceforjohnnydepp
28
#justiceforjohnnydepp https://meaww.com/johnny-depp-children-amber-heard-abusing-bahamas-actor-estate-manager
15
https://www.change.org/p/dc-entertainment-remove-amber-heard-from-aquaman-2 #amberheardisanabuser
8
https://meaww.com/johnny-depp-children-amber-heard-abusing-bahamas-actor-estate-manager #justiceforjohnnydepp
8
https://www.change.org/p/dc-entertainment-remove-amber-heard-from-aquaman-2
7
#justiceforjohnnydepp https://www.change.org/p/walt-disney-we-want-johnny-depp-back-as-captain-jack-sparrow
6
#justiceforjohnnydepp https://www.change.org/p/dc-entertainment-remove-amber-heard-from-aquaman-2
6
https://www.change.org/p/the-people-warner-bros-bring-johnny-depp-back-as-gellert-grindelwald #boycottwarnerbros #justiceforjohnnydepp
5
#boycottwarnerbros #justiceforjohnnydepp https://www.change.org/p/the-people-warner-bros-bring-johnny-depp-back-as-gellert-grindelwald
5
#amberheardisanabuser
4
https://www.change.org/p/the-people-warner-bros-bring-johnny-depp-back-as-gellert-grindelwald
3
#justiceforjohnnydepp \namber heard assaulted johnny depp when his children were in the house:\n'i saw amber lunge at johnny, clawing, tugging and aggre
ssively pulling him.'\nhttps://meaww.com/johnny-depp-children-amber-heard-abusing-bahamas-actor-estate-manager 3
https://www.change.org/p/the-people-warner-bros-bring-johnny-depp-back-as-gellert-grindelwald#justiceforjohnnydepp
2
Name: message, dtype: int64
```

```
In [105]: bar_peaks(get_top(df_comments[df_comments.username == "becauseitsjohnnydepp"], 'date', 8, 'date', 'n_comments'),
            'Commenting dates for "becauseitsjohnnydepp"')
```

```
In [105]: df_comments[df_comments.datetime.dt.date.astype(str) == "2020-11-13"][
        "message"]
    ].value_counts().head(20)
```

```
Out[105]:
#justiceforjohnnydepp
❤️ 221
no 40
😊 37
👉 23
love you 22
❤️❤️ 19
😊😊 18
#boycottaquaman2 17
fuck her 17
 FUCK YOU 15
fuck amber heard 14
BITCH 13
BITCH BITCH BITCH 12
https://www.change.org/p/dc-entertainment-remove-amber-heard-from-aquaman-2 11
❤️❤️❤️ 11
👉 11
yes 10
yes 9
Name: message, dtype: int64
```

2020-11-02

Lots of negative comments can be seen on that date.

```
In [105]: df_comments[df_comments.datetime.dt.date.astype(str) == "2020-11-02"]  
        .username  
    1.value_counts().head(10)
```

```
Out[105...]: queenmusicvideoe    71
             queenmusicvideo    60
             _jas_min_pr._      37
             babikate6          35
             untilthenia        33
             amirali.fitness2    33
             saghar.ttmfar        32
             academic_force      30
             tom_hiddleston_ir    30
             maryam_khaledi_77     30
             Name: username, dtype: int64
```

tom_hiddleston_in

[negative comments](#) | [newly created](#)

- first posted on OCTOBER 26, 2020
 - 148 posts
 - 1,702 followers
 - 664 following

```
In [106]: neg_users = neg_users|{'tom_hiddleston_ir'}
neg_text = neg_text|{'amberheardisalilar', 'nojohnnynopotc', 'wearewhityoujohnnydepp'}
```

```
In [106]: print('\nOnly Posting one Hashtag at a time!!!\n')
df_comments.query("username == 'tom hiddleston_ir'" )['message'].value_counts().head(15)
```

Only Posting one Hashtag at a time!!

```
Out[106...]: #nojohnnynopotc  
#justiceforjohnnydepp  
#amberheardisaliar  
#fuckthesun  
#wearewithyoujohnnydepp  
Name: message, dtype: int64
```

```
In [106]: bar_peaks(get_top(df_comments[df_comments.username == "tom_hiddleston_ir"], 'date', 8, 'date', 'n_comments'),  
              'Commenting dates for "tom hiddleston ir"')
```

queenmusicvideoe

negative comments

- private account
 - 0 posts
 - 4 followers
 - 403 following

```
In [106]: neg_users = neg_users|{'queenmusicvideo'}
```

```
In [106...     print('\nAmplifying lots of Hashtags!!\n')
    df_comments.replace('#', ' ', regex=True).groupby('video_id')[['comment_id']].value_counts().head(15)
```

Amplifying lots of Hashtags

Out[106]: @johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun
24
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 🌟
3
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun ❤️
3
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 💙
2
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 💙💙💙💙
2
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun ❤️❤️❤️❤️
2
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 💛❤️❤️❤️
2
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #hp #amberheard #fuckthesun
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 💛💛💛💛
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 💛❤️❤️❤️
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 💛🧡💛💛
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 🌟🧡💛💛
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 🌟🧡💛💛
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #emmawatson #amberheard #fuckthesun 💛
1
لطفاً به یک آپ ریکوئست بین کن که اگر برای پیچ اصلی اتفاقی افتد هم دیدی رو گفت نکنم 😊 @queenmusicvideoe 1
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #jd #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisaliar #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 💛
1

```
In [106]: bar_peaks(get_top(df_comments[df_comments.username == "queenmusicvideoe"], 'date', 8, 'date', 'n_comments')).head()
```

maryam_khaledi_ //

negative comments

- private account
- 0 posts
- 282 followers
- 297 following

```
In [106... neg_users = neg_users[{'maryam_khaledi_77'}]
neg_text = neg_text[{'amberturd', 'amberisanabuser', 'johnnydeppforever'}]
```

```
In [106... df_comments.query("username == 'maryam_khaledi_77'")['message'].value_counts().head(15)
```

```
Out[106... #justiceforjohnnydepp
```

```
7
#amberturd
4
@amberheard 🌟🌟🌟🌟🌟
3
#wearewithyoujohnnydepp ❤️
2
#amberisanabuser
2
████████████████████
2
#johnnydeppforever
2
@sard954
1
@parastooramezani
1
نشکن!
```

```
@ghazaleh_sa ❤️
1
@amirooe 😊😊😊😊😊
1
@celebrity.vid 😊😊😊😊😊😊
1
داره میگه کلارک پاتھسیت نک از عنبره دموا نکن 😊
1
@elahe.sedaghatian_rad
1
@wolfinli
1
Name: message, dtype: int64
```

```
In [106... bar_peaks(get_top(df_comments[df_comments.username == "maryam_khaledi_77"], 'date', 8, 'date', 'n_comments'),
    'Commenting dates for "maryam_khaledi_77"')
```

_jas_minpr:

negative comments

- private account
- 0 posts
- 143 followers
- 266 following

```
In [106... neg_users = neg_users[{'_jas_min_pr.'}]
```

```
In [107... df_comments.query("username == '_jas_min_pr.'")['message'].value_counts().head(15)
```

```
Out[107... @johnnydepp
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun
#wearewithyoujohnnydepp
😊😊
❤️🔥
💜💜
💛💜
@johnnydepp ❤️
@johnnydepp 💚
Name: message, dtype: int64
```

```
In [107... bar_peaks(get_top(df_comments[df_comments.username == "_jas_min_pr."], 'date', 8, 'date', 'n_comments'),
    'Commenting dates for "_jas_min_pr."')
```

babikate6

negative comments

- private account
- 0 posts
- 5 followers
- 21 following

```
In [107... neg_users = neg_users[{'babikate6'}]
```

```
In [107... df_comments.query("username == 'babikate6'")['message'].value_counts().head(15)
```

```
Out[107... @johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard
9
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun
5
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun
5
Name: message, dtype: int64
```

```

@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun ✌
4
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 💙
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 💎💎💎
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 🤗🤗🤗
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun ❤️❤️❤️
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 🦸
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 🍒
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 🌟
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 💫
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun ✕✖️✖️✖️
1
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun @johnnydepp #we
arewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 1
#wearewithyoujohnnydepp
1
Name: message, dtype: int64

```

```
In [107... bar_peaks(get_top(df_comments[df_comments.username == "babikate6"], 'date', 8, 'date', 'n_comments'),
   'Commenting dates for "babikate6"')
```

```
In [107... df_comments[df_comments.datetime.dt.date.astype(str) == "2020-11-02"][
   "message"
].value_counts().head(20)
```

```
Out[107... @johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun 119
#justiceforjohnnydepp
@johnnydepp
#wearewithyoujohnnydepp
😊
❤️❤️
🔥
😊😊😊
😃
😊😊😊
#justiceforjohnnydepp
❤️❤️❤️
😊😊😊😊
#fuckthesun
🔥🔥
❤️
#amberheardisalair
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard
😊😊😊
😊
Name: message, dtype: int64
```

2020-11-07

Lots of negative comments can be seen on that date.

```
In [107... df_comments[df_comments.datetime.dt.date.astype(str) == "2020-11-07"][
   "username"
].value_counts().head(10)
```

```
Out[107... azulj.nolasco      51
cinemaporteghal    43
glory_cinema       41
sassysthing90      23
11_ornella_06      20
olvorka            18
vengadorunavezvengador 18
theworldofgeeks9up 18
slut_for_big_juicy_tacos 17
samanthastar53     16
Name: username, dtype: int64
```

samanthastar53

negative comments | newly created

- Account created on NOVEMBER 5, 2020
- 5 posts
- 34 followers
- 102 following

https://www.instagram.com/p/CKXKaGEMOK8/?utm_source=ig_web_copy_link

```
In [107... neg_users = neg_users[('samanthastar53')]
neg_text = neg_text[('amberheardisanabuserandliar', 'boycottamberheard',
   'removeamberheardsfromaquaman2', 'jailforamberheard')]
```

```
In [107... df_comments.query("username == 'samanthastar53'")['message'].value_counts().head(15)
```

```
Out[107... #removeamberheardsfromaquaman2      42
#boycottamberheard    27
#amberheardisanabuserandliar 23
#jailforamberheard    11
#justiseforjohnnydepp  9
@amberheard 😊😊😊😊😊
#amberturd 🐾
😊😊😊😊😊
#boycottamberheard 😊
😊😊😊😊😊
Name: message, dtype: int64
```

```
@amberheard 🌸🌼🌼🌼 6
@removeamberheardsfromaquaman2 😳 6
#amberheardisanabuserandliar 🙄 5
#jailforamberheard 😳 4
@amberheard 🌸🌼🌼 4
Name: message, dtype: int64
```

```
In [107... bar_peaks(get_top(df_comments[df_comments.username == "samanthastar53"], 'date', 8, 'date', 'n_comments'),
    'Commenting dates for "samanthastar53"')
```

slut_for_big_juicy_tacos

negative comments

- private account
- 4,643 posts
- 38 followers
- 2,277 following

Bio:

Daddy Dylan Not scared of any Bitch. This is my iconic spam. Wish I can be a duck shark or flying squirrel because why the hell not <http://chng.it/ttWqDX5yVF>

```
In [108... neg_users = neg_users|{'samanthastar53'}
neg_text = neg_text|{'burn in hell', 'piece of shit', 'jailforamberheard', 'kys', 'get raped', 'go die',
    'jail', 'diecunt', 'cunt', 'death', 'death ', 'burn', 'kys', ' go kys', ' raped', 'get raped', 'go die',
    'kill amber', 'kill her', 'deathtoamber'}
```

```
In [108... df_comments.query("username == 'slut_for_big_juicy_tacos'")['message'].value_counts().head(15)
```

```
Out[108... die 4
burn in hell 2
piece of shit 2
she should kys 2
cunt 2
fuck this cunt 1
i feel like she will abuse the kid 1
#justiceforjohnnydepp 1
fuck her she needs to go to jail 1
worthless piece of shit 1
get raped 1
#diecunt 1
i hope you get beaten to death 1
go die 1
u kys too for supporting her knowing what she does 1
Name: message, dtype: int64
```

```
In [108... bar_peaks(get_top(df_comments[df_comments.username == "slut_for_big_juicy_tacos"], 'date', 8, 'date', 'n_comments'),
    'Commenting dates for "slut_for_big_juicy_tacos"')
```

theworldofgeeks99up

negative comments

- 8,311 posts
- 45.3k followers
- 682 following

"@jasonjamie1998 which i don't want amber to be in aquaman 2 that would be cool i'd still go see it but her stupid ass is in it then i cannot at all pay to go watch it and since movie theaters are still not open i doubt i'm gonna pay to watch a movie in theaters again."

```
In [108... neg_users = neg_users|{'theworldofgeeks99up'}
neg_text = neg_text|{'stupid ass', 'stupid'}
```

```
In [108... df_comments.query("username == 'theworldofgeeks99up'")['message'].value_counts().head(15)
```

```
Out[108... wakanda
1
@bruh__mode yee.
1
@d_man25 imagine superman still being single. 😊
1
@jasonjamie1998 aquaman 2 is gonna be in production soon.
1
@jasonjamie1998 which i don't want amber to be in aquaman 2 that would be cool i'd still go see it but her stupid ass is in it then i cannot at all pay to go watch it and since movie theaters are still not open i doubt i'm gonna pay to watch a movie in theaters again. 1
@hazem_essam1998 forreals.
1
@highabovelife it's gonna get crazier we got only a month and a half left.
1
@vjquick05 yeah.
1
@theindigomom it's your choice if you want to watch it.
1
@damian99ct i'd say not have her at all.
1
@igorkrassi nice speech.
1
@gabers_029 i'd take constantine 2 any day!
1
i know this is terrible.
1
@sergio_haidau yup.
1
@theworksofcinema i saw on bounding into comics.
1
Name: message, dtype: int64
```

```
In [108]: bar_peaks(get_top(df_comments[df_comments.username == "theworldofgeeks99up"], 'date', 8, 'date', 'n_comments'),  
                 'Commenting dates for "theworldofgeeks99up"')
```

olvorka

negative comments | newly created

- Account created on JUNE 4, 2021
 - 3 posts
 - 197 followers
 - 83 following

```
In [108]: neg_users = neg_users | {'olvorka'}
```

```
In [108... df_comments.query("username == 'olvorka'")['message'].value_counts().head(15)
```

```
In [108]: bar_peaks(get_top(df_comments[df_comments.username == "olvorka"], 'date', 8, 'date', 'n_comments'),  
             'Commenting dates for "olvorka"')
```

sassything90

negative comments

- Private Account
 - 632 posts
 - 357 followers
 - 924 following

```
In [108]: neg_users = neg_users[~('sassything90')]  
neg_text = neg_text[~('gold digger', 'abusing', 'abuser', 'abuse', 'clown',  
'justice for johnny', 'how can you still have fans')]
```

```
In [109]: df_comments.query("username == 'sassything90'")['message'].value_counts().head(15)
```

```
Out[109...]  
3  
#justiceforjohnnydepp  
1  
you look like you were up all night abusing, johnny depp!  
1  
1  
4 4 4 4  
1  
i hope you lose your career  
1  
gold digger!  
1  
no titts! 4 4 4  
1  
skin and bones  
1  
you are not sexy! you are a clown and an abuser 4 4 4  
1  
it's too bad her heart is not as pretty as her face. hey amber, an ugly heart destroys your pretty face. i hope your career goes up in smoke, you monste  
r! 1  
ugggggly heart  
1  
how can you still have fans?? justice for johnny!  
1  
4 4 4 4 4 4 4 4  
1  
ewwwwww  
1  
1  
4 4 4  
1  
Name: message, dtype: int64
```

```
In [109]: bar_peaks(get_top(df_comments[df_comments.username == "sassything90"], 'date', 8, 'date', 'n_comments'),  
               'Commenting dates for "sassything90"')
```

azulj.nolasco

negative comments

- azuljulieta.nolasco
 - 0 posts
 - 2 followers
 - 1 following

```
In [109...]: neg_users = neg_users[~'azuli.nolasco']
```

```
In [109]: df_comments.query("username == 'azuli.nolasco'")['message'].value_counts().head(15)
```

Out[109...]	#justiceforjohnnydepp	21
		5
		3
		2

```

        4
        1
        1
        1
        1
        1
        1
        1
        1
        1
        1
        1
        1
        1
Name: message, dtype: int64

In [109... bar_peaks(get_top(df_comments[df_comments.username == "azulj.nolasco"], 'date', 8, 'date', 'n_comments'),
    'Commenting dates for "azulj.nolasco"')

In [109... df_comments[df_comments.datetime.dt.date.astype(str) == "2020-11-07"][
    "message"
].value_counts().head(20)

Out[109... #justiceforjohnnydepp
307
:b
89
❤️
26
😊
23
😊
21
:((
20
❤️
18
😊
17
❤️❤️❤️
17
@el.pi0litas si
14
#justiceforjohnnydeep
12
❤️❤️
11
😊😊😊
10
❤️❤️❤️❤️
10
😊
9
#wearewithyoujohnnydepp\n#weareproudofyoujohnnydepp #justiceforjohnnydepp\n#justiceforjohnnydepp\n#justiceforjohnnydepp\n#johnnydeppisinnocent\n#amberh
eardisanabuser      9
beautiful
8
😊😊😊
8
چاقی
8
😊
7
Name: message, dtype: int64

```

2020-11-14

```

In [109... df_comments[df_comments.datetime.dt.date.astype(str) == "2020-11-14"][
    "username"
].value_counts().head(10)

Out[109... hero_doe      27
maiKstrange     19
engenhariadiocinema 18
mouhoubiadelghani 15
nathanjackson389  15
theweeknd_avakin  14
dushyant_386     13
dc_geeks         13
kinoholiczka    12
marcelitovalle   12
Name: username, dtype: int64

theweeknd_avakin
negative comments | newly created



- Account created on DECEMBER 4, 2020
- 97 posts
- 3,166 followers
- 7,105 following



"she's not a good actress either lmao 😂 she's never been nominated for shit"

In [109... neg_users = neg_users|{'theweeknd_avakin'}
neg_text = neg_text|{'nominated for shit', 'shit', 'whorish', 'scammer', 'fake victim'}

In [109... df_comments.query("username == 'theweeknd_avakin'")['message'].value_counts().head(15)

Out[109... @naveen_3275_ so you saying that johnny depp getting fired from pirates of the caribbean 6 and fantastic beasts and where to find them 2 are alright bu
t this isn't
1
@naveen_3275_ if you don't care about amber heard then stop her from being casted for the movie cuz what she deserves is being thrown in jail for playin
g the victim card and damaging johnny depp's career....and emilia is perfect for the role cuz she and jason was in game of thrones together as khal drog
o and khaleesi denarys...and they're chemistry is more perfect than anything the abuser amber turd can put onto the screen. 1
@bridge5306 strong woman.....😂 more like a whorish scammer who played the fake victim and tried to destroy the one and only mf johnny depp who deserved

```

```

es justice for what amber turd did.
1
@theregularalan boycott aquaman
1
@kinggatsby we all do believe johnny.... he's the man the myth the legendary captain jack sparrow
1
yessssss the best couple ever khal drogo and khalsi will now rule the real sea instead of the green sea 🤙.
1
@hidenseekchampion no see you never 😂
1
@trainlike_bruce_wayne39 johnny is our childhood and needs to be protected
1
@nigel_laulau she's not a good actress either lmao 😂 she's never been nominated for shit
1
@zeerahnaeim khal drogo and the khalesse will reunite in aquaman 2... best crossover ever 😂
1
@anuj_patnaik death to all the simp's
1
@mrmartyrdom you want an abusive actress to star in a movie while the victim johnny depp gets abandoned by the magical beasts and where to find them fra
nchise.... wow talk about simping for whores
1
@_fulgencio._ yess the queen needs the support she deserves
1
@thaihuynh50 lmao remember that emilia and jason momoa where together in game of thrones... they deserve some more screen time together in justice leagu
e...khal drogo and khalsi together again
1
Name: message, dtype: int64

```

```
In [109... df_comments[df_comments.datetime.dt.date.astype(str) == "2020-11-14"][
    "message"
].value_counts().head(20)
```

```
Out[109... #justiceforjohnnydepp
67
❤️
22
❤️❤️❤️
21
😊
19
😊😊😊😊😊
14
😊😊😊
13
against
12
❤️❤️
12
🔥🔥
11
no
11
❤️❤️❤️
11
beautiful
10
🔥
10
https://www.thetimes.co.uk/edition/news/amber-heard-accuses-johnny-depp-of-online-smear-campaign-to-get-her-fired-from-aquaman-sequel-bv55d9phj?utm_medi
um=social&utm_source=facebook&fbclid=iwar0vvwcetpvf43stvrfzhkyoiegdv9lifczv6qgfhybtiqy57p8pq7pmq4#echobox=1605269482 10
9
fuck amber heard
9
😊😊
8
❤️❤️❤️
7
boycott
7
@hero_doe simp
7
Name: message, dtype: int64
```

Comments on Peak Hours

- Comments Created OVER TIME
- Investigate Peaks
- Comments on Peak Days
- **Comments on Peak Hours**
- Comments on Peak Times
- -----
- Top Commented Users
- Users with the Most Likes
- Users with the Most Replies
- Most Repeated Comments
- Same Text Same Date
- Deeper Investigations

Users with The Most Contributions on Each Date in The Same Hour

```
In [110... df = df_comments.groupby(['date', 'hour', 'username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
.rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)
df.head(15)
```

	date	hour	username	n_comments	n_likes	n_replies
778019	2020-08-24	7	sinasbutterfly	217	0.0	0.0
777975	2020-08-24	6	sinasbutterfly	192	0.0	0.0
777925	2020-08-24	5	sinasbutterfly	191	16.0	2.0

1108581	2021-02-11	8	angel_amber_heard	183	200.0	0.0
778775	2020-08-24	18	sinasbutterfly	144	0.0	0.0
217823	2019-01-10	2	imcoreyrae	114	139.0	0.0
1305000	2021-06-05	11	anaww_ogi	113	9.0	0.0
1036632	2020-12-28	6	angel_amber_heard	112	111.0	0.0
697588	2020-07-12	19	thatsfabofficial	110	566.0	0.0
1306918	2021-06-06	9	maral_kp99	108	4.0	3.0
268970	2019-02-18	13	kallisi_vamp	108	114.0	0.0
593786	2020-04-25	17	_shmiwx	102	25.0	5.0
1018369	2020-12-19	19	angel_amber_heard	100	107.0	0.0
810828	2020-09-13	8	yaman_haluk	97	48.0	0.0
1078510	2021-01-20	20	thecombatclinic_	96	101.0	0.0

Peak Hours

```
In [110]: df = df_comments.groupby(['date', 'hour']).agg({'message': 'count', 'n_replies': 'sum', 'n_likes': 'sum'}).reset_index().rename(columns={'message': 'n_comments'}).sort_values('n_comments', ascending=False)
df.head(15)
```

	date	hour	n_comments	n_replies	n_likes
23289	2020-11-02	13	993	281.0	4877.0
23391	2020-11-06	19	816	367.0	6553.0
17420	2020-03-02	23	797	375.0	13888.0
23294	2020-11-02	18	795	125.0	2394.0
23292	2020-11-02	16	780	285.0	4171.0
23297	2020-11-02	21	773	190.0	4303.0
23296	2020-11-02	20	746	735.0	13807.0
24575	2020-12-26	3	702	111.0	1209.0
24924	2021-01-09	16	700	116.0	1095.0
23291	2020-11-02	15	651	592.0	12186.0
23394	2020-11-06	22	638	171.0	3890.0
23392	2020-11-06	20	638	264.0	9906.0
23540	2020-11-13	0	626	540.0	34221.0
23541	2020-11-13	1	611	469.0	15619.0
23393	2020-11-06	21	611	194.0	3688.0

In []:

Comments on Peak Times

- Comments Created OVER TIME
- Investigate Peaks
- Comments on Peak Days
- Comments on Peak Hours
- **Comments on Peak Times**
- -----
- Top Commented Users
- Users with the Most Likes
- Users with the Most Replies
- Most Repeated Comments
- Same Text Same Date
- Deeper Investigations

```
In [110]: df_comments.datetime.value_counts().head(20)
```

2018-10-25 20:52:06	16
2021-07-10 19:03:46	16
2021-08-15 06:13:29	11
2021-08-15 07:20:19	10
2018-10-25 20:52:07	10
2018-10-25 20:52:04	9
2018-10-25 20:52:01	9
2021-07-11 17:24:29	8
2020-07-31 03:23:07	8
2018-10-25 20:52:08	8
2021-07-20 13:44:22	8
2018-12-04 00:06:17	8
2021-07-16 15:51:42	8
2018-10-25 20:52:02	8
2018-10-25 20:52:05	8
2019-03-11 15:03:51	7
2018-12-04 00:06:13	7
2018-12-21 19:17:05	7
2018-10-25 20:52:03	7
2020-11-11 15:57:20	7

Name: datetime, dtype: int64

2018-10-25 20:52:06

```
In [110]: df_comments[df_comments.datetime.astype(str) == "2018-10-25 20:52:06"][[  
    "message"  
].value_counts()
```

```
Out[110]: bring it on          3  
gotta check it out        3  
billy bob                 2  
great movie                1  
oh yeah baby               1  
omg i can't wait to see it 1  
when does this hit all theaters 1  
this looks amazing         1  
kickass movie              1  
going to see this         1  
holy shit this looks good  1  
Name: message, dtype: int64
```

```
In [110]: df_comments[df_comments.datetime.astype(str) == "2018-10-25 20:52:06"][[  
    "username"  
].value_counts()
```

```
Out[110]: poppysmooches      1  
sosunov_                   1  
el.oze                     1  
madscrew_band              1  
rowdy_ma                  1  
hams_53                    1  
fantasista.kr              1  
doctor.ca                  1  
saharazeritv               1  
kum_gibi_hayat             1  
zachariaspneus             1  
foxlife84                  1  
miguelaclopes              1  
dougcourtright              1  
onurzlr                     1  
angelamart__                1  
Name: username, dtype: int64
```

2021-07-10 19:03:46

```
In [110]: df_comments[df_comments.datetime.astype(str) == "2021-07-10 19:03:46"]
```

	message	datetime	id	n_replies	n_likes	media_id	parent_id	user_id	username	is_verified	accou
431967	não é sei	2021-07-10 19:03:46	17918836441761036	3.0	1.0	2614864539877656576	n	7093571712	divaneisancaosilva	False	https://www.instagram.com/divaneisanca
548465	😊😊	2021-07-10 19:03:46	18182264398140180	0.0	0.0	2614866084007869440	n	48337075999	fbgkkoo	False	https://www.instagram.com/fbgkkoo
548467	.Hex.	2021-07-10 19:03:46	17931181747608260	0.0	0.0	2614866084007869440	n	48491295509	khanjk842	False	https://www.instagram.com/khanjk842
548468	🌐	2021-07-10 19:03:46	17909531332936026	0.0	0.0	2614866084007869440	n	48385055969	nfkd.ksjs	False	https://www.instagram.com/nfkd.ksjs
548469	😢	2021-07-10 19:03:46	17868186359497584	0.0	0.0	2614866084007869440	n	48408997689	whadiz_promoter	False	https://www.instagram.com/whadiz_promoter
548470	🚫	2021-07-10 19:03:46	17888277836332616	0.0	0.0	2614866084007869440	n	48620048799	onjvjv	False	https://www.instagram.com/onjvjv
548471	😊😊	2021-07-10 19:03:46	17907146515955280	0.0	0.0	2614866084007869440	n	48793920449	und_rcut	False	https://www.instagram.com/und_rcut
548472	😱😱	2021-07-10 19:03:46	17904789304915906	0.0	0.0	2614866084007869440	n	44099636139	vishwakarm.karan	False	https://www.instagram.com/vishwakarm.karan
548473	👑❤️	2021-07-10 19:03:46	17919029926758528	0.0	0.0	2614866084007869440	n	48732887189	shahidkotwal786	False	https://www.instagram.com/shahidkotwal786
548474	.Hex.	2021-07-10 19:03:46	17887052906240680	0.0	0.0	2614866084007869440	n	48742525469	roushan9788	False	https://www.instagram.com/roushan9788
548475	😢😢	2021-07-10 19:03:46	17956707532438548	0.0	0.0	2614866084007869440	n	48528997009	shabna_143	False	https://www.instagram.com/shabna_143
548477	😭😭	2021-07-10 19:03:46	17997381019356078	0.0	0.0	2614866084007869440	n	44133142349	paras_khanna_	False	https://www.instagram.com/paras_khanna_
548478	😂❤️	2021-07-10 19:03:46	1790507133800690	0.0	0.0	2614866084007869440	n	48416661209	sabat8645	False	https://www.instagram.com/sabat8645
548479	😉	2021-07-10 19:03:46	17849982848598512	0.0	0.0	2614866084007869440	n	48549696119	h67218223	False	https://www.instagram.com/h67218223
548480	😊	2021-07-10 19:03:46	17979938050379296	0.0	0.0	2614866084007869440	n	18524857149	uday.thakur648	False	https://www.instagram.com/uday.thakur648
548481	😊	2021-07-10 19:03:46	17930018221614936	0.0	0.0	2614866084007869440	n	38338269939	saini_sahab__	False	https://www.instagram.com/saini_sahab__

```
In [110... df_comments[df_comments.datetime.astype(str) == "2021-07-10 19:03:46"][
    "message"
].value_counts()

Out[110... 🎉🎉🎉 2
😊 é sei 1
😊😊😊😊 1
🌐 1
🌐 1
😊😊😊 1
😊😊😊 1
😊😊 1
😊😊 1
😊😊 1
😊😊 1
😊😊 1
😊 1
😊 1
Name: message, dtype: int64
```

```
In [110... df_comments[df_comments.datetime.astype(str) == "2021-07-10 19:03:46"][
    "username"
].value_counts()

Out[110... divaneisancaosilva 1
fhbgkko 1
khanjk842 1
nfkd.ksjs 1
whadiz_promoter 1
onjvjvjjv 1
und_rcut 1
vishwakarm.karan 1
shahidkotwal786 1
roushan9788 1
shabna_143 1
paras_khanna_ 1
sabat8645 1
h67218223 1
uday.thakur648 1
saini_sahab__ 1
Name: username, dtype: int64
```

2021-08-15 06:13:29

```
In [110... df_comments[df_comments.datetime.astype(str) == "2021-08-15 06:13:29"][
    "message"
].value_counts()

Out[110... 🎉🎉🎉 2
😊 1
😊 1
👉👉👉 1
❤️❤️ 1
😊 1
😊 1
😊 1
Name: message, dtype: int64
```

```
In [110... df_comments[df_comments.datetime.astype(str) == "2021-08-15 06:13:29"][
    "username"
].value_counts()

Out[110... official_love_thakur_ 1
gour.avsingh7676 1
theleo.messi202 1
mv7346714 1
fun_with_tmkok_1560 1
sidhanathmanc2746 1
halka6016 1
devil_boy_king_khan 1
agsoah89 1
sam4444176 1
_your_bruh_ 1
Name: username, dtype: int64
```

2021-08-15 07:20:19

```
In [111... df_comments[df_comments.datetime.astype(str) == "2021-08-15 07:20:19"][
    "message"
].value_counts()

Out[111... 🎉🎉🎉 1
🌐 1
😊 1
😊 1
❤️❤️ 1
😊😊😊😊 1
😊😊😊😊 1
😊😊😊😊 1
😊😊😊😊 1
🌐 1
Name: message, dtype: int64
```

```
In [111... df_comments[df_comments.datetime.astype(str) == "2021-08-15 07:20:19"][
    "username"
].value_counts()

Out[111... srammy129 1
kadi_r2259 1
sarikh_raia 1
Name: username, dtype: int64
```

```

mang12739      1
__rohittt__09999 1
divy.ansh4403   1
qhgf_y         1
smailyly3084   1
vabby455       1
ig_201         1
Name: username, dtype: int64

```

2018-10-25 20:52:07

In [111]	df_comments[df_comments.datetime.astype(str) == "2018-10-25 20:52:07"]
Out[111]	message datetime id n_replies n_likes media_id parent_id user_id username is_verified
	great movie 2018-10-25 20:52:07 17993045164038428 0.0 1.0 1898119171314928896 n 3088156712 coolerbaneiran False https://www.instagram.com/coolerbaneiran/
	oh yeah baby 2018-10-25 20:52:07 17996222773021752 0.0 1.0 1898119171314928896 n 5670174335 spa_les_bains_douches False https://www.instagram.com/spa_le...
	damn she's smoking hot 2018-10-25 20:52:07 17885828899278722 0.0 1.0 1898119171314928896 n 3067805787 hafyon False https://www.instagram.com/hafyon/
	kickass movie 2018-10-25 20:52:07 17929660612210100 0.0 1.0 1898119171314928896 n 6670998243 managerfixedgames False https://www.instagram.com/managerfixedgames/
	great movie 2018-10-25 20:52:07 17956702552173344 0.0 1.0 1898119171314928896 n 6671543291 dnieper_inst False https://www.instagram.com/dnieper_inst/
	this looks awesome 2018-10-25 20:52:07 17956911073174644 0.0 1.0 1898119171314928896 n 3586948371 rasched.timunga False https://www.instagram.com/rasched.timunga/
	great movie 2018-10-25 20:52:07 17968728649190868 0.0 1.0 1898119171314928896 n 6113732853 lgs_revisao False https://www.instagram.com/lgs_revisao/
	going to see this 2018-10-25 20:52:07 17977956193129384 0.0 1.0 1898119171314928896 n 2276846911 _lasanha__ False https://www.instagram.com/_lasanha__/
	this looks amazing 2018-10-25 20:52:07 17984109925072804 0.0 1.0 1898119171314928896 n 3649970085 zhonggenliangxing4019 False https://www.instagram.com/zhonggenliangxing4019/
	oh yeah baby 2018-10-25 20:52:07 17992208497050608 0.0 1.0 1898119171314928896 n 4376244940 slicklubeco False https://www.instagram.com/slicklubeco/
In [111]	df_comments[df_comments.datetime.astype(str) == "2018-10-25 20:52:07"]["message"].value_counts()
Out[111]	great movie 3 oh yeah baby 2 damn she's smoking hot 1 kickass movie 1 this looks awesome 1 going to see this 1 this looks amazing 1 Name: message, dtype: int64
In [111]	df_comments[df_comments.datetime.astype(str) == "2018-10-25 20:52:07"]["username"].value_counts()
Out[111]	coolerbaneiran 1 spa_les_bains_douches 1 hafyon 1 managerfixedgames 1 dnieper_inst 1 rasched.timunga 1 lgs_revisao 1 _lasanha__ 1 zhonggenliangxing4019 1 slicklubeco 1 Name: username, dtype: int64

Top Commented Users

- Comments Created OVER TIME
- Investigate Peaks
- Comments on Peak Days
- Comments on Peak Hours
- Comments on Peak Times
-
- Top Commented Users**
- Users with the Most Likes
- Users with the Most Replies
- Most Repeated Comments
- Same Text Same Date
- Deeper Investigations

```
In [111]: df_top_users = (
    df_comments["username"]
    .value_counts()
    .to_frame()
    .reset_index()
    .rename(columns={"index": "user_name", "username": "n_comments"})
)
```

```
In [111]: print("\nInvestigated --> These Users are Posting Normal Comments\n")
barh(df_top_users.head(15), "Top Commented Users")
```

Investigated --> These Users are Posting Normal Comments

Users with the Most Likes

- Comments Created OVER TIME
- Investigate Peaks
- Comments on Peak Days
- Comments on Peak Hours
- Comments on Peak Times
- -----
 - Top Commented Users
 - **Users with the Most Likes**
 - Users with the Most Replies
 - Most Repeated Comments
 - Same Text Same Date
 - Deeper Investigations

```
In [111]: df_nlikes = df_comments.groupby(['username']).agg({'message':'count', 'n_replies': 'sum', 'n_likes': 'sum'}).reset_index()
df_nlikes.rename(columns={'message':'n_comments'}, sort_values('n_likes', ascending=False)
df_nlikes.head(15)
```

	username	n_comments	n_replies	n_likes
37879	acciopark	3	4.0	9501.0
373349	littleflowerofmercy	78	18.0	9179.0
553685	sakazuki92	29	32.0	7828.0
9998	_yarleth_albornoz_	20	2.0	6357.0
144121	chris_darden1999	17	10.0	5791.0
479656	nuria_0_	16	1.0	5753.0
671506	yourfavemuzie	5	0.0	5592.0
363813	lectores_e_introvertidos	106	17.0	5483.0
355346	kurilka_dzen	4006	421.0	5477.0
170810	dceu_family	463	35.0	5391.0
393639	mahitowhere	50	133.0	5375.0
409368	marvel.dc.and.more	859	2.0	5263.0
251528	gr31sh	16	1.0	5173.0
512347	psudemate	6	0.0	5146.0
389906	machelyyyyy	324	64.0	5106.0

```
In [111]: neg_users = neg_users | {"sakazuki92", "_yarleth_albornoz_", "chris_darden1999", "yourfavemuzie"}
```

```
In [111]: colors = []
for user in df_nlikes.head(10) ['username']:
    if user in neg_users:
        colors.append('red')
    else:
        colors.append('#5296dd')
```

```
In [112]: print("\nNote: Negatively commenting users are highlighted in \"red\"")
barh(df_nlikes[['username', 'n_likes']].head(10), 'Users with the Most Likes', c=colors)
```

Note: Negatively commenting users are highlighted in "red"

```
In [112]: neg_text = neg_text|{'disgusting', 'domestic violence', 'threw a vodka bottle', 'fucked the right off',
"no one will believe you're a victim because you're a man",
'50 million', '7 million', 'lawsuit', 'violent', 'bitch', 'exposing her ass',
'punched', 'shut', 'garbage'}
```

The sun --> refers to a newspaper Johnny Depp has lost his libel case against the Sun newspaper over an article that called him a "wife beater".

@sakazuki92 information about the actual case:\n1. the \$50 million lawsuit - amber's tried to dismiss it 3x and failed. she's on her 4th attempt.\n2. amber wanted a protective order which is where info doesn't get released to the public. johnny wanted the opposite and the judge granted his wishes (why hide the truth eh?)\n3. the judge told her to redraft all her evidence because it has nothing to do with the case in january 2020. she's basically "fishing" for things and delaying because it's a losing case.\n4. johnny also has a lawsuit vs the sun when the sun called him a "wife beater". the trial is next march. if johnny wins which is 99%, then this will have a major impact on the actual amber heard case. that means the courts can't dismiss the case or whatever and it'll look really bad on amber.

```
In [112]: df_comments.query("username= 'sakazuki92'")["message"].value_counts()
```

garbage.

1
 @sakazuki92 list of things she did to johnny on top of the lies and verbal abuse:\n1. threw a vodka bottle at him which severed his finger and he contracted mrsa 3 times. followed by putting a cigarette out on his face because she overheard his lawyers talking about a post-nuptial agreement. \n2. punched and kicked him multiple times including in the face, had encounters in the bathroom, train, on her birthday, australia, bahamas and other places. \n3. threw things at him like pots, pans, vases, bottles, cans etc spat on him\n4. took a shit on his bed, you heard me, took a shit on his bed while leaving for coachella on the same day. \nyour victim and survivor ladies and gents
 1
 @wesliesnipe yes we do. 2 audio tapes were leaked in the last week showing infact she was the one who was abusive. but you keep being done deaf in your lala land.
 1
 disgusting abuser
 1
 shameful. take that trash out. she's a proven abuser through police statements, various testimonies and outright audio tapes. hope she gets fucked the right off from aquaman 2.
 1
 johnny follow you, well done mate
 1
 @sakazuki92 i've sent everyone dms who asked for them
 1
 @xmaryamfaridx <https://www.youtube.com/watch?v=cg9svqsmoe>
 1
 there is also a second audio tape that was released right after this where amber heard says "no one will believe you're a victim because you're a man"
 1
 @sakazuki92 information about the actual case:\n1. the \$50 million lawsuit - amber's tried to dismiss it 3x and failed. she's on her 4th attempt. \n2. amber wanted a protective order which is where info doesn't get released to the public. johnny wanted the opposite and the judge granted his wishes (why hide the truth eh?)\n3. the judge told her to redraft all her evidence because it has nothing to do with the case in january 2020. she's basically "fishing" for things and delaying because it's a losing case. \n4. johnny also has a lawsuit vs the sun when the sun called him a "wife beater". the trial is next march. if johnny wins which is 99%, then this will have a major impact on the actual amber heard case. that means the courts can't dismiss the case or whatever and it'll look really bad on amber. 1
 @sakazuki92 the april 21st and 22nd incidents were in 2016. i have a theory this was the breaking point for johnny, it was getting too much, hence he wanted to divorce her in may.
 1
 @gnty.e yep. \n1. in march 2015 she overheard his lawyers talking about a post-nuptial agreement. in anger she threw a vodka bottle at him which severed his finger and he contracted mrsa 3 times then she put a cigarette out on his face.\n2. she shat on his bed on april 22nd when she left for coachella, day after her birthday on april 21st where she repeatedly punched him in the face because he was late to her bday party. the housekeeper hilda vergas saw the shit then sent the pictures to the estate manager, kevin murphy. kevin spoke to johnny about them. amber got mad at kevin for speaking about it (he's testified about this in the court too)
 1
 @sophie__ig there's more but didn't want it too long lol
 1
 @sakazuki92 if anyone wants to know more info as there is more, let me know.
 1
 @sadisticpotato_ i haven't heard about that or seen the court docs so i can't comment. what i do know is his ex wife was willing to go to court but as far as i know it hasn't happened given it probably wouldn't have anything to do with the abuse claims since she wasn't there/ a witness.
 1
 ewwwwwwwwwwwwwww that's gross.
 1
 for anyone who doesn't know much about this:\n1. she called the cops on may 21st and claimed abuse. police came and saw nothing. the same police have testified under oath there was no injuries and she didn't file a statement or answer any questions either. \n2. the entire building staff saw no injuries from may 21st-may26th\n3. johnny has multiple credible witnesses who've testified under oath explaining she was the violent one instead. \n4. her own friend testified there was no abuse lmao\n5. she claimed she was hit on 15th december 2015. the next day she appeared on the james corden show with 0 in juries. her own makeup stylist has testified there was nothing on her face. \nand of course the audio tapes exposing her ass.
 1
 @chris_mend yep, that was the moment i knew amber heard was a lying bitch. i'm sorry but not one, but all of your exes deny he was ever abusive including his ex wife of 14 years, but all of a sudden this d-list thot comes in claiming abuse who had a domestic violence record herself? hmmmmmm
 1
 @anondhalia yep, she's also stupid. she didn't plan her hoax properly. her abuse case was dismissed because of prejudice lol and she didn't get a single penny from him apart from \$7 million dollars that was given to charity. she wanted his penthouses, vehicles, condos, spousal support etc and she didn't get none of it. then she claims she didn't want anything, yeah, right. \nshe only claimed abuse because johnny told her he was going to divorce her. running out of options knowing he wasn't going to submit to her demands about money and materials, she cries abuse. backfired on her big time.
 1
 @ievux24 on top of the defamation lies, he's also exposing her as the abuser. he's got first hand witnesses who've testified including staff, doctors, bodyguards, managers etc\nfunny enough she tried to get doctor kipper on her side, she wanted to bring out johnny's medical records (again, nothing to do with abuse) so he instead decided to testify against her because he's seen her be violent towards him. lol
 1
 @ievux24 there's a \$50 million defamation law against her from depp. she said in the washington post that he was an abuser. but all the testimonies have denied this including the entire building staff where they lived, the police already testified who saw no bruises when the cops were called and he's already submitted 80 videos and audio clips. she's moved the date 3 times and the judge made her redraft all her evidence because it had nothing to do with the case. she's on this ice. she's finished this august when the trial happens.
 1
 @msvintage_s her ex partner in 2009. she has a domestic violence record..
 1
 @fyehji 1. there was an incident when johnny was hiding in the bathroom from her as she was trying to get in then he accidentally scraped her toes pushing the door back. as he leaned over to say sorry she kicked the door open which hit in head then punched him. johnny was mocking her because nothing happened to her toes.
 1
 @am10billion because she said he was an abuser in the washington post in 2018. then in 2019 he filed the defamation lawsuit.
 1
 @am10billion they wanted to keep it private, meaning have a normal divorce. but amber couldn't keep her mouth shut. she kept throwing shade and eventually said he was an abuser. then johnny finally took action last year.
 1
 if anyone wants to know more information apart from my post, let me know as there is more and i've been on this case for years.
 1
 information about the actual case:\n1. the \$50 million lawsuit - amber's tried to dismiss it 3x and failed. she's on her 4th attempt.\n2. amber wanted a protective order which is where info doesn't get released to the public. johnny wanted the opposite and the judge granted his wishes (why hide the truth eh?)\n3. the judge told her to redraft all her evidence because it has nothing to do with the case in january 2020. she's basically "fishing" for things and delaying because it's a losing case.\n4. johnny also has a lawsuit vs the sun when the sun called him a "wife beater". the trial is next march. if johnny wins which is 99%, then this will have a major impact on the actual amber heard case. that means the courts can't dismiss the case or whatever and it'll look really bad on amber. 1
 disgusting
 1
 desperation tactics. she has nothing.
 1
 Name: message, dtype: int64

In [112]: # df_comments.query("username= '_.yarleth_albornoz_'")['message'].value_counts()

In [112]: neg_text = neg_text[{'because she's a woman', 'because she is a woman', 'change.org', 'petition', 'removed', 'prison', 'felony'}]

In [112]: df_comments.query("username= 'chris_darden1999'")["message"].value_counts()

Out[112]: 2
just wow
1
use me as a "i'm not going to see it" button.
"

1
@jj_so_smooth kevin spacey hasn't made any movies since his incident. i'm not saying to not watch movies she's been in before, just not to watch any new ones she may be in. duh. 1
@janner_w_7 i'm not even going to watch it if it's free lol
1
@jj_so_smooth i think there's something wrong with you for encouraging this to keep happening. you make me sick.
1
@jj_so_smooth johnny depp isn't even in my top 20 favorite actors. i'm screenshotting that comment and putting it on ifunny 😊
1
@jj_so_smooth the only reason she isn't in prison like harvey weinstein is because she's a woman.
1
the american patriarchy is a myth, but this is dope 👍
1
there is a petition on change.org to have her removed. please go sign it.
1
@dennisjamesgb she's facing prison time. she committed a felony.
1
@dennisjamesgb she should be in prison, not movies.
1
@dennisjamesgb people who do what she did do not deserve anything good in life.
1
@dennisjamesgb what do drugs and alcohol have to do with defamation of character? and i'm honestly not that big of a johnny depp fan.
1
@dennisjamesgb because those aren't at all the same thing 😊 also those actors didn't get away with it. they recovered. this lady is just a bitch who is probably going to get away with it just because she's a woman. 1
guess what movie i'm not going to see?
1
Name: message, dtype: int64

```
In [112]: neg_text = neg_text|{'clown'}
```

```
In [112]: df_comments.query("username='yourfavebuzzle'")["message"].value_counts()
```

```
Out[112]: @_paaggee god that woman is disgusting 😞  
1  
@ievux24 i hope he does but she really tried to take $50 million away from this man to make it seem to the public like she was the victim...luckily she didn't get the money but she's so disgusting 😞  
1  
@chris_mendt but her ex's all say she is an abuser...bless that poor man and fuck the people that didn't believe him from the beginning... i'm hoping he didn't feel suicidal whilst being with that clown called amber or now 😞  
1  
@angelic.rhii honestly he didn't have to be patient (it's a rare trait to find in people too) i mean he's scared to death of her and that's his abuser who he tried to take 50 million dollars from him so she looks like a damn victim...he had every right to shout at her but like he said...he's scared of her 😞 😞 😞 😞 😞 😞 someone look out for this man ♥ 1  
@angelic.rhii yes 😞 . i meant * she tried to take $50 million from him. whoops. bye !!  
1  
Name: message, dtype: int64
```

```
In [112]: # Note: We use @ with query, just like .isin() in masking  
# df_comments.query('username == neg_users[0]').count()['message']
```

```
In [112]: # A list of the negatively commented users with the most n_likes  
neg_users_list = ["sakazuki92", "..._yarleth_albornoz._", "chris_darden1999", "yourfavemuzie"]
```

```
In [113]: # filter the dataframe on the users with the most number of Likes  
# and commenting in a negative way  
df_neg = df_comments.query('username == @neg_users_list')
```

```
In [113]: df = df_neg.groupby('username').agg({'message': 'count', 'n_replies': 'sum', 'n_likes': 'sum'}).reset_index()
    .rename(columns={'message': 'n_comments'})

df.sort_values('n_comments', ascending=False)
```

	username	n_comments	n_replies	n_likes
2	sakazuki92	29	32.0	7828.0
0	_yarleth_albornoz_	20	2.0	6357.0
1	chris_darden1999	17	10.0	5791.0
3	yourfavemuzie	5	0.0	5592.0

```
In [113]: # get the daily like counts for the users with the most number of Likes  
# and commenting in a negative way  
df = df_neg.groupby(['username', 'date']).agg({'message': 'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()  
.rename(columns={'message': 'n_comments'})  
  
df.sort_values('n_comments', ascending=False).head(15)
```

Out[113...]	username	date	n_comments	n_likes	n_replies
5	_yarleth_albornoz_	2021-06-16	12	6348.0	0.0
18	sakazuki92	2020-02-15	9	3479.0	31.0
19	sakazuki92	2020-02-16	7	81.0	0.0
8	chris_darden1999	2020-05-13	6	3.0	0.0
21	sakazuki92	2020-02-20	6	2538.0	0.0
24	yourfavemuzzie	2020-02-18	5	5592.0	0.0
14	chris_darden1999	2021-06-28	4	4326.0	0.0
2	_yarleth_albornoz_	2020-03-21	2	1.0	0.0
3	_yarleth_albornoz_	2020-07-30	2	2.0	2.0
4	_yarleth_albornoz_	2020-11-07	2	4.0	0.0
15	sakazuki92	2020-02-08	2	25.0	0.0
16	sakazuki92	2020-02-10	1	0.0	0.0
22	_yarleth_albornoz_	2020-01-22	1	2.0	1.0

25	sakazuki92	2020-04-28	1	5.0	1.0
22	sakazuki92	2020-02-21	1	1.0	0.0
20	sakazuki92	2020-02-18	1	1699.0	0.0

sakazuki92: negative comments

- Private Account
- 0 posts
- 0 followers
- 10 following
- sakazuki92 ^ created around January 2017
- 29 comments with 32 replies and 7828 likes

_yarlethalbornoz: posting #JusticeForJohnnyDepp

- First Posted on Jun 3,2019
- 8 posts
- 1,306 followers
- 1,598 following
- _yarlethalbornoz. ^ created around February 2017.
- 20 comments with 2 replies and 6357 likes

chris_darden1999: negative comments

- Private Account
- 2,109 posts
- 723 followers
- 3211 following
- chris_darden1999 ^ created around January 2014.
- 17 comments with 10 replies and 5791 likes

yourfavemuzie: negative comments

- Private Account
- 11 posts
- 130 followers
- 491 following
- yourfavemuzie ^ created around February 2015
- 5 comments with 0 replies and 5592 likes

Users with the Most Replies

- Comments Created OVER TIME
- Investigate Peaks
- Comments on Peak Days
- Comments on Peak Hours
- Comments on Peak Times
- -----
- Top Commented Users
- Users with the Most Likes
- **Users with the Most Replies**
- Most Repeated Comments
- Same Text Same Date
- Deeper Investigations

```
In [113]: df_nreplies = df_comments.groupby(['username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'message':'n_comments'}).sort_values('n_replies', ascending=False)
df_nreplies.head(15)
```

	username	n_comments	n_likes	n_replies
661035	words_without_u	1889	2735.0	712.0
269070	hero_doe	80	286.0	517.0
418008	mcu_crawler_dc	527	570.0	466.0
158545	cute.scarlett	787	375.0	432.0
504689	pineros.fabito	1155	401.0	425.0
355346	kurilka_dzen	4006	5477.0	421.0
24053	_marveltime	690	390.0	357.0
358160	ladygoth1533	379	610.0	349.0
598819	stirgussa	595	815.0	288.0
453182	mukul.c00l	830	1073.0	287.0
167506	darya_majidi__	22	121.0	268.0
176677	detailsimone	688	321.0	265.0
30135	_v_philosophy_	254	480.0	258.0
659051	willowtss	70	2178.0	252.0
524826	rdj_and_celebrities	525	199.0	246.0

```
In [113]: print("\nInvestigated --> These Users are Posting Normal Comments\n")
barh(df_nreplies[['username', 'n_replies']].head(10), 'Users with the Most Replies')
```

Investigated --> These Users are Posting Normal Comments

```
In [113]: df_comments.query("username= 'hero_doe'")["message"].value_counts()
```

```
Out[113]:
```

```
she's hot so who cares
1
@hero_doe @b4.cl careful there buddy
1
@sweet_like.h0ney lmaooo
1
@sweet_like.h0ney oh darn i was really really trying to be like by all these random indian dudes oh gosh what a tragedy :/
1
@hero_doe @thelegionofgeeks i love how your gay fan base is just makin you proud, i'm going to go after all of your other media accounts. see ya soon
1

..
@dragonfure_noway yall really defend someone who will never notice you and yall defend depp like if your inlove with em lmaooo gay ass simp
1
@loxal_repair.boy she is
1
@dragonfure_noway ok? lmaoo go away you gay simp
1
@ncu_veteran 100% agree with you
1
lmaoooo yeah your not scary big boy relax
1
Name: message, Length: 80, dtype: int64
```

Most Repeated Comments

- Comments Created OVER TIME
- Investigate Peaks
- Comments on Peak Days
- Comments on Peak Hours
- Comments on Peak Times
- -----
- Top Commented Users
- Users with the Most Likes
- Users with the Most Replies
- **Most Repeated Comments**
- Same Text Same Date
- Deeper Investigations

```
In [113]: df_comments.message.value_counts().head(25)
```

```
Out[113]:
```

Comment	Count
❤️	16024
😊	11011
❤️ ❤️	10774
😊😊	8664
❤️	5566
❤️ ❤️ ❤️	5500
🔥🔥	5298
beautiful	5187
😊😊😊😊	5084
😊	5042
❤️ ❤️ ❤️	4942
#justiceforjohnnydepp	4862
🔥	4761
😊😊😊😊😊	3625
🔥	2861
🔥🔥	2798
❤️ ❤️ ❤️ ❤️	2723
🔥🔥🔥	2111
nice	2106
2	2099
😊😊😊😊😊	2075
1	2043
👍	1949
❤️ ❤️ ❤️	1874
❤️ ❤️ ❤️	1826

```
Name: message, dtype: int64
```

NOTE: #justiceforjohnnydepp is the most repeated comment --> 4862 times

Same Text Same Date

- Comments Created OVER TIME
- Investigate Peaks
- Comments on Peak Days
- Comments on Peak Hours
- Comments on Peak Times
- -----
- Top Commented Users
- Users with the Most Likes
- Users with the Most Replies
- Most Repeated Comments
- **Same Text Same Date**
- Deeper Investigations

```
In [113]:
```

```
print('\nThe Amplifications in the counts and number of likes on #justiceforjohnnydepp is quite obvious!!')
df = df_comments.groupby(["message", "date"]).agg({'id':'count', 'n_replies':'sum', 'n_likes':'sum'}).reset_index()
df.rename(columns={'id': 'count'}, inplace=True)
df.sort_values("count", ascending=False).head(60)
```

The Amplifications in the counts and number of likes on #justiceforjohnnydepp is quite obvious!!

Out[113]=

		message	date	count	n_replies	n_likes
365387		@sinadeinert @sinadeinertcf #sinas22 ❤️	2020-08-24	418	0.0	12.0
12337		#justiceforjohnnydepp	2020-11-07	307	4.0	2570.0
12343		#justiceforjohnnydepp	2020-11-13	221	41.0	4456.0
365375		@sinadeinert @sinas22 ❤️	2020-08-24	201	0.0	0.0
907757		red	2018-04-09	178	4.0	57.0
12378		#justiceforjohnnydepp	2020-12-18	162	6.0	473.0
12338		#justiceforjohnnydepp	2020-11-08	159	9.0	1059.0
907756		red	2018-04-08	155	0.0	3.0
910375		right	2018-07-07	153	0.0	24.0
907758		red	2018-04-10	153	0.0	29.0
12339		#justiceforjohnnydepp	2020-11-09	151	46.0	1077.0
24865		1	2018-08-16	137	0.0	3.0
365395	@sinadeinert @sinadeinertcf #sinas22 ❤️	...	2020-08-24	137	0.0	0.0
12336		#justiceforjohnnydepp	2020-11-06	133	4.0	1927.0
12340		#justiceforjohnnydepp	2020-11-10	129	12.0	1020.0
675768	i am inevitable		2019-05-14	128	6.0	187.0
907777		red	2018-06-11	128	0.0	2.0
31474		2	2018-08-16	127	0.0	2.0
802910		melissa	2018-03-29	121	0.0	27.0
220674	@johnnydepp #wearewithyoujohnnydepp #amberhear...		2020-11-02	119	0.0	23.0
12341		#justiceforjohnnydepp	2020-11-11	114	4.0	429.0
365365		@sinadeinert	2020-08-24	113	0.0	5.0
38374		5	2018-07-13	110	0.0	13.0
1279345		❤️	2019-05-07	106	0.0	16.0
511533		blue	2018-06-11	104	0.0	12.0
1020511		thor	2018-04-12	103	0.0	6.0
1020521		thor	2018-05-10	101	0.0	4.0
5366	#ashleytisdale #suicidesquad #thewolfofwallstr...		2019-08-08	98	0.0	0.0
17110	#rockhound #stoneforsale #cabsforsale #jewelry...		2021-03-13	96	0.0	0.0
1445407		😂😂😂	2020-08-03	96	1.0	17.0
443639		amber	2019-12-27	91	0.0	66.0
1103830		yes	2019-01-09	89	0.0	15.0
1220627		⚡	2020-11-07	89	0.0	18.0
1279915		❤️	2020-11-30	85	0.0	11.0
12333		#justiceforjohnnydepp	2020-11-03	85	2.0	687.0
12389		#justiceforjohnnydepp	2020-12-29	84	0.0	372.0
12332		#justiceforjohnnydepp	2020-11-02	82	4.0	279.0
220567		@johnnydepp	2020-11-02	80	4.0	74.0
5369	#ashleytisdale #suicidesquad #thewolfofwallstr...		2019-10-09	80	0.0	0.0
757418		left	2018-07-07	78	0.0	0.0
459971		aquaman	2018-12-31	78	0.0	78.0
511513		blue	2018-04-10	77	0.0	3.0
12435		#justiceforjohnnydepp	2021-02-15	75	1.0	18.0
12345		#justiceforjohnnydepp	2020-11-15	74	10.0	460.0
365391	@sinadeinert @sinadeinertcf #sinas22 ❤️		2020-08-24	71	0.0	0.0
907776		red	2018-06-10	70	0.0	20.0
31460		2	2018-07-13	69	0.0	4.0
1280147		❤️	2021-07-20	69	1.0	14.0
1446807		😂😂😂	2020-08-03	68	0.0	9.0
12342		#justiceforjohnnydepp	2020-11-12	68	4.0	602.0
12344		#justiceforjohnnydepp	2020-11-14	67	25.0	700.0
511528		blue	2018-05-27	66	0.0	10.0
443669		amber	2020-05-17	65	4.0	159.0
5370	#ashleytisdale #suicidesquad #thewolfofwallstr...		2019-11-03	64	0.0	1.0
35377		3	2018-07-13	63	0.0	1.0
31537		2	2018-12-31	62	0.0	32.0
357562		@selenagomez	2020-07-21	61	7.0	51.0
511532		blue	2018-06-10	61	0.0	70.0
1280154		❤️	2021-07-27	60	1.0	19.0
443670		amber	2020-05-18	60	0.0	6.0

In [113]=

top_repeated = (

```

        df_comments.groupby(["message", "date"])
        .count()
        .sort_values("datetime", ascending=False)
        .index
    )

```

Deeper Investigations

- Comments Created OVER TIME
- Investigate Peaks
- Comments on Peak Days
- Comments on Peak Hours
- Comments on Peak Times
- -----
 - Top Commented Users
 - Users with the Most Likes
 - Users with the Most Replies
 - Most Repeated Comments
 - Same Text Same Date
 - **Deeper Investigations**

#justiceforjohnnydepp

- #justiceforjohnnydepp
- Contains "Amber"
- Contains "F*ck"
- Contains "Agree"
- -----
 - @sinadeinert @sinadeinertcf
 - Red
 - I am inevitable
 - Only Numbers

Hashtags Count

Hashtag	Count
#justiceforjohnnydepp	10244
#amberheardisanabuser	2032
#wearewithyoujohnnydepp	805
#amberheardisalair	776
#amberturd	449
#fireamberheard	349
#fuckthesun	335
#boycottamberheard	324
#ambertheabuser	165
#amberheardisanabuserandliar	144
#jailforamberheard	89
#removeamberheardsfromaquaman2	57

```
In [113]:#
# neg_users = neg_users[{'di22mendez'}]
# neg_text = neg_text[{'remove amber', 'remove-amber', 'removed'}]
```

```
In [114]:#
# Add all the negative hashtags to the negative text
neg_text = neg_text|{'ambertheabuser', 'fireamberheard', 'amberturd', 'jailforamberheard',
'amberheardisanabuserandliar', 'boycottamberheard', 'removeamberheardsfromaquaman2',
'amberheardisanabuser', 'fuckthesun', 'amberheardisalair', 'wearewithyoujohnnydepp'}
```

```
In [114]:len(df_comments[df_comments["message"].str.contains("#ambertheabuser")])
```

```
Out[114]:165
```

```
In [114]:len(df_comments[df_comments["message"].str.contains("#fireamberheard")])
```

```
Out[114]:349
```

```
In [114]:len(df_comments[df_comments["message"].str.contains("#amberturd")])
```

```
Out[114]:449
```

```
In [114]:len(df_comments[df_comments["message"].str.contains("#jailforamberheard")])
```

```
Out[114]:89
```

```
In [114]:len(df_comments[df_comments["message"].str.contains("#amberheardisanabuserandliar")])
```

```
Out[114]:144
```

```
In [114]:len(df_comments[df_comments["message"].str.contains("#boycottamberheard")])
```

```

Out[114]: 324
In [114]: len(df_comments[df_comments["message"].str.contains("#removeamberheardsfromaquaman2")])
Out[114]: 57
In [114]: len(df_comments[df_comments["message"].str.contains("#amberheardisanabuser")])
Out[114]: 2032
In [114]: len(df_comments[df_comments["message"].str.contains("#fuckthesun")])
Out[114]: 335
In [115]: len(df_comments[df_comments["message"].str.contains("#amberheardisaliar")])
Out[115]: 776
In [115]: len(df_comments[df_comments["message"].str.contains("#wearewithyoujohnnydepp")])
Out[115]: 805
In [115]: top_repeated[1][0]
Out[115]: '#justiceforjohnnydepp'
In [115]: justice = ['justiceforjohnnydepp', 'justice for johnny']

```

A Heat Map for the Count of Comments Containing "justiceforjohnnydepp"

```

In [115]: df_justice = df_comments[df_comments["message"].str.contains(''.join(justice))]
daily_counts = df_justice.groupby(['year', 'dayofmonth', 'month']).size().reset_index(name='count')
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']

print('\nNote: The Peaks Also on Nov 2020\n')
def draw_heatmap(*args, **kwargs):
    data = kwargs.pop('data')
    d = data.pivot(index=args[1], columns=args[0], values=args[2])
    d = d.reindex(index=months[::-1])
    sb.heatmap(d, **kwargs)

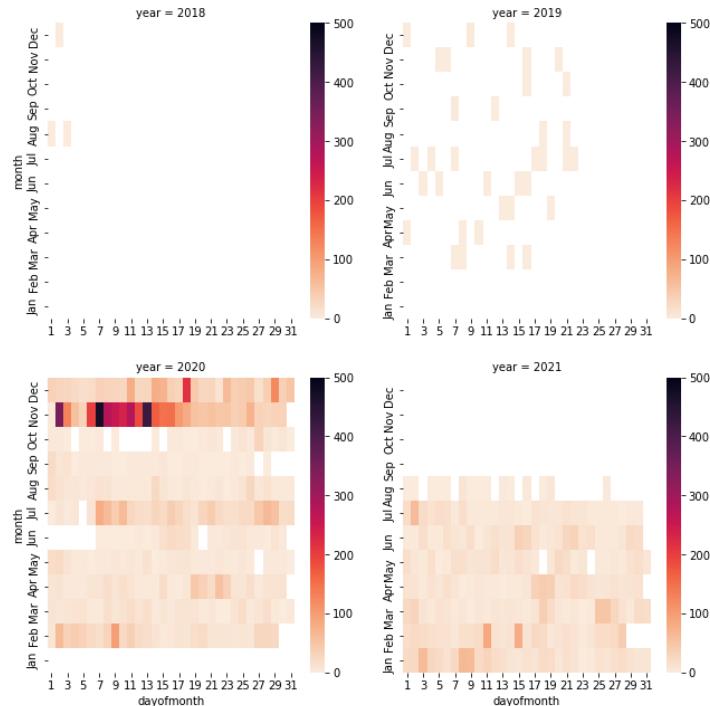
g = sb.FacetGrid(daily_counts, col='year', col_wrap=2, height=4.5)
g.map_dataframe(draw_heatmap, 'dayofmonth', 'month', 'count', cmap='rocket_r', vmin=0, vmax=500);

plt.suptitle('A Heat Map for the Count of Comments Containing "justiceforjohnnydepp"', y=1.04, fontsize=18)
g.fig.subplots_adjust(wspace=0.15, hspace=0.2)
for axis in g.axes.flat:
    axis.tick_params(labelbottom=True, labelleft=True)

```

Note: The Peaks Also on Nov 2020

A Heat Map for the Count of Comments Containing "justiceforjohnnydepp"



```
In [115]: len(df_justice)
```

11320

Most Repeated Comments Containing "justiceforjohnnydepp"

```
In [115]: df = df_justice.groupby(['message']).agg({'id':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'id':'repeated_times'})  
df.sort_values('repeated_times', ascending=False).head(25)
```

	message	repeated_times	n_likes	n_replies
297	#justiceforjohnnydepp	4862	41032.0	490.0
2822	justice for johnny depp	168	1924.0	83.0
2804	justice for johnny	141	1267.0	29.0
1464	@johnnydepp #wearewithyoujohnnydepp #amberhear...	124	23.0	0.0
73	#ambertheabuser #justiceforjohnnydepp	93	201.0	2.0
401	#justiceforjohnnydepp #amberheardisanabuser	84	337.0	9.0
842	#justiceforjohnnydepp ❤️	75	337.0	1.0
49	#amberheardisanabuser #justiceforjohnnydepp	75	232.0	15.0
2245	fuck amber heard #justiceforjohnnydepp	62	121.0	5.0
2254	fuck amber heard! #justiceforjohnnydepp	40	74.0	16.0
636	#justiceforjohnnydepp #prosecuteamberheard	39	39.0	0.0
1046	#justiceforjohnnydepp ❤️	34	108.0	17.0
4153	.#justiceforjohnnydepp #amberheardisanabuser ...	32	3.0	0.0
756	#justiceforjohnnydepp https://www.change.org/p...	29	20.0	1.0
2479	https://www.change.org/p/the-people-warner-bro...	28	24.0	3.0
322	#justiceforjohnnydepp #amberheardisanabuser ...	26	15.0	1.0
849	#justiceforjohnnydepp ❤️ ❤️	24	27.0	1.0
482	#justiceforjohnnydepp #cancelamberheard	21	34.0	1.0
978	#justiceforjohnnydepp 🙏	20	327.0	2.0
1238	@amberheard is not a victim #justiceforjohnnydepp	19	9.0	5.0
2876	justice for johnny depp!	19	218.0	14.0
2976	justice for johnny!	18	179.0	0.0
177	#fuckamberheard #justiceforjohnnydepp	16	7.0	0.0
753	#justiceforjohnnydepp https://meaww.com/johnny...	15	12.0	1.0
607	#justiceforjohnnydepp #justiceforjohnnydepp	15	12.0	0.0

```
In [115]: df_justice.message.value_counts().head(10)
```

#justiceforjohnnydepp	4862
justice for johnny depp	168
justice for johnny	141
@johnnydepp #wearewithyoujohnnydepp #amberheardisanabuser #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun	124
#ambertheabuser #justiceforjohnnydepp	93
#justiceforjohnnydepp #amberheardisanabuser	84
#amberheardisanabuser #justiceforjohnnydepp	75
#justiceforjohnnydepp ❤️	75
fuck amber heard #justiceforjohnnydepp	62
fuck amber heard! #justiceforjohnnydepp	40

Name: message, dtype: int64

Top Users Commented with "justiceforjohnnydepp"

```
In [115]: # The total number of different users posted justiceforjohnnydepp  
df_justice.username.nunique()
```

```
Out[115]: 5847
```

```
In [115]: df_njustice = df_justice.groupby(['username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)  
df_njustice.head(25)
```

	username	n_comments	n_likes	n_replies
946	becauseitsjohnnydepp	180	284.0	8.0
3932	moonbeam429	128	153.0	5.0
4369	pauu.eg	115	257.0	2.0
3147	kingskippy1987	99	148.0	17.0
714	annalena_1963	82	129.0	4.0
3530	machelyyyyy	75	122.0	29.0
4314	ownage130	72	1.0	0.0
4491	queenmusicvidoe	70	14.0	0.0
4082	naye6504	56	484.0	10.0
1158	c_shortt	55	173.0	6.0
4745	sahartaleb__	48	73.0	7.0
3532	mackenzilaplante	47	87.0	4.0
4324	pabloziegl	43	743.0	55.0

5825	zhra.006	42	73.0	2.0
1689	divulgaaa.bahia	41	106.0	4.0
4490	queenmusicvideo	41	0.0	0.0
3713	mathxy._01	41	32.0	1.0
5648	wewantjusticeforjohnnydepp	40	30.0	0.0
529	alexandr_while	40	75.0	2.0
3531	mackenziewilson27	37	69.0	0.0
4060	natchayaleejin	34	167.0	3.0
4112	netos.k	34	7.0	2.0
898	babikate6	33	11.0	0.0
2848	johnnydepp_gothic	33	138.0	4.0
1235	cconnny	31	1386.0	1.0

```
In [116]: # neg_users = neg_users|set(df_njustice.username.unique())
```

```
In [116]: newly_created = {'moonbeam429', 'mathxy._01', 'netos.k', 'justicie.for.johnny.depp', 'machelyyyyy', 'queenmusicvideo', 'divulgaaa.bahia', 'wewantjusticeforjohnnydepp'}
```

```
colors = []
for user in df_njustice['username'].head(20):
    if user in newly_created:
        colors.append('red')
    else:
        colors.append('#5296dd')
```

```
In [116]: print('\nnewly created (after 2018) accounts are colored in "red"')
barh(
    df_njustice[['username', 'n_comments']].head(20), 'Top users commentd with "justiceforjohnnydepp"', c=colors
)
```

newly created (after 2018) accounts are colored in "red"

"justiceforjohnnydepp" Users Contributions on Each Date

```
In [116]: df = df_justice.groupby(['date', 'username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
df.rename(columns={'message':'n_comments'}, inplace=True).sort_values('n_comments', ascending=False)

df.head(15)
```

	date	username	n_comments	n_likes	n_replies
6637	2021-02-15	ownage130	72	1.0	0.0
2356	2020-11-02	queenmusicvideoe	70	14.0	0.0
5268	2020-12-11	kingskippy1987	55	14.0	0.0
2355	2020-11-02	queenmusicvideo	41	0.0	0.0
6072	2021-01-03	mathxy._01	40	29.0	1.0
3569	2020-11-11	c_shorrtt	35	118.0	4.0
4045	2020-11-13	netos.k	34	7.0	2.0
2291	2020-11-02	babikate6	33	11.0	0.0
6609	2021-02-11	zhra.006	32	3.0	0.0
6933	2021-03-18	justicie.for.johnny.depp	31	96.0	2.0
6605	2021-02-11	sahartaleb__	30	18.0	1.0
894	2020-04-22	pauu.eg	28	19.0	0.0
3883	2020-11-13	becauseitsjohnnydepp	27	19.0	3.0
855	2020-04-19	pauu.eg	27	72.0	0.0
2395	2020-11-03	becauseitsjohnnydepp	26	18.0	1.0

```
In [116]: neg_users = neg_users|set(df_njustice.head(10).username)
```

"justiceforjohnnydepp" Peak Dates

```
In [116]: justice_dates = df_justice.groupby(['date']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
justice_dates.rename(columns={'message':'n_comments'}, inplace=True).sort_values('n_comments', ascending=False)

justice_dates.head(15)
```

	date	n_comments	n_likes	n_replies
298	2020-11-07	471	3522.0	31.0
304	2020-11-13	422	6272.0	75.0
293	2020-11-02	347	923.0	20.0
302	2020-11-11	278	1101.0	22.0
299	2020-11-08	276	2401.0	29.0
300	2020-11-09	254	1444.0	61.0
301	2020-11-10	236	1442.0	26.0
339	2020-12-18	215	767.0	8.0
307	2020-11-06	208	9777.0	44.0

	date	uu	111.u	10.u
303	2020-11-12	189	878.0	19.0
305	2020-11-14	169	978.0	33.0
307	2020-11-16	151	7299.0	67.0
306	2020-11-15	149	1281.0	23.0
294	2020-11-03	130	1341.0	19.0
350	2020-12-29	123	564.0	9.0

In [116]:

```
bar_peaks(justice_dates[['date', 'n_comments']].head(10), '"justiceforjohnnydepp" Comments Creation Peaks')
```

pauu.eg

- private account
- 39 posts
- 301 followers
- 153 following

kingskippy1987

- private account
- 136 posts
- 88 followers
- 98 following

annalena_1963

- private account
- 1,297 posts
- 566 followers
- 917 following

queenmusicvideoe

- private account
- 0 posts
- 4 followers
- 403 following

c_shortt

- private account
- 681 posts
- 3,007 followers
- 2,267 following

mackenzilaplante

- private account
- 25 posts
- 72 followers
- 62 following

sahartaleb___

- private account
- 0 posts
- 42 followers
- 37 following

pabloziegl

- first posted on JANUARY 15, 2014
- 88 posts
- 159 followers
- 693 following

zhra.006

- didn't found

queenmusicvideo newly created

- first posted on SEPTEMBER 22, 2020
- 78 posts
- 1,860 followers
- 246 following

divulgaaa.bahia newly created

- first posted on JULY 17, 2020
- 21 posts
- 113 followers
- 5,982 following

alexandr_while

- private account
- 29 posts
- 157 followers
- 123 following

wewantjusticeforjohnnydepp newly created

- first posted on NOVEMBER 2, 2020
- 160 posts
- 1,052 followers
- 170 following

mackenziewilson27

- 0 posts
- 145 followers
- 170 following

becauseitsjohnnydepp

- first posted on Aug 23, 2016
<https://www.instagram.com/p/BJbXDWCjWrz/>
- has a total of 10,810 posts
- 35.7k followers
- 1,968 following
- becauseitsjohnnydepp ^ created around September 2016

<https://www.instagram.com/p/B8xNqbkn-O3/>

ownage130

- is a private account
- ownage130 ^ created around March-April 2017.

moonbeam429 newly created

- first posted on May 20, 2018
- has a total of 808 posts (all are pictures of johnny depp)
- 117 followers
- 160 following
- moonbeam429 ^ created around June 2018.

mathxy_01

- is a private account
- mathxy_01 ^ created around February 2015.

netos.k newly created

- first posted on Jul 6, 2020
- has a total of 2 posts
- 596 followers
- 616 following
- netos.k ^ created around January 2015.

justicie.forjohnny.depp newly created

- first posted on Feb 1, 2021
- has a total of 80 posts
- 649 followers
- 250 following
- justicie.forjohnny.depp ^ created after 15 December 2020

machelyyyy newly created

- is a private account
- machelyyyy ^ created around April 2018

More Investigations on Top Users Commented with "justiceforjohnnydepp"

```
In [116]: df_justice.username.value_counts().head(10)
```

```
Out[116]:
```

username	count
becauseitsjohnnydepp	180
moonbeam429	128
pauu.eg	115
kingskippy1987	99
annalena_1963	82
machelyyyy	75
ownage130	72
queenmusicvideoe	70
naye6504	56
c_shortt	55

Name: username, dtype: int64

ownage130

```
In [116]: df_justice.query("username=='ownage130'").date.value_counts()
```

```
Out[116]:
```

date	count
2021-02-15	72

Name: date, dtype: int64

```
In [116]: df_justice.query("username=='ownage130'").datetime.dt.hour.value_counts()
```

```
Out[116]:
```

2	41
1	30
4	1

Name: datetime, dtype: int64

```
In [117]: df_justice.query("username=='ownage130'").n_likes.value_counts()
```

```
Out[117]:
```

0.0	71
1.0	1

Name: n_likes, dtype: int64

```
In [117]: df_justice.query("username=='ownage130'").n_replies.value_counts()
```

```
Out[117]:
```

0.0	72
-----	----

Name: n_replies, dtype: int64

moonbeam429`

```
In [117]: df_justice.query("username=='moonbeam429'").date.value_counts()
```

```
Out[117]:
```

2020-04-08	6
2020-03-18	5
2020-06-16	4
2020-07-08	4
2020-07-09	4
..	
2020-03-25	1
2020-04-11	1
2020-06-24	1
2020-06-29	1
2020-03-05	1

Name: date, Length: 65, dtype: int64

```
In [117]: df_justice.query("username=='moonbeam429'").datetime.dt.hour.value_counts()
```

```
Out[117]:
```

2	19
0	18
19	12
23	11
15	10
21	9
3	8
18	8
16	6
14	5
13	4
5	4
20	3
4	3
12	2
17	2
22	2
8	1
1	1

Name: datetime, dtype: int64

```
In [117]: df_justice.query("username=='moonbeam429'").n_likes.value_counts()
```

```
Out[117]:
```

0.0	63
1.0	30
2.0	17
3.0	8
4.0	4
6.0	2
7.0	1
5.0	1
11.0	1
14.0	1

Name: n_likes, dtype: int64

```
In [117]: df_justice.query("username=='moonbeam429'").n_replies.value_counts()
```

```
Out[117]:
```

0.0	124
1.0	3
2.0	1

Name: n_replies, dtype: int64

moonbeam429

- made 56 comments with sme text (supportjohnnydepp) in different times.
- moonbeam429 ^ created around June 2018

becauseitsjohnnydepp

```
In [117]: df_justice.query("username=='becauseitsjohnnydepp'").date.value_counts()
```

```
Out[117]:
```

2020-11-13	27
2020-11-03	26
2020-11-07	12
2020-11-08	12
2020-11-17	9
2020-11-11	9
2020-11-12	8
2020-12-10	6
2020-11-16	6
2020-11-27	6
2020-11-09	5
2020-12-18	5
2021-01-09	3
2020-12-03	3
2020-11-14	3
2020-11-04	3
2020-11-28	2
2020-12-28	2

```
2020-11-20    2
2020-03-24    2
2021-04-17    2
2020-11-05    2
2020-11-18    2
2020-11-29    2
2020-12-12    1
2020-12-24    1
2020-02-01    1
2020-07-15    1
2020-11-21    1
2020-10-16    1
2020-06-26    1
2020-12-19    1
2020-07-09    1
2020-10-28    1
2020-08-02    1
2020-09-01    1
2020-03-25    1
2020-11-10    1
2020-12-26    1
2020-11-23    1
2020-12-11    1
2020-12-21    1
2020-10-17    1
2020-03-28    1
2020-12-04    1
Name: date, dtype: int64
```

```
In [117]: df_justice.query("username=='becauseitsjohnnydepp'").datetime.dt.hour.value_counts()
```

```
Out[117]:
```

23	31
20	23
15	19
0	18
13	14
2	12
1	12
17	10
19	9
22	8
16	6
21	6
10	3
11	3
5	2
18	2
3	1
12	1

```
Name: datetime, dtype: int64
```

```
In [117]: df_justice.query("username=='becauseitsjohnnydepp'").n_likes.value_counts()
```

```
Out[117]:
```

0.0	107
1.0	34
2.0	13
4.0	7
3.0	7
5.0	3
6.0	2
12.0	2
11.0	1
35.0	1
10.0	1
50.0	1
18.0	1

```
Name: n_likes, dtype: int64
```

```
In [117]: df_justice.query("username=='becauseitsjohnnydepp'").n_replies.value_counts()
```

```
Out[117]:
```

0.0	172
1.0	8

```
Name: n_replies, dtype: int64
```

becauseitsjohnnydepp

- made 55 comments with same text (supportjohnnydepp) in different times:
 - 2020-11-03 26
 - 2020-11-07 12
 - 2020-11-04 3
- becauseitsjohnnydepp ^ created around September 2016

Contains Amber

- #justiceforjohnnydepp
- Contains "Amber"
- Contains "F*ck"
- Contains "Agree"
- -----
- @sinadeinert @sinadeinertcf
- Red
- I am inevitable
- Only Numbers

- Negative Comments
- Amber Turd
- F*ck Amber Heard
- Amber Heard is a liar
- Amber Heard is a abuser
- Fire Amber Heard

- Support Amber Heard

Steps:

- Get dataframe that with comments contain amber **amber**.
 - Get top 50 comments **amber_top**.
 - Extract text related to amber from the comments.
 - Get unique text related to amber to be analysed.

A Heat Map for the Count of Comments Containing "Amber"

```
In [118]: amber = df_comments[df_comments["message"].str.contains("amber")]
daily_counts = amber.groupby(['year', 'dayofmonth', 'month']).size().reset_index(name='count')
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']

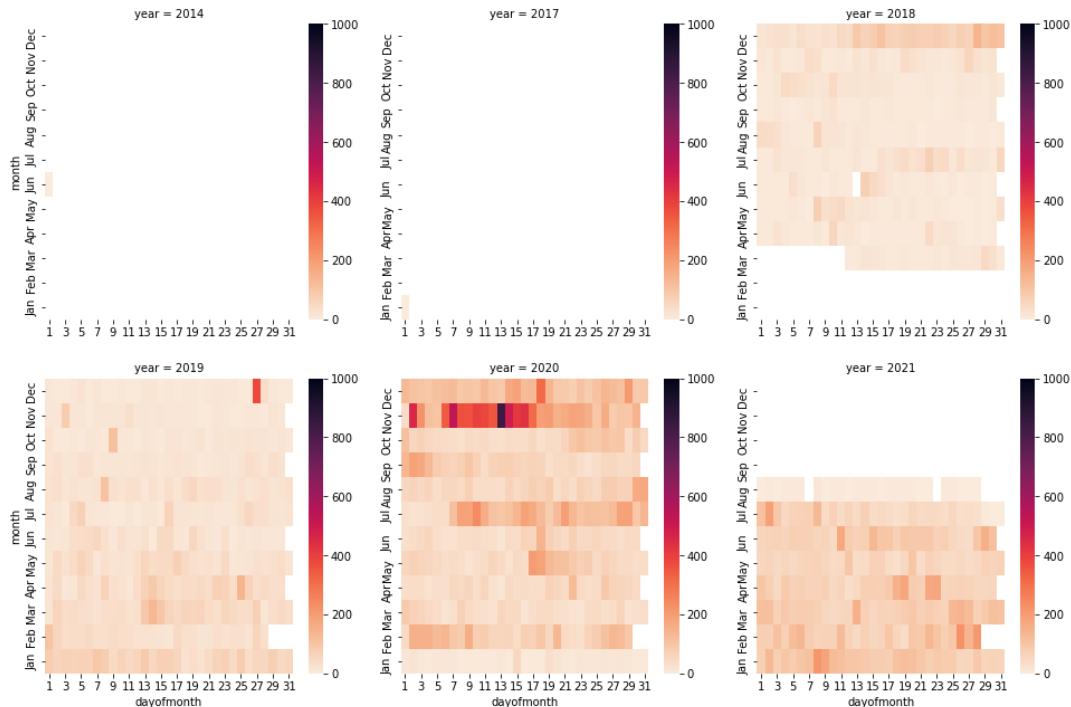
print('\nNote: The peaks on Nov 2020, and on Dec 27 2019\n ')
def draw_heatmap(*args, **kwargs):
    data = kwargs.pop('data')
    d = data.pivot(index=args[1], columns=args[0], values=args[2])
    d = d.reindex(index=months[::-1])
    sb.heatmap(d, **kwargs)

g = sb.FacetGrid(daily_counts, col='year', col_wrap=3, height=4.5)
g.map_dataframe(draw_heatmap, 'dayofmonth', 'month', 'count', cmap='rocket_r', vmin=0, vmax=1000)

plt.suptitle('A Heat Map for the Count of Comments Containing "Amber"', y=1.04, fontsize=18)
g.fig.subplots_adjust(wspace=0.15, hspace=0.2)
for axis in g.axes.flat:
    axis.tick_params(labelbottom=True, labelleft=True)
```

Note: The peaks on Nov 2020, and on Dec 27 2019

A Heat Map for the Count of Comments Containing "Amber"



In [118]:

64913

Most Repeated Comments Containing "Amber"

```
In [118]: df = amber.groupby(['message']).agg({'id': 'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'id': 'repeated_times'})  
df.sort_values('repeated_times', ascending=False).head(25)
```

Out[118...]		message	repeated_times	n_likes	n_replies
6073	#suicidesquad #thewolfofwallstreet #scarlettjohansson #ashleytisdale #rockhound #stoneforsale #cabsforsale #jewelry...		1371	263.0	53.0
18907		amber	1206	808.0	32.0
2096	#ashleytisdale #suicidesquad #thewolfofwallstreet #rockhound #stoneforsale #cabsforsale #jewelry...		560	2.0	0.0
8319		@amberheard	555	327.0	23.0
868		#amberheardisanabuser	432	1741.0	34.0
2090	#ashleytisdale #suicidesquad #thewolfofwallstreet #rockhound #stoneforsale #cabsforsale #jewelry...		415	1.0	0.0
5705	#rockhound #stoneforsale #cabsforsale #jewelry...		404	0.0	0.0
3458	#galgadot #gal #kyliejenner #kyliecosmetics #g...		347	232.0	16.0
29470		fuck amber heard	291	762.0	68.0
10254	All the time I'm thinking about you		279	4.0	0.0

41171	support amber heard	all the round the wor...	272	16.0	19.0
2083	#ashleytisdale	#suicidesquad #thewolfsoffwallstr...	257	0.0	0.0
19923		amber heard	233	265.0	44.0
3378		#fuckamberheard	165	272.0	7.0
18218	[tags]\n#elizabeth Olsen	#elizabethholensedit #...	158	74.0	7.0
41164	suport amber heard	all around the world my ...	153	15.0	2.0
18231	[tags]\n#elizabeth Olsen	#elizabethholensedit #...	142	56.0	15.0
1128		#amberturd	125	534.0	5.0
13657	@johnnydepp	#wearewithyoujohnnydepp #amberhear...	124	23.0	0.0
5711	#rockhound	#stoneforsale #cabsforsale #jewelry...	123	0.0	0.0
18248	[#maleficent	#super8 #gingerandrosa #weboughta...	117	13.0	0.0
23680		amber turd	116	402.0	21.0
41335	tags: #karengillan	#jumanji #rubyyroundhouse #n...	116	28.0	2.0
3468	#galgadot	#galgadotfan #galgadotfans #wonderwo...	113	33.0	2.0
3941	#jenniferlawrence	#scarlettjohansson #vanessah...	111	20.0	3.0

```
In [118]: amber.message.value_counts().head(10)

Out[118]: #suicidesquad #thewolfowallstreet #scarlettjohansson #blackwidow #avengers #captainamericacivilwar #avengersinfinitywar #wanda #scarlettwitch #annehathaway #emilyvancamp #katewinslet #angelinajolie #emmawatson #emmastone #selenagomez #imogenpoots #amberheard #natalieportman #leightonmeester #charlizetheron #heathergraham #jessicaalba #keiranightley #rachelmcadams #scarlettjohansson #blackwidow #captainamericacivilwar #avengersinfinitywar #wanda #scarlettwitch #annehathaway #emilyvancamp #katewinslet #angelinajolie #emmawatson #emmastone #selenagomez #rachaeltaylor #amberheard #natalieportman #charlizetheron #heathergraham #jessicaalba #sashabarrese #keiranightley #rachelmcadams #ninadobrev 1371
1266
#ashleytisdale #suicidesquad #thewolfowallstreet #scarlettjohansson #blackwidow #avengers #captainamericacivilwar #avengersinfinitywar #wanda #scarlettwitch #annehathaway #emilyvancamp #katewinslet #angelinajolie #emmawatson #emmastone #imogenpoots #amberheard #natalieportman #leightonmeester #charlizetheron #heathergraham #jessicaalba #keiranightley #rachelmcadams #scarlettjohansson #blackwidow #captainamericacivilwar #avengersinfinitywar #wanda #scarlettwitch #annehathaway #emilyvancamp #katewinslet #angelinajolie #emmawatson #emmastone #selenagomez #rachaeltaylor #amberheard #natalieportman #heathergraham #jessicaalba #keiranightley #rachelmcadams #ninadobrev #vampirediarries #iansommerhalder 560
@amberheard
555
#amberheardisanabuser
432
#ashleytisdale #suicidesquad #thewolfowallstreet \t#scarlettjohansson #blackwidow #avengers #captainamericacivilwar #avengersinfinitywar #wanda #scarlettwitch #annehathaway \t#emilyvancamp #katewinslet #angelinajolie #emmawatson #emmastone #imogenpoots #amberheard #natalieportman #leightonmeester #charlizetheron #heathergraham #jessicaalba #keiranightley #rachelmcadams #scarlettjohansson #blackwidow #captainamericacivilwar #avengersinfinitywar #wanda #scarlettwitch #annehathaway #emilyvancamp #katewinslet #angelinajolie #emmawatson #emmastone #selenagomez #rachaeltaylor #amberheard #natalieportman #heathergraham #jessicaalba #keiranightley #rachelmcadams #ninadobrev #vampirediarries #iansommerhalder 415
#rockhound #stoneforsale #cabstforsale #jewelrymaker #jewelry #wirework #wireworkjewelry #canada #lapidary #lapidaryart #jasper #minerals #stonecollection n #cabochon #chabochons #silversmithing #silversmith #metalsmith #wireartsladysmith #jewelrydesign #blueopaljewelry #gemstonejewelry #handmade #picture agate #picturejasperjewelry #rockhound #stoneforsale #cabsforsale #jewelrymaker #jewelry #wirework #wireworkjewelry #canada #lapidary #lapidaryart #jasper #minerals #stonecollection #cabochon #chabochons #silversmithing #silversmith #metalsmith #wireartsladysmith #jewelrydesign #wireartists #agate #gemstonejewelry #amberheard #etsysellersofinstagram 404
#galgadot #gal #kyliejenner #kyliecosmetics #gadot #amberheard #laurencohan #amandacerny #scarlettjohansson #meganfox #margotrobbie #katebeckinsale #natalieportman #elizabethholmes #kateupton #alexandradaddario #beautifulwomen #beautyqueen #beautyagent #hollywood #happyweekend #weekendfun #weekendgetaway #weekendvibes #camerondiaz #kyliejkendell
347
fuck amber heard
291
[sabrinapetraglia #agathomoreira #deborasecco #vitoriastrada #julianapaiva #salvesequempuder #novela #globo #redegloblo #micaelasantamariana #marcospito mbo #bruneli #shirlipe #hajacoracao #shirleifelipe #larissamanuela #maisa #paolaoliveira #marinaruybarbosa #brunamarquezine #gigihadid #kendaljenner #kyliejenner #dakotajohnson #kristenstewart #amberheard #caradelavigne #nicolekidman #bbb20 #bbb]
279
Name: message, dtype: int64
```

Top Users with Comments Containing "Amber"

```
In [118]: # The total number of different users with Comments Containing "Amber"
amber.username.unique()

Out[118]: 29475

In [118]: amber_count = amber.groupby(['username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
        .rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

        amber_count.head(25)

Out[118]:
```

	username	n_comments	n_likes	n_replies
600	_actor_movie	1570	295.0	53.0
3657	ashleytisdale6_	1390	3.0	0.0
8700	edwincuvillier	554	679.0	54.0
26006	sweet_and_caring_	491	369.0	29.0
24888	siachidesign	436	40.0	31.0
21766	petersimp15	359	385.0	78.0
26259	tayabnacer	351	85.0	3.0
4307	beauty.gifted	348	45.0	4.0
5873	cemerondiaz	347	232.0	16.0
22679	razaopetraglia	337	5.0	0.0
28039	veysel.dummus1967	298	51.0	0.0
10036	filmobster	266	8.0	0.0
27865	valentin_planneur	256	71.0	12.0
17469	mahdihemati9	254	89.0	21.0
22895	camomilearts52	252	122.0	22.0

	username	count	n_likes	n_replies
23278	rodneycollen	246	114.0	10.0
10520	gadotkingdoms	214	42.0	4.0
6828	cristianfernandez5699	192	20.0	1.0
7388	daskin_serdar	183	77.0	12.0
12409	iconiclively	172	27.0	1.0
13792	jenniferrlawrence_	166	29.0	4.0
17756	margotrobbitrfans	163	74.0	7.0
24799	shirley_jewelry_stone	163	0.0	0.0
21054	olsenblogs	162	59.0	19.0
7520	dc_uhd	150	39.0	1.0

```
In [118]: barh(
    amber_count[['username', 'n_comments']].head(20), 'Top users with Comments Containing "Amber"'
)
```

"Amber" Users Contributions on Each Date

```
In [118]: df = amber.groupby(['date', 'username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index(
).rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

df.head(15)
```

	date	username	n_comments	n_likes	n_replies
11149	2019-08-08	ashleytisdale6_	98	0.0	0.0
42022	2021-03-13	reach_dream.id	96	0.0	0.0
12054	2019-10-09	ashleytisdale6_	80	0.0	0.0
28375	2020-11-02	queenmusicvideoe	70	14.0	0.0
12414	2019-11-03	ashleytisdale6_	64	1.0	0.0
35282	2020-12-11	kingskippy1987	55	14.0	0.0
23710	2020-07-31	amberheardabottleofwineopen	51	3.0	0.0
44603	2021-04-23	charmviktoria	50	50.0	1.0
26785	2020-10-01	ashleytisdale6_	49	0.0	0.0
13612	2020-01-15	ashleytisdale6_	47	0.0	0.0
6650	2019-02-01	ashleytisdale6_	47	0.0	0.0
6386	2019-01-25	ashleytisdale6_	42	0.0	0.0
28374	2020-11-02	queenmusicvideoe	41	0.0	0.0
8609	2019-04-14	ashleytisdale6_	38	0.0	0.0
10612	2019-07-05	ashleytisdale6_	37	0.0	0.0

"Amber" Date Peaks

```
In [118]: df = amber.groupby(['date']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index(
).rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

df.head(15)
```

	date	n_comments	n_likes	n_replies
978	2020-11-13	843	15137.0	591.0
972	2020-11-07	531	7875.0	289.0
979	2020-11-14	490	5716.0	95.0
967	2020-11-02	455	1493.0	81.0
981	2020-11-16	431	4383.0	162.0
980	2020-11-15	415	8135.0	157.0
975	2020-11-10	399	1808.0	59.0
976	2020-11-11	384	4257.0	76.0
656	2019-12-27	382	534.0	9.0
973	2020-11-08	364	1901.0	117.0
974	2020-11-09	362	2375.0	116.0
977	2020-11-12	353	1971.0	169.0
971	2020-11-06	342	7268.0	246.0
982	2020-11-17	316	4981.0	114.0
1013	2020-12-18	312	2125.0	68.0

```
In [118]: amber_top = get_top(amber, 'message', 50, 'comment', 'n_repeated')
```

```
In [119]: def get_amber_text(row):
    """
    A function to get texts related to amber.
    Args:
        - row --> row of column in df.
    Returns:
```

```

    .... - neat --> list of texts related to amber
    ...
    row = row.lower()
    result = list(set(re.findall(r"#?[a-z\s]*amber[a-z\s]*", row)))
    neat = []
    for i in result:
        neat.append(i.strip())
    return neat

```

In [119]: `amber_top.comment.apply(lambda x: get_amber_text(x))`

```

Out[119]:
0      [#amberheard]
1      [amber]
2      [#amberheard]
3      [amberheard]
4      [#amberheardisabuser]
5      [#amberheard]
6      [#amberheard]
7      [#amberheard]
8      [fuck amber heard]
9      [#amberheard]
10     [support amber heard]
11     [#amberheard]
12     [amber heard]
13     [#fuckamberheard]
14     [#amberheard]
15     [suport amber heard]
16     [#amberheard]
17     [#amberturd]
18     [#amberheardisalier, #amberheard]
19     [#amberheard]
20     [#amberheard]
21     [amber turd]
22     [#amberheard]
23     [#amberheard]
24     [#amberheard]
25     [fuck amber]
26     [#amberheard]
27     [#amberheard]
28     [#fireamberheard]
29     [#ambertheabuser]
30     [#amberheard]
31     [#amberheard]
32     [#amberheard]
33     [#amberheardisabuser]
34     [#boycottamberheard]
35     [#amberheard]
36     [#amberheard]
37     [#amberheard]
38     [#amberheardisalier]
39     [#amberheardisabuser]
40     [amber]
41     [#amberheard]
42     [#amberheard]
43     [amber]
44     [#amberheard]
45     [fuck amber heard]
46     [amber]
47     [amber]
48     [amber]
49     [#amberheard]

Name: comment, dtype: object

```

In [119]: `top_texts = [list(x)[0] for x in set(tuple(x) for x in amber_top.comment.apply(lambda x: get_amber_text(x)).values)]
top_texts`

```

Out[119]:
['fuck amber',
 'amber',
 '#amberheardisalier',
 'amber heard',
 '#amberheardisalier',
 '#fireamberheard',
 '#ambertheabuser',
 'fuck amber heard',
 '#amberheard',
 '#amberheardisabuser',
 'support amber heard',
 'suport amber heard',
 '#amberturd',
 '#boycottamberheard',
 'amber turd',
 '#fuckamberheard',
 'amberheard']

```

Negative Comments

(Turd - F*ck. Liar, Fire)

- **Negative Comments**
- Amber Turd
- Fuck Amber Heard
- Amber Heard is a liar
- Amber Heard is a abuser
- Fire Amber Heard
- Support Amber Heard

In [119]:

```

negative = ['turd', 'liar', 'abuse', 'abusing', 'fireamberheardfromaquaman', 'fireamberheard',
            'fire her', 'fired', 'fire amber', 'remove amber', 'removeamber', 'removed',
            'fuck amber heard', 'fuck amber', '#fuckamberheard', 'fuck @amberheard', 'fuck you @amberheard',
            '@amberheard fuck you', 'fuckamber', 'fuck @amberheard', 'fuck amber', 'fuck you amber', 'fuck her',
            'fuck that bitch', 'fuck this bitch', 'fucking bitch', 'fucking abuser', 'fuck herself', 'fuck off',
            'fuckamberheard', 'fucking bullshit']

```

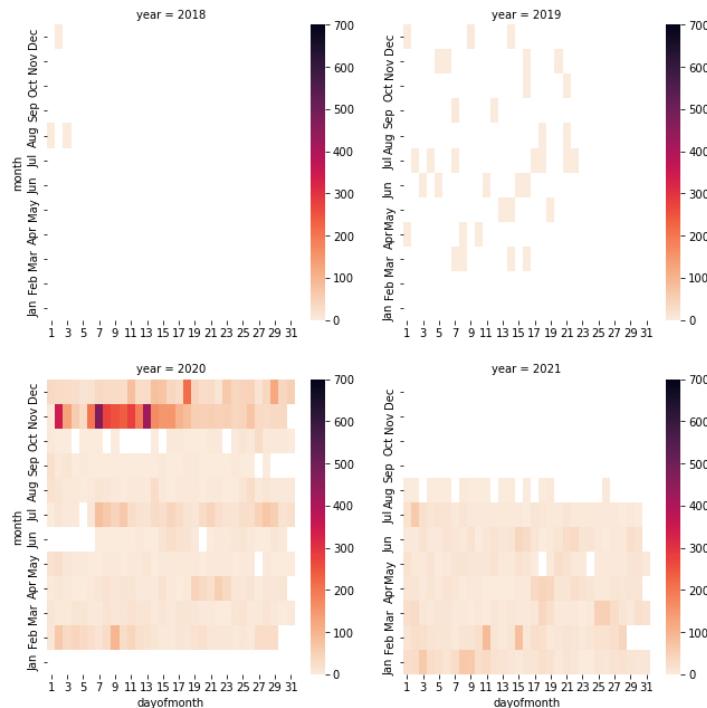
A Heat Map for the Count of Negative Comments

(Turd - F*ck, Liar, Fire)

```
In [119... df_negative = df_comments[df_comments["message"].str.contains('|'.join(negative))]  
daily_counts = df_justice.groupby(['year', 'dayofmonth', 'month']).size().reset_index(name='count')  
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']  
  
print('\nNote: The Peaks Also on Nov 2020\n')  
def draw_heatmap(*args, **kwargs):  
    data = kwargs.pop('data')  
    d = data.pivot(index=args[1], columns=args[0], values=args[2])  
    d = d.reindex(index=months[::-1])  
    sb.heatmap(d, **kwargs)  
  
g = sb.FacetGrid(daily_counts, col='year', col_wrap=2, height=4.5)  
g.map_dataframe(draw_heatmap, 'dayofmonth', 'month', 'count', cmap='rocket_r', vmin=0, vmax=700);  
  
plt.suptitle('A Heat Map for the Count of Negative Comments', y=1.04, fontsize=18)  
g.fig.subplots_adjust(wspace=0.15, hspace=0.2)  
for axis in g.axes.flat:  
    axis.tick_params(labelbottom=True, labelleft=True)
```

Note: The Peaks Also on Nov 2020

A Heat Map for the Count of Negative Comments"



```
In [119... len(df_negative)
```

Out[119... 23776

Most Repeated Negative Comments

```
In [119... df = df_negative.groupby(['message']).agg({'id':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()  
.rename(columns={'id':'repeated_times'})  
  
df.sort_values('repeated_times', ascending=False).head(25)
```

	message	repeated_times	n_likes	n_replies
157	#amberheardisanabuser	432	1741.0	34.0
8730	abuser	346	794.0	21.0
10963	fuck amber heard	291	762.0	68.0
11230	fuck her	185	122.0	14.0
458	#fuckamberheard	165	272.0	7.0
4748	@johnnydepp #wearewithyoujohnnydepp #amberhear...	124	23.0	0.0
8616	[#maleficent #super8 #gingerandrosa #weboughta...	117	13.0	0.0
9455	amber turd	116	402.0	21.0
10939	fuck amber	105	158.0	3.0
419	#fireamberheard	94	191.0	1.0
323	#ambertheabuser #justiceforjohnnydepp	93	201.0	2.0
675	#justiceforjohnnydepp #amberheardisanabuser	84	337.0	9.0
140	#amberheardisalier	76	331.0	1.0
221	#amberheardisanabuser #justiceforjohnnydepp	75	232.0	15.0
11459	fuck that bitch	74	69.0	19.0

12332	https://www.change.org/p/dc-entertainment-remo...	67	91.0	11.0
10969	fuck amber heard #justiceforjohnnydepp	62	121.0	5.0
13986	liar	61	18.0	0.0
11525	fuck this bitch	60	45.0	2.0
912	#removeamberheardfromaquaman2	54	941.0	11.0
78	#amberheard #amberheardisanabuser #amberheara...	51	3.0	0.0
290	#amberheardistherealabuser	48	85.0	19.0
11386	fuck off	47	14.0	6.0
921	#removeamberheardsfromaquaman2	47	79.0	4.0
10636	everyone who is a fan of amber heard please l...	44	76.0	63.0

```
In [119]: df_negative.message.value_counts().head(10)
```

```
Out[119]:
#amberheardisanabuser
432
abuser
346
fuck amber heard
291
fuck her
185
#fuckamberheard
165
@johnnydepp #wearewithyoujohnnydepp #amberheardisalair #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun
124
#[maleficent #super8 #gingerandrosa #weboughtazoo #maryshelley #theneondemon #galveston #thebeguiled #aboutray #ithinkwearealonenow #20thcenturywomen #
#wtotalktogiirlsatparties #teenspirit #sidneyhall #allthebrightplaces #dakotafanning #angelinajolie #chloemoretz #nicolekidman #annehathaway #amberheard
#lilycollins #lucyhale #lilyjames #kristenstewart #juliaroberts #caradelevingne] 117
amber turd
116
fuck amber
105
#fireamberheard
94
Name: message, dtype: int64
```

Top Users with Negative Comments

```
In [119]: # The total number of different users posted justiceforjohnnydepp
df_negative.username.unique()
```

```
Out[119]: 14393
```

```
In [119]: df_nnegative = df_negative.groupby(['username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
        .rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

df_nnegative.head(25)
```

	username	n_comments	n_likes	n_replies
11473	samanthastar53	133	234.0	18.0
10419	pauu.eg	115	257.0	2.0
7544	kingskippy1987	99	148.0	17.0
404	_dope_black_unicorn_	80	159.0	5.0
8483	mackenzilaplante	76	115.0	19.0
4788	feelselle	71	13.0	0.0
10757	queenmusicvideoe	70	14.0	0.0
8473	machelyyyyy	66	694.0	13.0
2131	becauseitsjohnnydepp	65	559.0	9.0
7149	justiceforheard	57	24.0	2.0
6896	johnnyforever_2005	53	79.0	63.0
11422	sahartaleb___	52	89.0	4.0
1369	amberheardabottleofwineopen	51	3.0	0.0
2687	c_shortt	50	154.0	5.0
10914	razaopetraglia	48	0.0	0.0
14341	zhra.006	45	107.0	2.0
5715	hosein.sarsam	43	78.0	5.0
7218	kai_t_2005	42	77.0	13.0
4668	eyluuulyildirim	42	226.0	0.0
10756	queenmusicvideo	41	0.0	0.0
13491	unveilyouraves	41	1669.0	19.0
6871	johnnydepp_gothic	41	183.0	2.0
9724	natchayaleejin	40	145.0	2.0
13835	wewantjusticeforjohnnydepp	39	22.0	0.0
3968	diann_lee	38	186.0	0.0

```
In [120]: neg_users = neg_users|set(df_nnegative.username.unique())
```

```
In [120]: # newly created - 'monochrom20' 'mathru_at' 'notach' 'Australia_for_johnny_depp' 'marchalunuu'
```

```
# newly_created = ['mariamalik', 'mariy_2017', 'mariyay', 'jessicajohnnydepp', 'mariyyyyyy']
# colors = []
# for user in df_njustice['username'].head(20):
#     if user in newly_created:
#         colors.append('red')
#     else:
#         colors.append('#5296dd')
```

```
In [120...]
# print('\nnewly created (after 2018) accounts are colored in "red"')
barh(
    df_nnegative[['username', 'n_comments']].head(15), 'Top Users with Negative Comments', 40
)
```

Users Negative Contributions on Each Date

```
In [120...]
df = df_negative.groupby(['date', 'username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
.rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

df.head(15)
```

	date	username	n_comments	n_likes	n_replies
8582	2020-11-02	queenmusicvideoe	70	14.0	0.0
13155	2020-12-11	kingskippy1987	55	14.0	0.0
6933	2020-07-31	amberheardabottleofwineopen	51	3.0	0.0
8581	2020-11-02	queenmusicvideo	41	0.0	0.0
8511	2020-11-02	babikate6	33	11.0	0.0
9919	2020-11-11	c_shortt	32	106.0	3.0
15331	2021-02-11	zhra.006	32	3.0	0.0
15327	2021-02-11	sahartaleb___	31	19.0	1.0
4376	2020-04-22	pauu.eg	28	19.0	0.0
4311	2020-04-19	pauu.eg	27	72.0	0.0
9571	2020-11-09	ngnizi	22	22.0	0.0
4437	2020-04-27	blancx_agender	19	18.0	1.0
17122	2021-05-08	johnny.depp.is.innocent	19	11.0	0.0
10131	2020-11-12	c_shortt	18	48.0	2.0
13190	2020-12-12	johnnyforever_2005	16	30.0	58.0

```
In [120...]
neg_users = neg_users|set(df_nnegative.head(10).username)
```

Negative Comments Peak Dates

```
In [120...]
negative_dates = df_negative.groupby(['date']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
.rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

negative_dates.head(15)
```

	date	n_comments	n_likes	n_replies
770	2020-11-13	790	19830.0	196.0
771	2020-11-14	396	3388.0	80.0
759	2020-11-02	351	1682.0	59.0
766	2020-11-09	333	1677.0	57.0
768	2020-11-11	319	4619.0	53.0
767	2020-11-10	299	1812.0	97.0
772	2020-11-15	294	4742.0	81.0
764	2020-11-07	294	8261.0	222.0
769	2020-11-12	280	3576.0	46.0
765	2020-11-08	259	3185.0	107.0
774	2020-11-17	244	2863.0	51.0
773	2020-11-16	230	1963.0	78.0
805	2020-12-18	219	1076.0	18.0
698	2020-09-02	172	1345.0	92.0
489	2020-02-06	170	2278.0	105.0

```
In [120...]
bar_peaks(negative_dates[['date', 'n_comments']].head(10), 'Negative Comments Peaks')
```

Amber Heard Turd

- Negative Comments
- [Amber Turd](#)
- Fuck Amber Heard
- Amber Heard is a liar
- Amber Heard is a abuser
- [Fire Amber Heard](#)

THE AMERICAN EAGLE

- Support Amber Heard

```
In [120]: turd = [i for i in top_texts if 'turd' in i]
          turd.append(' turd')
```

```
[#amberturd, 'amber turd', 'turd']
```

```
In [120...]: # For checking more than one keyword  
# df_turd = amber[amber.message.str.contains("|".join(turd))]  
# |".join(turd)
```

```
Out[120]: '#amberturd|amber turd| turd
```

```
In [120...]: # Check for the text containing "turd" and not containing "Amber"
print('\nNote: Almost only "saturday" is a misleading result\n')
```

```
df_turd = df_comments[df_comments.message.str.contains('turd')]
df_turd[~df_turd.message.str.contains('amber')]['message'].head(30)
```

Note: Almost only "saturday" is a misleading result

Out[120...]

8337 happy saturday 🍀 and sweet 😊 weekend 🎉
20366 ambitch turd face
22599 turd, eat your faeces💩💩💩
24788 turd belongs in prison
26874 that dress in number 1 would look a lot better...
27971 i had some pretending to n u yesterday asking ...
31902 i thought her last name was turd? 😊
32217 angry turd
39144 @hichtwo actually, they were defending johnny ...
39694 @recesses_of_my_soul he was mass reported by s...
40552 🥰🥰🥰anyway turd is a crime scene happened😊
45263 wow beautiful back and face side have a great ...
48065 next up #saturday #morning #cartoons
54874 @turdalievabaya ой ой, можно подумать прям ...
60334 you captured a turd perfectly.
65431 @elai.ne21 he plotted with aturd to use a knif...
67604 @becool.honeybunny nutty as a squirrel turd...
76844 turd
76936 #teamjohnnydepp #ashleyturd
77502 the justice league trailers dropped on a satur...
90349 happy saturday 🍀☀️反腐
93985 yup it was a turd💩 of a movie
94273 what in the bad saturday lifetime movie is goi...
97220 turd is a wicked liar 😊
97823 what makes me so sad for johnny, was he loved h...
97832 i despise her. karma is coming for you amanda ...
109131 imagine supporting a manipulative abuser pile ...
113304 turd
114592 @eeee.jayy lmao, yes, i watched it on saturday...
118827 how's that mera mafex? i've been thinking abou...

Name: message, dtype: object

```
In [121]: # Exclude "Saturday" From the DataFrame or use space before turd
df_turd = df_comments[df_comments.message.str.contains('turd')]
df_turd = df_turd[~df_turd.message.str.contains('saturday')]
df_turd.shape
```

```
Out[121] - (1788, 16)
```

A Heat Map for the Count of Comments Containing "Amber Turd"

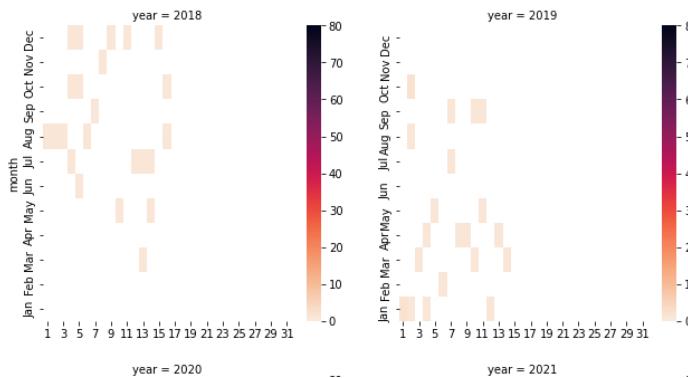
```
In [121]: daily_counts = df_turd.groupby(['year', 'dayofmonth', 'month']).size().reset_index(name='count')
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']

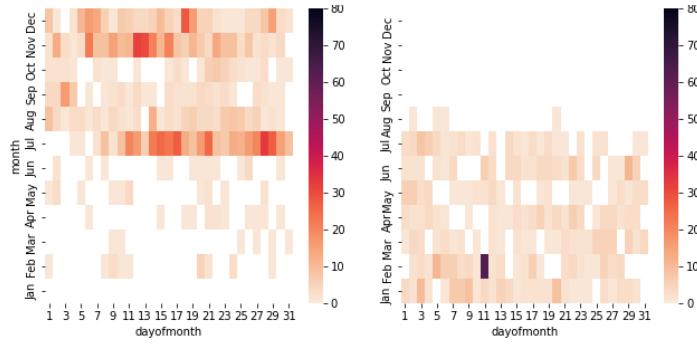
def draw_heatmap(*args, **kwargs):
    data = kwargs.pop('data')
    d = data.pivot(index=args[1], columns=args[0], values=args[2])
    d = d.reindex(index=months[::-1])
    sb.heatmap(d, **kwargs)

g = sb.FacetGrid(daily_counts, col='year', col_wrap=2, height=4.5)
g.map_dataframe(draw_heatmap, 'dayofmonth', 'month', 'count', cmap='rocket_r', vmin=0, vmax=80);

plt.suptitle('A Heat Map for the Count of Comments Containing "Amber Turd"', y=1.04, fontsize=18)
g.fig.subplots_adjust(wspace=0.15, hspace=0.2)
for axis in g.axes.flat:
    axis.tick_params(labelbottom=True, labelleft=True)
```

A Heat Map for the Count of Comments Containing "Amber Turd"





In [121]:

```
len(df_turd)
```

Out[121]:

Most Repeated Comments Containing "Amber Turd"

In [121]:

```
df = df_turd.groupby(['message']).agg({'id': 'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'id': 'repeated_times'})  
df.sort_values('repeated_times', ascending=False).head(25)
```

Out[121]:

	message	repeated_times	n_likes	n_replies
27	#amberturd	125	534.0	5.0
493	amber turd	116	402.0	21.0
1273	.#justiceforjohnnydepp #amberheardisanabuser ...	32	3.0	0.0
556	amber turd 💩	27	86.0	3.0
105	#justiceforjohnnydepp #amberheardisanabuser ...	26	15.0	1.0
1145	turd	21	20.0	0.0
52	#amberturd 💩	11	10.0	0.0
1188	we support you @johnnydepp \n#fuckamberheard @...	10	29.0	0.0
98	#johnnydeppisanangel #johnnydeppisinnocent #ju...	10	81.0	2.0
744	fuck amber turd	9	8.0	0.0
1081	sooo proud of johnny depp ❤️👉 he has our outmo...	8	19.0	1.0
99	#johnnydeppisanangel #johnnydeppisinnocent #ju...	8	0.0	0.0
75	#boycotamberturd 💩 #boycotamberheard	6	20.0	0.0
625	amberturd	6	8.0	0.0
45	#amberturd #justiceforjohnnydepp #amberheardis...	5	8.0	0.0
212	@d.a.k.y amber turd	5	151.0	0.0
67	#amberturdisanabuser	5	22.0	3.0
564	amber turd 💩💩	5	1.0	0.0
32	#amberturd #amberheardisalialar #justiceforjohn...	4	8.0	0.0
1189	we support you @johnnydepp \n#fuckamberheard @...	4	4.0	2.0
592	amber turd.	3	15.0	2.0
1030	scamber turd	3	12.0	0.0
1282	💩 #amberturd #ambersanabuser #amberheardisali...	3	0.0	0.0
46	#amberturd #justiceforjohnnydepp #amberheardis...	3	0.0	1.0
867	i think you should stop promoting amber turd b...	3	12.0	20.0

Top Users Commented "Amber Turd"

In [121]:

```
# The total number of different users with Comments Containing "Amber"
df_turd.username.unique()
```

Out[121]:

```
In [121]:  
print("\n\"pabloziegl\" Got a total of 1074 likes on only 6 comments\n")  
df_nturd = df_turd.groupby(['username']).agg({'id': 'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'id': 'n_comments'}).sort_values('n_comments', ascending=False)  
df_nturd.head(25)
```

"pabloziegl" Got a total of 1074 likes on only 6 comments

Out[121]:

	username	n_comments	n_likes	n_replies
855	sahartaleb__	39	33.0	2.0
1069	zhra.006	36	9.0	2.0
403	hani_cockatiel	35	79.0	3.0
858	samanthastar53	31	47.0	3.0
522	johnnydepp_gothic	26	109.0	2.0
196	c_shortt	18	48.0	2.0

729	natchayaleejin	15	29.0	0.0
323	dylanfrost1995	15	51.0	1.0
707	monsoonglasgow	15	59.0	4.0
339	engajamento800	11	89.0	0.0
351	eyluuulyildirim	9	157.0	0.0
307	donna_williams32k	8	23.0	0.0
659	maryam_khaledi_77	8	3.0	0.0
527	joseashmore_dublin_irland	8	41.0	0.0
723	nadia_2030	8	19.0	1.0
711	mr_mooresky_cosplay	8	119.0	0.0
954	te_he_we_wa_	8	3.0	0.0
1019	user.05376287290251695	8	4.0	0.0
181	boykinbecca	7	20.0	1.0
309	dontshowmyfacecauseidotherace	7	7.0	0.0
752	odetchiwa	7	76.0	0.0
676	mhmd_tlaiss	7	16.0	0.0
1031	violetsinclair	7	0.0	1.0
664	maya.sury.7	7	33.0	29.0
259	darknesspreys	7	21.0	0.0

```
In [121]: neg_users = neg_users.set(df_nturd.username)
```

```
In [121]: barh(df_nturd[['username', 'n_comments']].head(15), 'Top users commentd "Amber Trud"', 5)
```

"Amber Turd" Users Contributions on Each Date

```
In [121]: df = df_turd.groupby(['date', 'username']).agg({'message': 'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'message': 'n_comments'}).sort_values('n_comments', ascending=False)
df.head(15)
```

	date	username	n_comments	n_likes	n_replies
1149	2021-02-11	zhra.006	32	3.0	0.0
1147	2021-02-11	sahartaleb___	30	18.0	1.0
712	2020-11-12	c_shortt	18	48.0	2.0
663	2020-11-06	nadia_2030	8	19.0	1.0
788	2020-11-16	hani_cockatiel	8	5.0	0.0
230	2020-07-17	dontshowmyfacecauseidotherace	7	7.0	0.0
831	2020-11-22	hani_cockatiel	6	10.0	0.0
168	2020-07-14	darknesspreys	6	20.0	0.0
421	2020-07-30	odetchiwa	5	71.0	0.0
687	2020-11-09	johnnydepp_gothic	5	0.0	0.0
541	2020-09-03	ansellachlan	5	2.0	0.0
555	2020-09-04	user.05376287290251695	5	3.0	0.0
1100	2021-01-20	samanthastar53	5	7.0	0.0
360	2020-07-27	te_he_we_wa_	5	1.0	0.0
317	2020-07-24	eyluuulyildirim	4	1.0	0.0

"Amber Turd" Peak Dates

```
In [121]: df = df_turd.groupby(['date']).agg({'message': 'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'message': 'n_comments'}).sort_values('n_comments', ascending=False)
df.head(15)
```

	date	n_comments	n_likes	n_replies
291	2021-02-11	63	23.0	1.0
114	2020-07-28	33	2516.0	13.0
205	2020-11-12	32	148.0	2.0
206	2020-11-13	30	198.0	3.0
240	2020-12-18	28	152.0	0.0
115	2020-07-29	27	79.0	2.0
103	2020-07-17	27	1066.0	21.0
107	2020-07-21	25	146.0	5.0
101	2020-07-15	25	3255.0	3.0
102	2020-07-16	23	65.0	2.0
199	2020-11-06	22	103.0	4.0
100	2020-07-14	22	101.0	1.0

```
208 2020-11-14      21    107.0    1.0
209 2020-11-16      21     74.0    1.0
113 2020-07-27      20    220.0    1.0
```

```
In [122]: df_turd['datetime'].max()
```

```
Out[122]: Timestamp('2021-08-20 05:08:41')
```

```
In [122]: df_turd['datetime'].min()
```

```
Out[122]: Timestamp('2018-03-25 09:26:58')
```

```
In [122]: fig = (
    px.bar(
        get_top(df_turd, "date", df_turd.shape[0], "date", "n_comments"),
        x="date",
        y="n_comments",
        title = "Peak days of 'Amber Turd' comments"
    )
    .update_traces(
        marker_color="red",
        opacity=1,
        textposition="auto",
        marker_line_color="red",
        marker_line_width=0.5,
    )
    .update_xaxes(tickangle=45)
)
fig.show('svg')
```

```
In [122]: bar_peaks(
    get_top(df_turd, "date", 15, "date", "n_comments").sort_values("date").head(9),
    "title",
)
```

```
In [122]: bar_peaks(
    get_top(df_turd, "date", 15, "date", "n_comments").sort_values("date").iloc[9:12],
    "title",
)
```

```
In [122]: bar_peaks(
    get_top(df_turd, "date", 15, "date", "n_comments").sort_values("date").tail(3),
    "title",
)
```

Time difference

```
In [122]: df_turd.datetime.sort_values().diff().sort_values().value_counts().head(15)
```

```
Out[122]: 0 days 00:00:07    18
0 days 00:00:05     9
0 days 00:00:08     9
0 days 00:00:12     8
0 days 00:00:11     7
0 days 00:00:06     7
0 days 00:00:10     7
0 days 00:00:04     6
0 days 00:00:35     5
0 days 00:00:15     5
0 days 00:00:19     5
0 days 00:00:22     5
0 days 00:00:13     4
0 days 00:00:36     4
0 days 00:00:51     3
Name: datetime, dtype: int64
```

pabloziegl

Got a total of 1074 likes on 6 comments

- first posted on JANUARY 15, 2014
- 88 posts
- 159 followers
- 693 following

```
In [122]: df_turd.query("username == 'pabloziegl'").message.value_counts()
```

```
Out[122]: fuck amber turd 🐱 #justiceforjohnnydepp
1
@cinder_luna amber turd* 🐱 #justiceforjohnnydepp
1
@getthatknowledge i didn't watch the first one because of this cunt. fuck amber turd
1
@nerd_rumble i'm boycotting every and each movie from warner bros. fuck them and fuck amber turd 😡 #justiceforjohnnydepp
1
@shawth over the bullshit about amber turd, that fucking liar 😡 #justiceforjohnnydepp
1
 @_graceh19_ every woman that crossed jonny depp's path did spoke and defended him. the only woman that says he opposite is amber turd,a known abuser who was arrested for this crime in the past.. 1
Name: message, dtype: int64
```

we can see most comments were done within seconds!

sahartaleb__

```
In [122]: df_turd.query('username == "sahartaleb__"').date.value_counts()
```

```
Out[122]:
```

2021-02-11	30
2020-12-15	2
2020-12-12	2
2021-07-06	1
2021-04-22	1
2020-12-14	1
2020-12-01	1
2021-02-21	1

Name: date, dtype: int64

```
In [122]: df_turd.query('username == "sahartaleb__"').datetime.sort_values().diff().sort_values()
```

```
Out[122]:
```

645212	0 days 00:00:08
448928	0 days 00:00:08
1016839	0 days 00:00:08
596729	0 days 00:00:09
714036	0 days 00:00:10
1488297	0 days 00:00:10
1429350	0 days 00:00:10
1681881	0 days 00:00:10
653724	0 days 00:00:10
890286	0 days 00:00:11
117282	0 days 00:00:11
223439	0 days 00:00:12
311500	0 days 00:00:12
35003	0 days 00:00:13
1595554	0 days 00:00:13
1546049	0 days 00:00:13
457917	0 days 00:00:14
1639957	0 days 00:00:14
1695600	0 days 00:00:15
135429	0 days 00:00:15
1623453	0 days 00:00:18
762530	0 days 00:00:18
1245449	0 days 00:00:26
908149	0 days 00:00:31
1109418	0 days 00:00:33
1595555	0 days 00:00:38
693823	0 days 00:00:47
1283505	0 days 00:00:53
535471	0 days 00:01:09
1216071	0 days 03:40:50
1223435	0 days 10:04:54
1669428	0 days 23:48:18
1424637	1 days 14:23:41
1639959	9 days 21:03:36
1492271	10 days 03:00:46
1089278	58 days 14:51:46
1275917	59 days 23:43:46
733178	74 days 20:07:04
1553736	NAT

Name: datetime, dtype: timedelta64[ns]

```
In [123]: df_turd.query('username == "sahartaleb__"').n_likes.value_counts(), df_turd.query('username == "sahartaleb__"').n_replies.value_counts()
```

```
Out[123]:
```

(1.0	18
0.0	17
2.0	2
6.0	1
5.0	1

Name: n_likes, dtype: int64,

0.0	34
1.0	2

Name: n_replies, dtype: int64)

zhra.006

```
In [123]: df_turd.query('username == "zhra.006"').date.value_counts()
```

```
Out[123]:
```

2021-02-11	32
2021-03-12	2
2021-03-03	1
2021-02-21	1

Name: date, dtype: int64

```
In [123]: df_turd.query('username == "zhra.006"').datetime.sort_values().diff().sort_values()
```

```
Out[123]:
```

679720	0 days 00:00:04
1429351	0 days 00:00:04
908150	0 days 00:00:04
658408	0 days 00:00:04
1458450	0 days 00:00:05
1189341	0 days 00:00:05
1639958	0 days 00:00:05
135430	0 days 00:00:05
1346161	0 days 00:00:05
364346	0 days 00:00:06
1623454	0 days 00:00:06
1103151	0 days 00:00:06
319768	0 days 00:00:06
448931	0 days 00:00:07
645213	0 days 00:00:07
1283506	0 days 00:00:07
1275153	0 days 00:00:07
745636	0 days 00:00:07
951800	0 days 00:00:07
1058530	0 days 00:00:07
596730	0 days 00:00:07
311501	0 days 00:00:07
1198632	0 days 00:00:07
381534	0 days 00:00:07

```
-----  
746113 0 days 00:00:07  
1595556 0 days 00:00:07  
693824 0 days 00:00:07  
117283 0 days 00:00:08  
1089280 0 days 00:00:10  
1546050 0 days 00:00:11  
1488298 0 days 00:00:24  
1655907 0 days 02:13:23  
1215602 9 days 00:46:32  
531082 9 days 16:56:30  
1553725 9 days 23:54:40  
1695601 NaT  
Name: datetime, dtype: timedelta64[ns]
```

```
In [123]: df_turd.query('username == "zhra.006"').n_likes.value_counts(), df_turd.query(  
    'username == "zhra.006"')  
.n_replies.value_counts()
```

```
Out[123]:  
(0.0    31  
1.0     4  
5.0     1  
Name: n_likes, dtype: int64,  
0.0    35  
2.0     1  
Name: n_replies, dtype: int64)
```

hani._cockatiel 35

```
In [123]: df_turd.query('username == "hani._cockatiel"').date.value_counts()
```

```
Out[123]:  
2020-11-16    8  
2020-11-22    6  
2020-11-26    4  
2020-11-19    4  
2020-11-14    2  
2020-11-17    2  
2020-12-06    2  
2021-01-06    1  
2020-12-18    1  
2021-04-17    1  
2020-11-23    1  
2021-01-03    1  
2020-11-15    1  
2020-11-18    1  
Name: date, dtype: int64
```

```
In [123]: df_turd.query('username == "hani._cockatiel"').datetime.sort_values().diff().sort_values()
```

```
Out[123]:  
236307 0 days 00:00:19  
481565 0 days 00:00:21  
1061159 0 days 00:00:24  
1663150 0 days 00:00:35  
1124204 0 days 00:00:35  
1386279 0 days 00:00:36  
221353 0 days 00:00:44  
1038072 0 days 00:01:12  
30459 0 days 00:01:20  
636187 0 days 00:01:24  
1274237 0 days 00:01:36  
908016 0 days 00:01:55  
541120 0 days 00:03:01  
133354 0 days 00:03:28  
1044356 0 days 00:06:37  
1415258 0 days 00:09:11  
985597 0 days 00:09:30  
987205 0 days 00:14:31  
869376 0 days 01:20:54  
1347254 0 days 08:36:56  
816247 0 days 08:40:58  
1470168 0 days 10:58:35  
1493986 0 days 18:29:03  
1053487 0 days 21:32:13  
1404994 0 days 23:32:46  
1515736 0 days 23:59:54  
1024880 1 days 01:51:23  
222804 2 days 09:17:43  
908061 3 days 00:02:55  
482860 3 days 06:14:12  
1628349 10 days 03:58:37  
502968 11 days 13:06:24  
982528 16 days 12:24:48  
590010 101 days 04:53:59  
371699 NaT  
Name: datetime, dtype: timedelta64[ns]
```

```
In [123]: df_turd.query('username == "hani._cockatiel"').n_likes.value_counts(), df_turd.query(  
    'username == "hani._cockatiel"')  
.n_replies.value_counts()
```

```
Out[123]:  
(0.0    14  
1.0    11  
3.0     4  
2.0     3  
4.0     1  
37.0    1  
9.0     1  
Name: n_likes, dtype: int64,  
0.0    31  
1.0     3  
Name: n_replies, dtype: int64)
```

johnnydepp_gothic

```
In [123]: df_turd.query('username == "johnnydepp_gothic"').date.value_counts()
```

```
Out[123]:  
2020-11-09    5  
2021-02-17    4
```

```
2020-12-29    3
2020-12-18    2
2021-01-12    2
2020-07-23    1
2020-12-28    1
2020-11-10    1
2020-08-14    1
2020-12-01    1
2020-11-08    1
2021-02-06    1
2020-11-02    1
2021-01-20    1
2020-10-28    1
Name: date, dtype: int64
```

In [123]

```
df_turd.query('username == "johnnydepp_gothic"').datetime.sort_values().diff().sort_values()
```

Out[123...]

```
801015    0 days 00:00:04
353131    0 days 00:00:05
1608741   0 days 00:00:07
385220    0 days 00:00:10
1243824   0 days 00:00:11
1740391   0 days 00:00:16
302480    0 days 00:00:21
1610472   0 days 00:00:51
1544631   0 days 00:01:52
1544458   0 days 01:20:17
502672    0 days 01:49:04
1544500   0 days 18:43:11
503583    0 days 22:43:39
656813    1 days 00:25:43
1615787   5 days 12:25:41
1360933   5 days 22:37:46
1663227   8 days 00:59:24
623234   10 days 03:45:28
1253774   10 days 21:09:47
926458   13 days 22:14:18
502833   17 days 01:10:53
1361828   17 days 01:44:59
1314855   20 days 16:33:06
778624   22 days 07:47:30
1722759   74 days 21:43:31
261673      NaT
Name: datetime, dtype: timedelta64[ns]
```

In [123...]

```
df_turd.query('username == "johnnydepp_gothic"').n_likes.value_counts(), df_turd.query(
    'username == "johnnydepp_gothic"'
).n_replies.value_counts()
```

Out[123...]

```
(0.0    8
 2.0    4
 1.0    4
 8.0    2
 5.0    2
13.0    1
10.0    1
 4.0    1
24.0    1
17.0    1
 3.0    1
Name: n_likes, dtype: int64,
 0.0    23
 1.0    2
Name: n_replies, dtype: int64)
```

Amber Heard Turd

- Top Users:
 - sahartaleb___ 37
 - 0 posts
 - 42 followers
 - 37 following
 - created around 15 December 2020.
 - 30 comments contain amber turd in 11 feb 2021
 - time difference of comments is only seconds!
 - most comments has no likes or replies.
 - zhra.006 36
 - user not found
 - 32 comments contain amber turd in 11 feb 2021
 - time difference of comments is only seconds!
 - most comments has no likes or replies.
 - hani_cockatiel 35
 - 0 posts
 - 60 followers
 - 98 following
 - created around 15 February 2020
 - most comments has no likes or replies.
 - johnnydepp_gothic 26
 - 131 posts
 - 2,176 followers
 - 336 following
 - created around 15 January 2020
 - has variety of number of replies and likes on his comments.
 - ...
- Top Dates:
 - 2021-02-11 63
 - 2020-11-12 31
 - 2020-07-28 26

▪ 2020-12-18 24
▪ ...

F*ck Amber Heard

- Negative Comments
- Amber Turd
- **Fuck Amber Heard**
- Amber Heard is a liar
- Amber Heard is a abuser
- Fire Amber Heard
- Support Amber Heard

```
In [124]: fuc = [i for i in top_texts if 'fuck' in i]
fuc
Out[124]: ['fuck amber', 'fuck amber heard', '#fuckamberheard']

In [124]: fuc = ['fuck amber heard', 'fuck amber', '#fuckamberheard', 'fuck u @amberheard', 'fuck you @amberheard',
          '@amberheard fuck you', 'fuckamber', 'fuck @amberheard', 'fuck amber', 'fuck you amber', 'fuck her',
          'fuck that bitch', 'fuck this bitch', 'fucking bitch', 'fucking abuser', 'fuck herself',
          'fuck off', 'fuckamberheard', 'fucking bullshit']

In [124]: neg_text = neg_text|set(fuc)

In [124]: # Get the most repeated text containing "Amber" and "F*ck"
df_fuc1 = df_comments[df_comments.message.str.contains('fuck')]
df_fuc1 = df_fuc1[df_fuc1.message.str.contains('amber')]
df_fuc1.message.value_counts().head(20)

Out[124]: fuck amber heard
291
#fuckamberheard
165
@johnnydepp #wearewithyoujohnnydepp #amberheardisalier #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun
124
fuck amber
105
fuck amber heard #justiceforjohnnydepp
62
fuck amber heard! #justiceforjohnnydepp
40
#justiceforjohnnydepp #amberheardisanabuser #amberturd #amberheardisalier #johnnydeppisinnocent #boycottthesun #boycottwarnerbros #boycottamberhe
eard #wearewithyoujohnnydepp #johnnydeppismyhero #fuckthesun #fuckamberheard      32
fuck you amber
26
#justiceforjohnnydepp #amberheardisanabuser #amberturd #amberheardisalier #johnnydeppisinnocent #boycottthesun #boycottwarnerbros #boycottamberhe
ard #wearewithyoujohnnydepp #johnnydeppismyhero #fuckthesun #fuckamberheard      26
fuck @amberheard
17
#fuckamberheard #justiceforjohnnydepp
16
fuck amber heard all my homies hate amber heard
15
fuck you @amberheard
14
fuck amber heard.
14
fuck u @amberheard 🙄
14
#fuckamber
13
fuck you amber heard
12
@amberheard fuck you
10
true always win she wan't it or not fuck you @amberheard
10
we support you @johnnydepp \n#fuckamberheard @amberheard \n#amberturd #厮 🙄 \n#justiceforjohnnydepp #aberheardisanabuser #abuse #justicefordepp #fuckambe
rheard #aberheardisanabuser #amberheardisanabuser #aquaman #amberheardisacow      10
Name: message, dtype: int64

In [124]: # Get the most repeated text containing "F*ck", but don't contain "Amber"
df_fuc1 = df_comments[df_comments.message.str.contains('fuck')]
df_fuc1 = df_fuc1[df_fuc1.message.str.contains('amber')]
df_fuc1.message.value_counts().head(60)

Out[124]: fuck her
185
🖕🖕🖕 fuck you and your bullshit copy/paste tags
85
fuck
80
fuck no
75
fuck that bitch
74
fuck you
63
fuck this bitch
60
fuck off
47
what the fuck
39
fucking bitch
36
#fuckthesun
24
fuck yes
18
fuck that
17
holy fuck
16
fuck u
15
🖕🖕🖕 fuck you and your bullshit copy/paste tags!!!
15
fuck wb
14
fuck yeah
12
fuck you bitch
11
i fucking post the fucking same fucking picture of fucking thanos every fucking day
11
what the actual fuck
10
fuck her.
9
fuck all
8
```

```

fuck now
fuck warner bros
fucking abuser
fuck it
fuck thanks for sharing
fuck that bitch.
fuck this bitch.
fuck this
fucking bullshit
this is fucking amazing
oh fuck
fuck this shit
fucking
fuck disney
fuck yeah
fuck this bitch #justiceforjohnnydepp
sexy as fuck
fuck 🍑
she can go fuck herself
fuck dc
shut the fuck up
fucking cunt
the fuck?
fucking psycho
fuck no.
fuck her!
fucking amazing
fuck the sun
fucking simps
fuck this hoe
hell fucking no
fuck her #justiceforjohnnydepp
mother fucker
fuck johnny depp
she can fuck off
who the fuck cares
fuckkkk
fuck this cunt
Name: message, dtype: int64

```

```
In [124]: # df_fuc1 = df_comments[df_comments.message.str.contains('fuck')]
# df_fuc1.shape
```

```
In [124]: # df_fuc1 = amber[amber.message.str.contains('fuck')]
# df_fuc1.shape
```

```
In [124]: df_fuc1 = df_comments[df_comments.message.str.contains("|".join(fuc))]
df_fuc1.shape
```

```
Out[124]: (3488, 16)
```

Most Repeated Comments Containing "F*ck Amber"

```
In [124]: df = df_fuc1.groupby(['message']).agg({'id':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
        .rename(columns={'id':'repeated_times'})

df.sort_values('repeated_times', ascending=False).head(25)
```

	message	repeated_times	n_likes	n_replies
706	fuck amber heard	291	762.0	68.0
970	fuck her	185	122.0	14.0
22	#fuckamberheard	165	272.0	7.0
682	fuck amber	105	158.0	3.0
1190	fuck that bitch	74	69.0	19.0
712	fuck amber heard #justiceforjohnnydepp	62	121.0	5.0
1243	fuck this bitch	60	45.0	2.0
1121	fuck off	47	14.0	6.0
800	fuck amber heard! #justiceforjohnnydepp	40	74.0	16.0
1374	fucking bitch	36	0.0	1.0
1963	,#justiceforjohnnydepp #amberheardisanabuser ...	32	3.0	0.0
1303	fuck you amber	26	43.0	3.0
83	#justiceforjohnnydepp #amberheardisanabuser ...	26	15.0	1.0
664	fuck @amberheard	17	14.0	0.0
37	#fuckamberheard #justiceforjohnnydepp	16	7.0	0.0
716	fuck amber heard all my homies hate amber heard	15	114.0	0.0
1295	fuck you @amberheard	14	9.0	1.0
826	fuck amber heard.	14	585.0	17.0
1286	fuck u @amberheard 🍑	14	10.0	0.0
20	#fuckamber	13	22.0	0.0
1309	fuck you amber heard	12	7.0	0.0
72	#johnnydeppisanangel #johnnydeppisinnocent #ju...	10	81.0	2.0
1863	we support you @johnnydepp \n#fuckamberheard @...	10	29.0	0.0
160	@amberheard fuck you	10	10.0	1.0
1835	true always win she want's it or not fuck you @...	10	12.0	2.0

```
In [124]: df_fuc1.message.value_counts().head(10)
```

```

Out[124... fuck amber heard      291
      fuck her          185
      #fuckamberheard   165
      fuck amber        105
      fuck that bitch    74
      fuck amber heard #justiceforjohnnydepp  62
      fuck this bitch     60
      fuck off           47
      fuck amber heard! #justiceforjohnnydepp  40
      fucking bitch       36
Name: message, dtype: int64

```

A Heat Map for the Count of Comments Containing "F*ck Amber"

```

In [125... daily_counts = df_fuc1.groupby(['year', 'dayofmonth', 'month']).size().reset_index(name='count')
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']

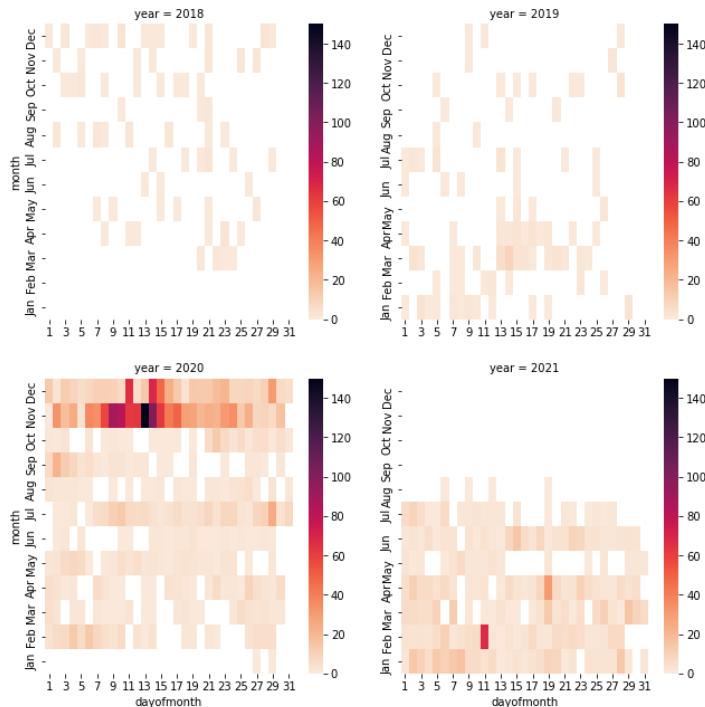
def draw_heatmap(*args, **kwargs):
    data = kwargs.pop('data')
    d = data.pivot(index=args[1], columns=args[0], values=args[2])
    d = d.reindex(index=months[::-1])
    sb.heatmap(d, **kwargs)

g = sb.FacetGrid(daily_counts, col='year', col_wrap=2, height=4.5)
g.map_dataframe(draw_heatmap, 'dayofmonth', 'month', 'count', cmap='rocket_r', vmin=0, vmax=150);

plt.suptitle('A Heat Map for the Count of Comments Containing "F*ck Amber"', y=1.04, fontsize=18)
g.fig.subplots_adjust(wspace=0.15, hspace=0.2)
for axis in g.axes.flat:
    axis.tick_params(labelbottom=True, labelleft=True)

```

A Heat Map for the Count of Comments Containing "F*ck Amber"



```
In [125... len(df_fuc1)
```

```
Out[125... 3488
```

Top Users Posted "F*ck Amber Heard"

```

In [125... # The total number of different users with Comments Containing "Amber"
df_fuc1.username.unique()

```

```
Out[125... 2750
```

```

In [125... df_nfuck1 = df_fuc1.groupby(['username']).agg({'id':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
        .rename(columns={'id':'n_comments'}).sort_values('n_comments', ascending=False)

df_nfuck1.head(25)

```

	username	n_comments	n_likes	n_replies
1475	kingskippy1987	99	148.0	17.0
1128	hosein.sarsam	43	78.0	5.0
2202	sahartaleb___	37	35.0	1.0
2738	zhra.006	35	4.0	0.0
1872	ngnizi	22	22.0	0.0
533	c_shortt	20	50.0	2.0
1359	johnnydepp_gothic	19	88.0	2.0

2364	staffordcarlis1	15	0.0	0.0
707	dana_milash	14	10.0	0.0
402	ballikaya_defne_7	11	20.0	0.0
1344	johnny.depp.is.innocent	10	10.0	0.0
1435	karolsevillaofcfanclub	10	12.0	2.0
1601	lrichardson71	10	9.0	0.0
1550	lexfx11	8	4.0	0.0
2085	ranchkh24	8	30.0	3.0
479	bonecrackii	8	16.0	1.0
1019	gandomataee	7	0.0	0.0
2136	rinisthere_	6	1.0	0.0
687	crxrv	6	11.0	0.0
1148	iamatefehr	6	24.0	0.0
1318	jitshff8647jyff	6	10.0	0.0
2469	thejacobostrowski	5	43.0	0.0
1494	kurtc0bainsslut	5	14.0	3.0
1769	mje681	5	5.0	0.0
2222	santino_zampella	5	23.0	1.0

```
In [125]: neg_users = neg_users.set(df_nfuc1.username)
```

```
In [125]: barh(get_top(df_fuc1, 'username', 15, 'username', 'n_comments'), 'Top users commentd "F*ck Amber"', 5)
```

"F*ck Amber" Users Contributions on Each Date

```
In [125]: df = df_fuc1.groupby(['date', 'username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

df.head(15)
```

	date	username	n_comments	n_likes	n_replies
2044	2020-12-11	kingskippy1987	55	14.0	0.0
2550	2021-02-11	zhra.006	32	3.0	0.0
2548	2021-02-11	sahartaleb__	30	18.0	1.0
1132	2020-11-09	ngnrzi	22	22.0	0.0
1289	2020-11-12	c_shortt	18	48.0	2.0
961	2020-11-04	dana_milash	14	10.0	0.0
2488	2021-01-28	ballikaya_defne_7	10	20.0	0.0
2937	2021-06-15	karolsevillaofcfanclub	10	12.0	2.0
2697	2021-03-29	hosein.sarsam	10	76.0	4.0
2637	2021-03-07	hosein.sarsam	9	0.0	0.0
1258	2020-11-11	lexfx11	8	4.0	0.0
1874	2020-11-24	bonecrackii	8	16.0	1.0
2659	2021-03-19	hosein.sarsam	7	0.0	0.0
2057	2020-12-13	kingskippy1987	6	47.0	3.0
2634	2021-03-05	hosein.sarsam	6	2.0	1.0

"F*ck Amber" Peak Dates

```
In [125]: df = df_fuc1.groupby(['date']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

df.head(15)
```

	date	n_comments	n_likes	n_replies
369	2020-11-13	157	1516.0	7.0
370	2020-11-14	101	464.0	0.0
365	2020-11-09	88	49.0	0.0
366	2020-11-10	82	71.0	17.0
400	2020-12-14	69	989.0	3.0
457	2021-02-11	67	26.0	1.0
397	2020-12-11	66	15.0	0.0
368	2020-11-12	63	71.0	3.0
371	2020-11-15	63	62.0	4.0
367	2020-11-11	62	88.0	2.0
364	2020-11-08	58	47.0	2.0
373	2020-11-17	49	11.0	0.0
401	2020-12-15	48	130.0	1.0

```
372 2020-11-16      42   41.0    0.0
362 2020-11-06      37   80.0    1.0
```

```
In [125]: df_fuc1['datetime'].max()
```

```
Out[125]: Timestamp('2021-08-19 12:05:33')
```

```
In [125]: df_fuc1['datetime'].min()
```

```
Out[125]: Timestamp('2018-03-22 01:19:23')
```

```
In [126]: fig = (
    px.bar(
        get_top(df_fuc1, "date", df_fuc1.shape[0], "date", "n_comments"),
        x="date",
        y="n_comments",
        title="Peak days of 'F*ck Amber Heard' comments",
    )
    .update_traces(
        marker_color="red",
        opacity=1,
        textposition="auto",
        marker_line_color="red",
        marker_line_width=0.5,
    )
    .update_xaxes(tickangle=45)
)
fig.show("svg")
```

```
In [126]: bar_peaks(
    get_top(df_fuc1, "date", 20, "date", "n_comments").sort_values("date").head(15),
    "title",
)
```

Time difference

```
In [126]: df_fuc1.datetime.sort_values().diff().sort_values().value_counts().head(15)
```

```
Out[126]: 0 days 00:00:07    28
0 days 00:00:08    25
0 days 00:00:01    19
0 days 00:00:10    19
0 days 00:00:09    18
0 days 00:00:05    17
0 days 00:00:02    17
0 days 00:00:04    15
0 days 00:00:06    12
0 days 00:00:11    11
0 days 00:00:12    11
0 days 00:00:13    11
0 days 00:00:03     9
0 days 00:00:15     9
0 days 00:00:26     8
Name: datetime, dtype: int64
```

```
In [126]: get_top(df_fuc1, 'username', 15, 'username', 'n_comments').iloc[:8].username.values
```

```
Out[126]: array(['kingskippy1987', 'hossein.sarsam', 'sahartaleb__', 'zhra.006',
       'ngnrzi', 'c_shortt', 'johnnydepp_gothic', 'staffordcarlisi'],
      dtype=object)
```

kingskippy1987

```
In [126]: df_fuc1.query('username == "kingskippy1987"').datetime.sort_values().diff().sort_values().to_frame().value_counts().head(20)
```

```
Out[126]: datetime
0 days 00:00:08    11
0 days 00:00:09    10
0 days 00:00:10     7
0 days 00:00:07     6
0 days 00:00:26     3
0 days 00:00:16     2
0 days 00:00:24     2
0 days 00:00:12     2
0 days 00:00:11     2
0 days 01:52:54     1
0 days 01:00:23     1
1 days 00:26:39     1
0 days 04:10:34     1
0 days 04:42:52     1
0 days 04:42:54     1
0 days 06:07:34     1
0 days 06:38:11     1
0 days 12:50:36     1
0 days 17:22:33     1
0 days 18:27:10     1
dtype: int64
```

```
In [126]: df_fuc1.query('username == "kingskippy1987"').n_likes.value_counts(), df_fuc1.query(
    'username == "kingskippy1987"'
).n_replies.value_counts()
```

```
Out[126]: (0.0      67
1.0      10
2.0      7
3.0      7
4.0      3
5.0      1
6.0      1
7.0      1
8.0      1
9.0      1
10.0     1
11.0     1
12.0     1
13.0     1
14.0     1
15.0     1
16.0     1
17.0     1
18.0     1
19.0     1
20.0     1
21.0     1
22.0     1
23.0     1
24.0     1
25.0     1
26.0     1
27.0     1
28.0     1
29.0     1
30.0     1
31.0     1
32.0     1
33.0     1
34.0     1
35.0     1
36.0     1
37.0     1
38.0     1
39.0     1
40.0     1
41.0     1
42.0     1
43.0     1
44.0     1
45.0     1
46.0     1
47.0     1
48.0     1
49.0     1
50.0     1
51.0     1
52.0     1
53.0     1
54.0     1
55.0     1
56.0     1
57.0     1
58.0     1
59.0     1
60.0     1
61.0     1
62.0     1
63.0     1
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65.0     1
66.0     1
67.0     1
68.0     1
69.0     1
70.0     1
71.0     1
72.0     1
73.0     1
74.0     1
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76.0     1
77.0     1
78.0     1
79.0     1
80.0     1
81.0     1
82.0     1
83.0     1
84.0     1
85.0     1
86.0     1
87.0     1
88.0     1
89.0     1
90.0     1
91.0     1
92.0     1
93.0     1
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96.0     1
97.0     1
98.0     1
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131.0    1
132.0    1
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134.0    1
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143.0    1
144.0    1
145.0    1
146.0    1
147.0    1
148.0    1
149.0    1
150.0    1
151.0    1
152.0    1
153.0    1
154.0    1
155.0    1
156.0    1
157.0    1
158.0    1
159.0    1
160.0    1
161.0    1
162.0    1
163.0    1
164.0    1
165.0    1
166.0    1
167.0    1
168.0    1
169.0    1
170.0    1
171.0    1
172.0    1
173.0    1
174.0    1
175.0    1
176.0    1
177.0    1
178.0    1
179.0    1
180.0    1
181.0    1
182.0    1
183.0    1
184.0    1
185.0    1
186.0    1
187.0    1
188.0    1
189.0    1
190.0    1
191.0    1
192.0    1
193.0    1
194.0    1
195.0    1
196.0    1
197.0    1
198.0    1
199.0    1
200.0    1
201.0    1
202.0    1
203.0    1
204.0    1
205.0    1
206.0    1
207.0    1
208.0    1
209.0    1
210.0    1
211.0    1
212.0    1
213.0    1
214.0    1
215.0    1
216.0    1
217.0    1
218.0    1
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220.0    1
221.0    1
222.0    1
223.0    1
224.0    1
225.0    1
226.0    1
227.0    1
228.0    1
229.0    1
230.0    1
231.0    1
232.0    1
233.0    1
234.0    1
235.0    1
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238.0    1
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247.0    1
248.0    1
249.0    1
250.0    1
251.0    1
252.0    1
253.0    1
254.0    1
255.0    1
256.0    1
257.0    1
258.0    1
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261.0    1
262.0    1
263.0    1
264.0    1
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267.0    1
268.0    1
269.0    1
270.0    1
271.0    1
272.0    1
273.0    1
274.0    1
275.0    1
276.0    1
277.0    1
278.0    1
279.0    1
280.0    1
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```

```
10.0      1
43.0      1
12.0      1
Name: n_likes, dtype: int64,
0.0      89
1.0      2
4.0      1
3.0      1
2.0      1
6.0      1
Name: n_replies, dtype: int64)
```

```
In [126]: df_fuc1.query('username == "kingskippy1987"').date.value_counts()
```

```
Out[126]:
```

date	count
2020-12-11	55
2020-12-13	6
2021-01-08	5
2020-12-16	4
2020-12-21	3
2020-12-14	3
2020-12-15	3
2020-12-20	3
2020-12-12	2
2020-12-28	2
2020-12-17	2
2020-11-10	2
2020-12-07	2
2020-12-03	2
2020-11-09	1
2020-12-26	1
2020-12-01	1
2020-12-24	1
2021-01-06	1

Name: date, dtype: int64

sahartaleb__

```
In [126]: df_fuc1.query('username == "sahartaleb__"').datetime.sort_values().diff().sort_values().to_frame().value_counts().head(20)
```

```
Out[126]:
```

datetime	count
0 days 00:00:10	5
0 days 00:00:08	3
0 days 00:00:13	3
0 days 00:00:11	2
0 days 00:00:12	2
0 days 00:00:14	2
0 days 00:00:15	2
0 days 00:00:18	2
0 days 00:01:09	1
58 days 14:51:46	1
13 days 03:19:38	1
5 days 21:01:58	1
5 days 16:21:33	1
4 days 04:42:03	1
0 days 03:40:50	1
0 days 00:00:33	1
0 days 00:00:53	1
0 days 00:00:47	1
0 days 00:00:38	1
0 days 00:00:09	1

dtype: int64

```
In [126]: df_fuc1.query('username == "sahartaleb__"').n_likes.value_counts(), df_fuc1.query(
    'username == "sahartaleb__"')
).n_replies.value_counts()
```

```
Out[126]:
```

n_likes	count
1.0	17
0.0	16
2.0	2
11.0	1
3.0	1

Name: n_likes, dtype: int64,

n_replies	count
0.0	33
1.0	1

Name: n_replies, dtype: int64)

```
In [126]: df_fuc1.query('username == "sahartaleb__"').date.value_counts()
```

```
Out[126]:
```

date	count
2021-02-11	30
2020-12-15	2
2021-02-27	1
2021-07-06	1
2021-02-17	1
2020-12-01	1
2021-02-21	1

Name: date, dtype: int64

zhra.006

```
In [127]: df_fuc1.query('username == "zhra.006"').datetime.sort_values().diff().sort_values()
```

```
Out[127]:
```

datetime
679720 0 days 00:00:04
1429351 0 days 00:00:04
908150 0 days 00:00:04
658408 0 days 00:00:04
1458450 0 days 00:00:05
1189341 0 days 00:00:05
1639958 0 days 00:00:05
135430 0 days 00:00:05
1346161 0 days 00:00:05
364346 0 days 00:00:06
1623454 0 days 00:00:06
1103151 0 days 00:00:06
319768 0 days 00:00:06
448931 0 days 00:00:07
645213 0 days 00:00:07

```
1283506 0 days 00:00:07
1275153 0 days 00:00:07
745636 0 days 00:00:07
951800 0 days 00:00:07
1058530 0 days 00:00:07
596730 0 days 00:00:07
311501 0 days 00:00:07
1198632 0 days 00:00:07
381534 0 days 00:00:07
746113 0 days 00:00:07
693824 0 days 00:00:07
1595556 0 days 00:00:07
117283 0 days 00:00:08
1089280 0 days 00:00:10
1546050 0 days 00:00:11
1488298 0 days 00:00:24
1655907 9 days 02:59:55
531082 9 days 16:56:30
1553725 9 days 23:54:40
1695601 NaT
Name: datetime, dtype: timedelta64[ns]
```

```
In [127]: df_fuc1.query('username == "zhra.006"').n_likes.value_counts(), df_fuc1.query(
    'username == "zhra.006"'
).n_replies.value_counts()
```

```
Out[127]: (0.0 31
1.0 4
Name: n_likes, dtype: int64,
0.0 35
Name: n_replies, dtype: int64)
```

```
In [127]: df_fuc1.query('username == "zhra.006"').date.value_counts()
```

```
Out[127]: 2021-02-11 32
2021-03-03 1
2021-02-21 1
2021-03-12 1
Name: date, dtype: int64
```

ngnrzi

```
In [127]: df_fuc1.query('username == "ngnrzi"').datetime.sort_values().diff().sort_values()
```

```
Out[127]: 314318 0 days 00:00:01
314320 0 days 00:00:01
314314 0 days 00:00:02
314316 0 days 00:00:02
314317 0 days 00:00:02
314319 0 days 00:00:02
314321 0 days 00:00:02
314331 0 days 00:00:02
314333 0 days 00:00:02
314325 0 days 00:00:03
314327 0 days 00:00:04
314330 0 days 00:00:04
314332 0 days 00:00:04
314323 0 days 00:00:04
314329 0 days 00:00:05
314328 0 days 00:00:05
314322 0 days 00:00:05
314334 0 days 00:00:07
314326 0 days 00:00:17
314315 0 days 00:00:18
314324 0 days 00:00:29
314313 NaT
Name: datetime, dtype: timedelta64[ns]
```

```
In [127]: df_fuc1.query('username == "ngnrzi"').n_likes.value_counts(), df_fuc1.query(
    'username == "zhra.006"'
).n_replies.value_counts()
```

```
Out[127]: (1.0 22
Name: n_likes, dtype: int64,
0.0 35
Name: n_replies, dtype: int64)
```

```
In [127]: df_fuc1.query('username == "ngnrzi"').date.value_counts()
```

```
Out[127]: 2020-11-09 22
Name: date, dtype: int64
```

c_shortt

```
In [127]: df_fuc1.query('username == "c_shortt"').datetime.sort_values().diff().sort_values()
```

```
Out[127]: 837863 0 days 00:00:04
424219 0 days 00:00:05
204289 0 days 00:00:05
1223660 0 days 00:00:06
837861 0 days 00:00:08
366749 0 days 00:00:08
1037198 0 days 00:00:08
1084150 0 days 00:00:08
366746 0 days 00:00:11
155509 0 days 00:00:13
554433 0 days 00:00:15
1225504 0 days 00:00:19
837864 0 days 00:00:19
203507 0 days 00:00:36
663617 0 days 00:00:54
871784 0 days 00:02:05
837859 0 days 00:26:41
1310789 0 days 01:12:57
663615 0 days 13:25:22
102981 NaT
```

```
Name: datetime, dtype: timedelta64[ns]

In [127]: df_fuc1.query('username == "c_shortt"').n_likes.value_counts(), df_fuc1.query(
    'username == "c_shortt"'
).n_replies.value_counts()

Out[127]: (1.0    7
0.0    4
3.0    3
5.0    2
4.0    2
2.0    1
14.0   1
Name: n_likes, dtype: int64,
0.0    14
1.0    2
Name: n_replies, dtype: int64)

In [127]: df_fuc1.query('username == "c_shortt"').date.value_counts()

Out[127]: 2020-11-12    18
2020-11-11     2
Name: date, dtype: int64

johnnydepp_gothic

In [127]: df_fuc1.query('username == "johnnydepp_gothic"').datetime.sort_values().diff().sort_values()

Out[127]: 801015    0 days 00:00:04
353131    0 days 00:00:05
1608741    0 days 00:00:07
385220    0 days 00:00:10
1243824    0 days 00:00:11
1740391    0 days 00:00:16
302480    0 days 00:00:21
1544631    0 days 00:00:55
1544458    0 days 01:20:17
1544507    0 days 18:44:08
503583    0 days 22:43:39
656813    1 days 00:25:43
1663227    8 days 01:00:15
1253774   10 days 21:09:47
926458   13 days 22:14:18
1361828   17 days 01:44:59
1314855   20 days 16:33:06
623234   27 days 06:45:25
1360933          NaT
Name: datetime, dtype: timedelta64[ns]

In [128]: df_fuc1.query('username == "johnnydepp_gothic"').n_likes.value_counts(), df_fuc1.query(
    'username == "johnnydepp_gothic"'
).n_replies.value_counts()

Out[128]: (0.0    8
1.0    2
2.0    2
5.0    2
13.0   1
10.0   1
24.0   1
8.0    1
17.0   1
Name: n_likes, dtype: int64,
0.0    16
1.0    2
Name: n_replies, dtype: int64)

In [128]: df_fuc1.query('username == "johnnydepp_gothic"').date.value_counts()

Out[128]: 2020-11-09    5
2021-02-17    4
2020-12-29    3
2020-12-28    1
2020-11-10    1
2021-01-12    1
2020-12-01    1
2020-11-08    1
2021-02-06    1
2021-01-20    1
Name: date, dtype: int64

johnny.depp.is.innocent

In [128]: df_fuc1.query('username == "johnny.depp.is.innocent"').datetime.sort_values().diff().sort_values()

Out[128]: 926413    0 days 00:00:01
1643074    0 days 00:00:54
1410212    0 days 00:01:06
535473    0 days 00:01:42
922724    0 days 00:02:08
961273    0 days 00:04:20
234298    1 days 00:53:43
926412   68 days 00:56:39
1120475  108 days 23:49:45
1200539          NaT
Name: datetime, dtype: timedelta64[ns]

In [128]: df_fuc1.query('username == "johnny.depp.is.innocent"').n_likes.value_counts(), df_fuc1.query(
    'username == "johnny.depp.is.innocent"'
).n_replies.value_counts()

Out[128]: (1.0    5
0.0    3
3.0    1
2.0    1
Name: n_likes, dtype: int64,
```

```
0.0    9  
Name: n_replies, dtype: int64)
```

```
In [128]: df_fuc1.query('username == "johnny.depp.is.innocent").date.value_counts()
```

```
Out[128]:  
2021-05-08    5  
2021-01-19    3  
2020-11-11    1  
2020-11-10    1  
Name: date, dtype: int64
```

F*ck Amber Heard

- Top Users:

- kingskippy1987 99
 - created around April 2019
 - 136 posts
 - 88 followers
 - 98 following
 - 55 comments in 2020-12-11.
 - most comments have 0 likes and 0 replies.
 - comments were made within seconds.
- sahartaleb___ 37
 - created around 15 December 2020
 - 0 posts
 - 42 followers
 - 37 following
 - most comments has one like, no replies.
 - 30 comments in 2021-02-11
- zhra.006 35
 - user not found
 - 32 comments contain amber turd in 11 feb 2021
 - time difference of comments is only seconds!
 - most comments has no likes or replies.
- ngnrzi 22
 - user not found.
 - all comments were made in the same day 2020-11-09.
 - all comments has 1 like, 0 reply.
 - all comments within seconds.
- c_shortt 20
 - created around February 2017.
 - 681 posts
 - 3,006 followers
 - 2,265 following
 - private account.
 - comments were made in 2 days:
 - 2020-11-12 18
 - 2020-11-11 2
 - low number of likes 1 or 0.
 - most comments within seconds.
- johnnydepp_gothic 19
 - 131 posts
 - 2,176 followers
 - 336 following
 - created around 15 January 2020
 - has variety of number of replies and likes on his comments but most of them are 0.
 - made comments in those dates:
 - 2020-11-09 5
 - 2021-02-17 4
 - 2020-12-29 3
- johnny.depp.is.innocent 10
 - 3 posts
 - 195 followers
 - 116 following
 - made posts in those dates:
 - 2021-05-08 5
 - 2021-01-19 3
 - 2020-11-10 1
 - 2020-11-11 1
 - 0 likes on comments.
 - has some replies in his comments.
 - created around 15 December 2020.
- ...

Amber Heard is a liar

- Negative Comments
- Amber Turd
- Fuck Amber Heard
- **Amber Heard is a liar**
- Amber Heard is a abuser
- Fire Amber Heard
- Support Amber Heard

```
In [128]: liar = [i for i in top_texts if 'liar' in i]
liar
['#amberheardisalier', '#amberheardisaliar']

Out[128]: 

In [128]: # Comments that contains Liar but don't contain "Amber"
df_liar = df_comments[df_comments.message.str.contains('liar')]
df_liar[~df_liar.message.str.contains('amber')].message.value_counts().head(20)

Out[128]: 
liar
61
classic liar█████justice for #johnnydepp
6
she is a liar
6
she's a liar
5
liar and abuser
5
liar!
4
face of a liar█████justice for #johnnydepp
4
#anyataylorjoy #thequeensgambit #queensgambit #netflix \n#tarantino #christophernolan #peterjackson #davidfincher #alfredhitchcock #filmogray #cinema #m
ovie #jamesmcavoy #sinema #movies #lityler #leaseydoux #rachelweisz #rachelmcadams #marioncotillard #emiliaclarke #reneezellweger #harrypotter #forrest
gump #juliarooberts #split #lalaland #emmastone #love #emmawatson #ryangosling      3
you are a liar
3
this woman is a bitch liar
3
liar.
3
liar!!!
3
liar bitch ██████████
2
@w00rth he says she says but he gets the benefit of the doubt. familiar story.
2
justice has finally been done, this hideous, silly, manipulative, abusive, liar and useless woman got what she deserved and i sincerely hope that for he
r the worst is yet to come. of course this decision does not fully satisfy us, they should have fired her for being an abuser but even this reason is
better than nothing. now it's the others' turn to call her "fat"          2
shes a liar
2
she's a liar
2
i hate abusers and liars
2
liar...
2
liar ██████████
2
Name: message, dtype: int64

In [128]: df_liar.message.value_counts().head(10)

Out[128]: 
@johnnydepp #wearewithyoujohnnydepp #amberheardisalier #justiceforjohnnydepp #wearewithyoujohnnydepp #johnnydepp #amberheard #fuckthesun
124
#[maleficent #super8 #gingerandrosa #weboughtazoo #maryshelley #theneondemon #galveston #thebeguiled #aboutray #ithinkwearealonow #20thcenturywomen #
owtalktogiirlsatparties #teenspirit #sidneyhall #allthebrightplaces #dakotafanning #angelinajolie #chloemoretz #nicolekidman #annehathaway #amberheard
#lilycollins #lucyhale #lilyjames #kristenstewart #juliarooberts #caradelevingne]
117
#amberheardisalier
76
liar
61
#amberheard #amberheardisanabuser #amberheardabusedjohnnydepp #amberheardisanabuserandliar #amberheardfans #johnnydepp #johnnydeppisinnocent #johnnydepp
forever
51
everyone who is a fan of amber heard please look and at the evidence she is an abuser and a bad person! i know its hard to look at someone you really l
ove and possibly is your hero but she needs to be in jail and be punished for what she has done to johnny depp! please just watch a few videos with real
evidence and it will be very clear who the abuser is! #johnnydeppisinnocent #boycottthesun #istandwithjohnnydepp #amberheardisanabuser #johnnyisinnocent
#johnnyismycaptainjacksparrow #ihateamberheard #amberheardisalier #boycottfantasticbeasts #boycottwarnerbros #johnnydeppismyhero #depphead #deppfamily #
thesunisalialia #deppheadfamily #werewithyoujohnnydepp      44
#amberheardisanabuserandliar
42
#justiceforjohnnydepp #amberheardisanabuser #amberturd #amberheardisalier #johnnydeppisinnocent #boycottthesun #boycottwarnerbros #boycottamberhe
ard #wearewithyoujohnnydepp #johnnydeppismyhero #fuckthesun #fuckamberheard
32
#amberisalier
27
#justiceforjohnnydepp #amberheardisanabuser #amberturd #amberheardisalier #johnnydeppisinnocent #boycottthesun #boycottwarnerbros #boycottamberhe
ard #wearewithyoujohnnydepp #johnnydeppismyhero #fuckthesun #fuckamberheard
26
Name: message, dtype: int64
```

A Heat Map for the Count of Comments Containing "Liar"

```
In [128]: daily_counts = df_liar.groupby(['year', 'dayofmonth', 'month']).size().reset_index(name='count')
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']

def draw heatmap(*args, **kwargs):
```

```

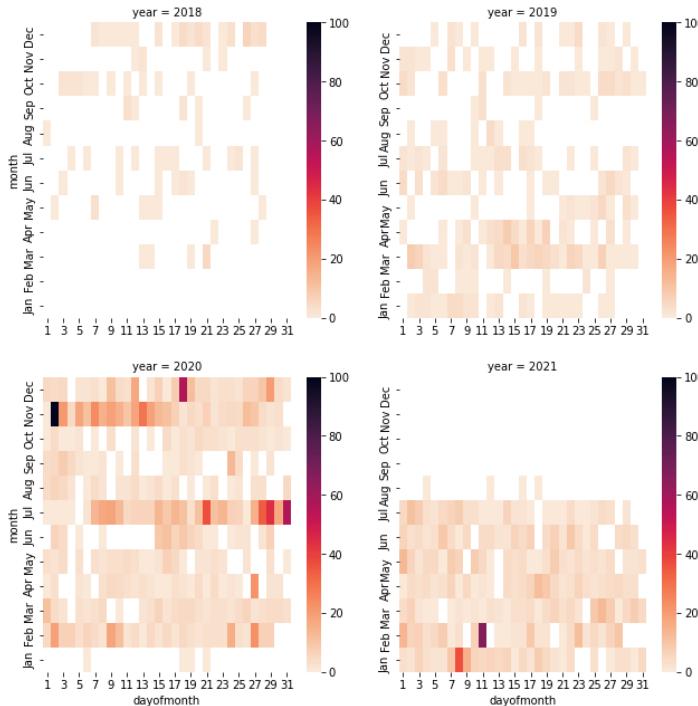
    data = kwargs.pop('data')
    d = data.pivot(index=args[1], columns=args[0], values=args[2])
    d = d.reindex(index=months[::-1])
    sb.heatmap(d, **kwargs)

g = sb.FacetGrid(daily_counts, col='year', col_wrap=2, height=4.5)
g.map_dataframe(draw_heatmap, 'dayofmonth', 'month', 'count', cmap='rocket_r', vmin=0, vmax=100);

plt.suptitle('A Heat Map for the Count of Comments Containing "Liar"', y=1.04, fontsize=18)
g.fig.subplots_adjust(wspace=0.15, hspace=0.2)
for axis in g.axes.flat:
    axis.tick_params(labelbottom=True, labelleft=True)

```

A Heat Map for the Count of Comments Containing "Liar"



In [128]:

len(df_liar)

Out[128]:

3134

Most Repeated Comments Containing "Liar"

```

df = df_liar.groupby(['message']).agg({'id':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
df.rename(columns={'id':'repeated_times'}, inplace=True)

df.sort_values('repeated_times', ascending=False).head(25)

```

Out[129]:

	message	repeated_times	n_likes	n_replies
616	@johnnydepp #wearewithyoujohnnydepp #amberheard...	124	23.0	0.0
943	#maleficent #super8 #gingerandrosa #weboughta...	117	13.0	0.0
50	#amberheardisalilar	76	331.0	1.0
1509	liar	61	18.0	0.0
25	#amberheard #amberheardisanabuser #amberhearda...	51	3.0	0.0
1229	everyone who is a fan of amber heard please l...	44	76.0	63.0
91	#amberheardisanabuserandliar	42	112.0	3.0
2236	.#justiceforjohnnydepp #amberheardisanabuser ...	32	3.0	0.0
113	#amberisalilar	27	124.0	0.0
209	#justiceforjohnnydepp #amberheardisanabuser ...	26	15.0	1.0
1228	everyone who is a fan and is following her fan...	14	42.0	8.0
70	#amberheardisanabuser #amberheardisalilar	14	50.0	1.0
914	@wewantjusticeforjohnnydepp #johnnydepp #amber...	12	1.0	0.0
191	#johnnydeppisanangel #johnnydeppisinnocent #ju...	10	81.0	2.0
615	@johnnydepp #wearewithyoujohnnydepp #amberhear...	9	9.0	0.0
230	#justiceforjohnnydepp #amberisalilar #amberisan...	9	12.0	1.0
192	#johnnydeppisanangel #johnnydeppisinnocent #ju...	8	0.0	0.0
920	@wewantjusticeforjohnnydepp #justiceforjohnnyd...	8	4.0	0.0
107	#amberheardisalilar	7	12.0	0.0
1160	classic liar👉👩‍🦰👩‍🦳👩‍🦲justice for #johnnydepp	6	0.0	0.0
1803	she is a liar	6	3.0	0.0
265	#nicolekidman #jenniferlawrence #naomiwatts #s...	6	0.0	0.0
86	#amberheardisanabuser #amberisalilar 🌸	5	12.0	1.0

#	Text	date	n_comments	n_likes	n_replies
1939	she's a liar		5	0.0	0.0
270	#scarlettjohansson #lucyhale #emmastone #galga...		5	0.0	0.0

Top Users Commented with "Liar"

In [129...]	# The total number of different users posted justiceforjohnnydepp df_liar.username.nunique()	Out[129...]	1786																																																																																																																																		
In [129...]	df_nliar = df_liar.groupby(['username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index() .rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False) df_nliar.head(25)	Out[129...]																																																																																																																																			
			<table border="1"> <thead> <tr> <th></th> <th>username</th> <th>n_comments</th> <th>n_likes</th> <th>n_replies</th> </tr> </thead> <tbody> <tr><td>603</td><td>feelselle</td><td>71</td><td>13.0</td><td>0.0</td></tr> <tr><td>1392</td><td>queenmusicvidoe</td><td>70</td><td>14.0</td><td>0.0</td></tr> <tr><td>165</td><td>amberheardabottleofwineopen</td><td>51</td><td>3.0</td><td>0.0</td></tr> <tr><td>1413</td><td>razaopetraglia</td><td>48</td><td>0.0</td><td>0.0</td></tr> <tr><td>1483</td><td>samanthastar53</td><td>46</td><td>78.0</td><td>7.0</td></tr> <tr><td>884</td><td>johnnyforever_2005</td><td>43</td><td>79.0</td><td>63.0</td></tr> <tr><td>1391</td><td>queenmusicvideo</td><td>41</td><td>0.0</td><td>0.0</td></tr> <tr><td>1782</td><td>zhra.006</td><td>41</td><td>57.0</td><td>2.0</td></tr> <tr><td>1725</td><td>wewantjusticeforjohnnydepp</td><td>37</td><td>7.0</td><td>0.0</td></tr> <tr><td>1476</td><td>sahartaleb___</td><td>34</td><td>20.0</td><td>1.0</td></tr> <tr><td>249</td><td>babikate6</td><td>33</td><td>11.0</td><td>0.0</td></tr> <tr><td>874</td><td>johnnydepp_gothic</td><td>28</td><td>135.0</td><td>2.0</td></tr> <tr><td>1107</td><td>machelyyyy</td><td>26</td><td>20.0</td><td>2.0</td></tr> <tr><td>932</td><td>kai_t_2005</td><td>24</td><td>45.0</td><td>10.0</td></tr> <tr><td>850</td><td>jmj.fan</td><td>21</td><td>7.0</td><td>0.0</td></tr> <tr><td>302</td><td>blancx_agender</td><td>20</td><td>20.0</td><td>1.0</td></tr> <tr><td>282</td><td>bersabel6</td><td>18</td><td>4.0</td><td>0.0</td></tr> <tr><td>835</td><td>jdbestmoments</td><td>18</td><td>21.0</td><td>2.0</td></tr> <tr><td>1734</td><td>willie_jones81</td><td>17</td><td>0.0</td><td>0.0</td></tr> <tr><td>1416</td><td>red12blue10.green</td><td>16</td><td>6.0</td><td>0.0</td></tr> <tr><td>1264</td><td>natchayaleejin</td><td>15</td><td>51.0</td><td>0.0</td></tr> <tr><td>52</td><td>_dope_black_unicorn_</td><td>15</td><td>44.0</td><td>2.0</td></tr> <tr><td>1235</td><td>mr_mooresky_cosplay</td><td>13</td><td>28.0</td><td>1.0</td></tr> <tr><td>1103</td><td>m_~sp</td><td>12</td><td>0.0</td><td>0.0</td></tr> <tr><td>864</td><td>johnny.depp_____</td><td>12</td><td>27.0</td><td>3.0</td></tr> </tbody> </table>		username	n_comments	n_likes	n_replies	603	feelselle	71	13.0	0.0	1392	queenmusicvidoe	70	14.0	0.0	165	amberheardabottleofwineopen	51	3.0	0.0	1413	razaopetraglia	48	0.0	0.0	1483	samanthastar53	46	78.0	7.0	884	johnnyforever_2005	43	79.0	63.0	1391	queenmusicvideo	41	0.0	0.0	1782	zhra.006	41	57.0	2.0	1725	wewantjusticeforjohnnydepp	37	7.0	0.0	1476	sahartaleb___	34	20.0	1.0	249	babikate6	33	11.0	0.0	874	johnnydepp_gothic	28	135.0	2.0	1107	machelyyyy	26	20.0	2.0	932	kai_t_2005	24	45.0	10.0	850	jmj.fan	21	7.0	0.0	302	blancx_agender	20	20.0	1.0	282	bersabel6	18	4.0	0.0	835	jdbestmoments	18	21.0	2.0	1734	willie_jones81	17	0.0	0.0	1416	red12blue10.green	16	6.0	0.0	1264	natchayaleejin	15	51.0	0.0	52	_dope_black_unicorn_	15	44.0	2.0	1235	mr_mooresky_cosplay	13	28.0	1.0	1103	m_~sp	12	0.0	0.0	864	johnny.depp_____	12	27.0	3.0
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In [129...]	neg_users = neg_users set(df_nliar.username)
In [129...]	barh(get_top(df_nliar, 'username', 15, 'username', 'n_comments'), 'Top users commented "Amber Heard is a Liar"', 20)

"Amber Heard is a Liar" Users Contributions on Each Date

In [129...]	df = df_liar.groupby(['date', 'username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index() .rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False) df.head(15)	Out[129...]																																																																																																	
		<table border="1"> <thead> <tr> <th></th> <th>date</th> <th>username</th> <th>n_comments</th> <th>n_likes</th> <th>n_replies</th> </tr> </thead> <tbody> <tr><td>1287</td><td>2020-11-02</td><td>queenmusicvidoe</td><td>70</td><td>14.0</td><td>0.0</td></tr> <tr><td>1107</td><td>2020-07-31</td><td>amberheardabottleofwineopen</td><td>51</td><td>3.0</td><td>0.0</td></tr> <tr><td>1286</td><td>2020-11-02</td><td>queenmusicvideo</td><td>41</td><td>0.0</td><td>0.0</td></tr> <tr><td>1274</td><td>2020-11-02</td><td>babikate6</td><td>33</td><td>11.0</td><td>0.0</td></tr> <tr><td>1849</td><td>2021-02-11</td><td>zhra.006</td><td>32</td><td>3.0</td><td>0.0</td></tr> <tr><td>1847</td><td>2021-02-11</td><td>sahartaleb___</td><td>30</td><td>18.0</td><td>1.0</td></tr> <tr><td>674</td><td>2020-04-27</td><td>blancx_agender</td><td>19</td><td>18.0</td><td>1.0</td></tr> <tr><td>1555</td><td>2020-12-12</td><td>johnnyforever_2005</td><td>16</td><td>30.0</td><td>58.0</td></tr> <tr><td>537</td><td>2020-02-27</td><td>razaopetraglia</td><td>15</td><td>0.0</td><td>0.0</td></tr> <tr><td>527</td><td>2020-02-24</td><td>razaopetraglia</td><td>15</td><td>0.0</td><td>0.0</td></tr> <tr><td>1283</td><td>2020-11-02</td><td>m_~sp</td><td>12</td><td>0.0</td><td>0.0</td></tr> <tr><td>1212</td><td>2020-09-24</td><td>machelyyyy</td><td>12</td><td>0.0</td><td>0.0</td></tr> <tr><td>1285</td><td>2020-11-02</td><td>purpleh_bh</td><td>11</td><td>0.0</td><td>0.0</td></tr> <tr><td>1290</td><td>2020-11-02</td><td>spark_fans</td><td>10</td><td>5.0</td><td>0.0</td></tr> <tr><td>1808</td><td>2021-02-01</td><td>johnny.depp_____</td><td>10</td><td>17.0</td><td>1.0</td></tr> </tbody> </table>		date	username	n_comments	n_likes	n_replies	1287	2020-11-02	queenmusicvidoe	70	14.0	0.0	1107	2020-07-31	amberheardabottleofwineopen	51	3.0	0.0	1286	2020-11-02	queenmusicvideo	41	0.0	0.0	1274	2020-11-02	babikate6	33	11.0	0.0	1849	2021-02-11	zhra.006	32	3.0	0.0	1847	2021-02-11	sahartaleb___	30	18.0	1.0	674	2020-04-27	blancx_agender	19	18.0	1.0	1555	2020-12-12	johnnyforever_2005	16	30.0	58.0	537	2020-02-27	razaopetraglia	15	0.0	0.0	527	2020-02-24	razaopetraglia	15	0.0	0.0	1283	2020-11-02	m_~sp	12	0.0	0.0	1212	2020-09-24	machelyyyy	12	0.0	0.0	1285	2020-11-02	purpleh_bh	11	0.0	0.0	1290	2020-11-02	spark_fans	10	5.0	0.0	1808	2021-02-01	johnny.depp_____	10	17.0	1.0	
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"Amber Heard is a Liar" Peak Dates

```
In [129... df = df_liar.groupby(['date']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

df.head(15)
```

```
Out[129...      date  n_comments  n_likes  n_replies
470  2020-11-02       229     61.0      12.0
565  2021-02-11       67      24.0      1.0
514  2020-12-18       57     197.0      0.0
401  2020-07-31       57      29.0      7.0
399  2020-07-29       44      60.0      1.0
391  2020-07-21       37      49.0      3.0
535  2021-01-08       37     126.0      6.0
398  2020-07-28       34      77.0      0.0
481  2020-11-13       29      34.0      4.0
475  2020-11-07       24      13.0      1.0
277  2020-02-27       23      31.0      0.0
329  2020-04-27       22      19.0      1.0
471  2020-11-03       21      80.0      0.0
525  2020-12-29       20     107.0      0.0
482  2020-11-14       19      20.0      0.0
```

```
In [129... df_liar['datetime'].max()
```

```
Out[129... Timestamp('2021-08-18 23:13:18')
```

```
In [129... df_liar['datetime'].min()
```

```
Out[129... Timestamp('2018-03-14 02:55:42')
```

```
In [129... fig = (
    px.bar(
        get_top(df_liar, "date", df_liar.shape[0], "date", "n_comments"),
        x="date",
        y="n_comments",
        title="Peak days of 'Amber Heard is Liar' comments",
    )
    .update_traces(
        marker_color="red",
        opacity=1,
        textposition="auto",
        marker_line_color="red",
        marker_line_width=0.5,
    )
    .update_xaxes(tickangle=45)
)
fig.show("svg")
```

```
In [130... bar_peaks(
    get_top(df_liar, "date", 10, "date", "n_comments").sort_values("date"),
    "title",
)
```

Time difference

```
In [130... df_liar.datetime.sort_values().diff().sort_values().value_counts().head(15)
```

```
Out[130... 0 days 00:00:04    52
0 days 00:00:03    47
0 days 00:00:05    44
0 days 00:00:02    42
0 days 00:00:08    31
0 days 00:00:07    30
0 days 00:00:06    29
0 days 00:00:10    20
0 days 00:00:13    16
0 days 00:00:01    16
0 days 00:00:12    11
0 days 00:00:11    10
0 days 00:00:09    10
0 days 00:00:14    10
0 days 00:00:17    10
Name: datetime, dtype: int64
```

```
In [130... df_liar.username.value_counts().head(15)
```

```
Out[130... feelselle                71
queenmusicvideoe               70
amberheardabottleofwineopen   51
razaopetraglia                 48
samanthastar53                  46
johnnyforever_2005                 43
zhra.006                         41
queenmusicvideoe                  41
```

```
wewantjusticeforjohnnydepp    37
sahartaleb____    34
babikate6    33
johnnydepp_gothic    28
machelyyyy    26
kai_t_2005    24
jmj_fan    21
Name: username, dtype: int64
```

queenmusicvideoe

```
In [130]: df_liar.query('username == "queenmusicvideoe"').datetime.sort_values().diff().sort_values().to_frame().value_counts().head(20)
```

```
Out[130]: datetime
0 days 00:00:05    11
0 days 00:00:04    10
0 days 00:00:02     8
0 days 00:00:06     7
0 days 00:00:08     6
0 days 00:00:03     5
0 days 00:00:07     4
0 days 00:00:09     4
0 days 00:00:13     2
0 days 00:00:01     1
0 days 00:00:26     1
0 days 00:07:08     1
0 days 00:04:31     1
0 days 00:01:08     1
0 days 00:00:40     1
0 days 00:00:12     1
0 days 00:00:25     1
0 days 00:00:15     1
0 days 00:00:14     1
0 days 00:00:10     1
dtype: int64
```

```
In [130]: df_liar.query('username == "queenmusicvideoe"').n_likes.value_counts(), df_liar.query(
    'username == "queenmusicvideoe"'
).n_replies.value_counts()
```

```
Out[130]: (0.0    65
1.0     4
10.0    1
Name: n_likes, dtype: int64,
0.0    70
Name: n_replies, dtype: int64)
```

```
In [130]: df_liar.query('username == "queenmusicvideoe"').date.value_counts()
```

```
Out[130]: 2020-11-02    70
Name: date, dtype: int64
```

johnnyforever_2005

```
In [130]: df_liar.query('username == "johnnyforever_2005"').datetime.sort_values().diff().sort_values().to_frame().value_counts().head(20)
```

```
Out[130]: datetime
0 days 00:00:42     2
0 days 00:00:10     2
0 days 00:00:08     2
0 days 00:00:15     2
0 days 00:00:30     2
0 days 23:16:54     1
0 days 00:01:43     1
0 days 00:03:05     1
0 days 00:03:08     1
0 days 00:03:59     1
0 days 08:46:06     1
1 days 07:26:00     1
0 days 00:01:10     1
1 days 14:42:50     1
1 days 16:44:28     1
3 days 02:06:39     1
9 days 22:54:10     1
13 days 08:25:56     1
18 days 01:17:14     1
0 days 00:01:11     1
dtype: int64
```

```
In [130]: df_liar.query('username == "johnnyforever_2005"').n_likes.value_counts(), df_liar.query(
    'username == "johnnyforever_2005"'
).n_replies.value_counts()
```

```
Out[130]: (0.0    24
1.0     7
2.0     5
4.0     3
3.0     2
28.0    1
16.0    1
Name: n_likes, dtype: int64,
0.0    35
1.0     4
2.0     1
47.0    1
10.0    1
Name: n_replies, dtype: int64)
```

```
In [130]: df_liar.query('username == "johnnyforever_2005"').date.value_counts()
```

```
Out[130]: 2020-12-12    16
2020-12-17     6
2021-01-18     5
2021-01-08     5
2020-12-20     4
```

```
2021-01-31      3
2021-04-16      1
2020-12-18      1
2020-12-15      1
2020-12-21      1
Name: date, dtype: int64
```

queenmusicvideo

```
In [130]: df_liar.query('username == "queenmusicvideo"').datetime.sort_values().diff().sort_values().to_frame().value_counts().head(20)
```

```
Out[130]:
```

datetime	count
0 days 00:00:03	9
0 days 00:00:02	8
0 days 00:00:05	5
0 days 00:00:04	3
0 days 00:00:06	2
0 days 00:00:31	1
0 days 00:38:00	1
0 days 00:29:27	1
0 days 00:11:31	1
0 days 00:00:50	1
0 days 00:00:37	1
0 days 00:00:18	1
0 days 00:00:20	1
0 days 00:00:17	1
0 days 00:00:13	1
0 days 00:00:12	1
0 days 00:00:10	1
0 days 00:48:49	1

```
dtype: int64
```

```
In [131]: df_liar.query('username == "queenmusicvideo"').n_likes.value_counts(), df_liar.query(
    'username == "queenmusicvideo"'
).n_replies.value_counts()
```

```
Out[131]:
```

username	n_likes	n_replies
queenmusicvideo	41	41

```
Name: n_likes, dtype: int64,
Name: n_replies, dtype: int64
```

```
In [131]: df_liar.query('username == "queenmusicvideo"').date.value_counts()
```

```
Out[131]:
```

date	count
2020-11-02	41

```
Name: date, dtype: int64
```

Amber Heard is Liar

- Top Users:
 - queenmusicvideoe 70
 - 0 posts
 - 4 followers
 - 403 following
 - created around 15 April 2020.
 - all comments (70) were made at 2020-11-02.
 - most of the 0 likes, 0 replies.
 - johnnyforever_2005 43
 - 233 posts
 - 976 followers
 - 439 following
 - comments were made in those dates:
 - 2020-12-12 16
 - 2020-12-17 6
 - 2021-01-08 5
 - 2021-01-18 5
 - ..
 - most comments were made in seconds.
 - most of the 0 likes, 0 replies.
 - queenmusicvideo 41
 - 78 posts
 - 1.813 followers
 - 235 following
 - created around 15 August 2020
 - most comments were made in seconds.
 - all comments (41) were made in one day 2020-11-02.
 - all comments 0 replies, 0 likes.
 - zhra.006 39
 - suspicious account, made all negative comments related to amber.
 - sahartaleb___ 33
 - suspicious account, made all negative comments related to amber.
 - babikate6 33
 - 0 posts
 - 5 followers
 - 21 following
 - created around 15 September 2020
 - johnnydepp_gothic 28
 - suspicious account, made all negative comments related to amber.
 - wewantjusticeforjohnnydepp 26
 - 160 posts
 - 1.049 followers
 - 169 following
 - created around 15 December 2020

- ...
- Top Dates:
 - 2020-11-02 224
 - 2021-02-11 62
 - 2020-12-18 25
 - 2021-01-08 17
 - 2020-12-12 16
 - 2020-12-29 11
 - ..

Amber Heard is a abuser

- Negative Comments
- Amber Turd
- Fuck Amber Heard
- Amber Heard is a liar
- **Amber Heard is a abuser**
- Fire Amber Heard
- Support Amber Heard

```
In [131]: abuser = [i for i in top_texts if 'abuse' in i]
abuser
Out[131]: ['#ambertheabuser', '#amberheardisanabuser']

In [131]: abuser += ['abuse', 'abusing']
```

A Heat Map for the Count of Comments Containing "abuser"

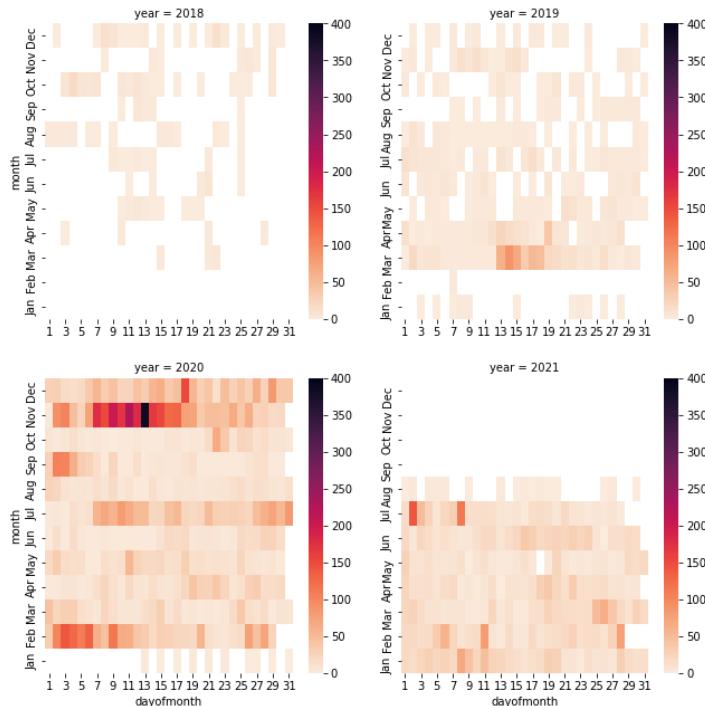
```
In [131]: df_abuser = df_comments[df_comments.message.str.contains('|'.join(abuser))]
daily_counts = df_abuser.groupby(['year', 'dayofmonth', 'month']).size().reset_index(name='count')
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']

def draw_heatmap(*args, **kwargs):
    data = kwargs.pop('data')
    d = data.pivot(index=args[1], columns=args[0], values=args[2])
    d = d.reindex(index=months[::-1])
    sb.heatmap(d, **kwargs)

g = sb.FacetGrid(daily_counts, col='year', col_wrap=2, height=4.5)
g.map_dataframe(draw_heatmap, 'dayofmonth', 'month', 'count', cmap='rocket_r', vmin=0, vmax=400);

plt.suptitle('A Heat Map for the Count of Comments Containing "abuser"', y=1.04, fontsize=18)
g.fig.subplots_adjust(wspace=0.15, hspace=0.2)
for axis in g.axes.flat:
    axis.tick_params(labelbottom=True, labelleft=True)
```

A Heat Map for the Count of Comments Containing "abuser"



```
In [131]: len(df_abuser)
Out[131]: 14793
```

Most Repeated Comments Containing "Abuser"

```
In [131]: df = df_abuser.groupby(['message']).agg({'id':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
        .rename(columns={'id':'repeated_times'})

df.sort_values('repeated_times', ascending=False).head(25)
```

	message	repeated_times	n_likes	n_replies
112	#amberheardisanabuser	432	1741.0	34.0
6515	abuser	346	794.0	21.0
271	#ambertheabuser #justiceforjohnnydepp	93	201.0	2.0
468	#justiceforjohnnydepp #amberheardisanabuser	84	337.0	9.0
176	#amberheardisanabuser #justiceforjohnnydepp	75	232.0	15.0
54	#amberheard #amberheardisanabuser #amberheara...	51	3.0	0.0
243	#amberheardistherealabuser	48	85.0	19.0
7723	everyone who is a fan of amber heard please l...	44	76.0	63.0
71	#amberheard #justiceforamberheard #johnnydepp ...	42	16.0	2.0
223	#amberheardisanabuserandliar	42	112.0	3.0
6927	amber heard is an abuser	35	127.0	26.0
256	#amberisanabuser	35	147.0	1.0
12433	,#justiceforjohnnydepp #amberheardisanabuser ...	32	3.0	0.0
453	#justiceforjohnnydepp #amberheardisanabuser ...	26	15.0	1.0
10335	she is an abuser	21	39.0	7.0
10674	she's an abuser	20	452.0	32.0
6644	abuser.	20	110.0	3.0
7594	domestic abuser	19	9.0	0.0
268	#ambertheabuser	16	32.0	0.0
28	#abuser	15	6.0	0.0
594	#justiceforjohnnydepp https://meaww.com/johnny...	15	12.0	1.0
7722	everyone who is a fan and is following her fan...	14	42.0	8.0
131	#amberheardisanabuser #amberheardisaliar	14	50.0	1.0
1221	@amberheard #justiceforjohnnydepp #ambertheabuser	13	12.0	0.0
439	#justiceforjohnny #aberheardisanabuser	13	44.0	0.0

```
In [131]: df_abuser.message.value_counts().head(10)
```

#amberheardisanabuser	432
abuser	346
#ambertheabuser #justiceforjohnnydepp	93
#justiceforjohnnydepp #amberheardisanabuser	84
#amberheardisanabuser #justiceforjohnnydepp	75
#amberheard #amberheardisanabuser #amberheardabusedjohnnydepp #amberheardisanabuserandliar #amberheardfans #johnnydepp #johnnydeppisinnocent #johnnydepp forever	51
#amberheardistherealabuser	48
everyone who is a fan of amber heard please look and at the evidence she is an abuser and a bad person! i know its hard to look at someone you really love and possibly is your hero but she needs to be in jail and be punished for what she has done to johnny depp! please just watch a few videos with real evidence and it will be very clear who the abuser is! #johnnydeppisinnocent #boycottthesun #istandwithjohnnydepp #amberheardisanabuser #johnnyisinnocent #johnnyismycaptainjacksparrow #ihateamberheard #amberheardisaliar #boycottfantasticbeasts #boycottwarnerbros #johnnydeppismyhero #depphead #deppfamily #thesunisalair #deptheadfamily #werewithyoujohnnydepp 44	
#amberheard #justiceforamberheard #johnnydepp #johnnydeppisawifebeater #johnnydeppisanabuser	42
#amberheardisanabuserandliar	42
Name: message, dtype: int64	

Top Users Commented with "Abuser"

```
In [131]: # The total number of different users posted justiceforjohnnydepp
df_abuser.username.unique()
```

```
Out[131]: 8827
```

```
In [131]: df_nabuser = df_abuser.groupby(['username']).agg({'message': 'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
        .rename(columns={'message': 'n_comments'}).sort_values('n_comments', ascending=False)

df_nabuser.head(25)
```

	username	n_comments	n_likes	n_replies
6378	pauu.eg	115	257.0	2.0
7021	samanthastar53	67	143.0	14.0
230	_dope_black_unicorn_	66	138.0	4.0
5179	mackenzilaplante	60	109.0	19.0
4336	justiceforheard	57	24.0	2.0
4180	johnnyforever_2005	53	79.0	63.0
1279	becauseitsjohnnydepp	51	546.0	7.0
804	amberheardabottleofwineopen	51	3.0	0.0

1610	c_shortt	50	154.0	5.0
6996	sahartaleb__	47	67.0	4.0
5172	machelyyyy	44	685.0	13.0
4381	kai_t_2005	42	77.0	13.0
8270	unveilyourfaves	41	1669.0	19.0
8794	zhra.006	41	59.0	2.0
8483	wewantjusticeforjohnnydepp	38	21.0	0.0
2818	eyluuulyildirim	36	205.0	0.0
2401	diann_lee	31	163.0	0.0
1430	blancx_agender	31	20.0	1.0
868	andmen.1998	31	102.0	0.0
1986	colepoff	30	118.0	0.0
4161	johnnydepp_gothic	29	117.0	2.0
3698	its_offical_sophie1	26	95.0	8.0
1585	bunaer	25	29.0	2.0
3946	jdbestmoments	24	71.0	4.0
7255	shellpoll26	24	161.0	18.0

```
In [132]: neg_users = neg_users.set(df_nabuser.username)
```

```
In [132]: barh(get_top(df_abuser, 'username', 15, 'username', 'n_comments'), 'Top users commentd "Amber Heard is an Abuser"', 30)
```

"Amber Heard is an Abuser" Users Contributions on Each Date

```
In [132]: df = df_abuser.groupby(['date', 'username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

df.head(15)
```

	date	username	n_comments	n_likes	n_replies
4633	2020-07-31	amberheardabottleofwineopen	51	3.0	0.0
6425	2020-11-11	c_shortt	32	106.0	3.0
9448	2021-02-11	zhra.006	32	3.0	0.0
9444	2021-02-11	sahartaleb__	31	19.0	1.0
3043	2020-04-22	pauu.eg	28	19.0	0.0
2995	2020-04-19	pauu.eg	27	72.0	0.0
3084	2020-04-27	blancx_agender	19	18.0	1.0
6564	2020-11-12	c_shortt	18	48.0	2.0
8137	2020-12-12	johnnyforever_2005	16	30.0	58.0
3048	2020-04-23	pauu.eg	15	56.0	1.0
8799	2020-12-31	ganeshiva_	13	12.0	0.0
2033	2020-02-11	racheltw__	12	11.0	0.0
8610	2020-12-25	kaelienunnnn	12	0.0	0.0
8256	2020-12-15	xinyimeimei_	12	29.0	0.0
1166	2019-11-10	joy4lyfe	12	14.0	0.0

"Amber Heard is an Abuser" Peak Dates

```
In [132]: df = df_abuser.groupby(['date']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

df.head(15)
```

	date	n_comments	n_likes	n_replies
605	2020-11-13	385	8118.0	112.0
603	2020-11-11	227	2588.0	51.0
601	2020-11-09	200	1494.0	35.0
604	2020-11-12	180	2999.0	38.0
599	2020-11-07	177	5054.0	156.0
602	2020-11-10	170	1553.0	59.0
606	2020-11-14	166	2704.0	74.0
607	2020-11-15	154	3384.0	69.0
640	2020-12-18	153	872.0	18.0
600	2020-11-08	152	2613.0	78.0
835	2021-07-02	142	4893.0	74.0
322	2020-02-03	141	4662.0	143.0
325	2020-02-06	132	2095.0	84.0
609	2020-11-17	130	1705.0	31.0

```
323 2020-02-04      128    964.0     37.0
```

```
In [132]: df_abuser['datetime'].max()
```

```
Out[132]: Timestamp('2021-08-30 08:34:23')
```

```
In [132]: df_abuser['datetime'].min()
```

```
Out[132]: Timestamp('2018-03-16 02:48:25')
```

```
In [132]: fig = (
    px.bar(
        get_top(df_abuser, "date", df_abuser.shape[0], "date", "n_comments"),
        x="date",
        y="n_comments",
        title="Peak days of 'Amber Heard is Liar' comments",
    )
    .update_traces(
        marker_color="red",
        opacity=1,
        textposition="auto",
        marker_line_color="red",
        marker_line_width=0.5,
    )
    .update_xaxes(tickangle=45)
)
fig.show("svg")
```

```
In [132]: bar_peaks(
    get_top(df_abuser, "date", 5, "date", "n_comments").sort_values("date"),
    "title",
)
```

Time difference

```
In [132]: df_abuser.datetime.sort_values().diff().sort_values().value_counts().head(15)
```

```
Out[132]: 0 days 00:00:05    68
0 days 00:00:07    60
0 days 00:00:08    57
0 days 00:00:04    52
0 days 00:00:06    47
0 days 00:00:10    43
0 days 00:00:15    38
0 days 00:00:11    37
0 days 00:00:13    36
0 days 00:00:18    35
0 days 00:00:09    35
0 days 00:00:02    34
0 days 00:00:03    34
0 days 00:00:31    34
0 days 00:00:22    33
Name: datetime, dtype: int64
```

```
In [132]: df_abuser.username.value_counts().head(15)
```

```
Out[132]: pauu.eg                115
samanthastar53                  67
_dope_black_unicorn_              66
mackenziplaplante                60
justiceforheard                   57
johnnyforever_2005                 53
amberheardabottleofwineopen       51
becauseitsjohnnydepp              51
c_shortt                           50
sahartaleb___                     47
machelyyyy                         44
kai_t_2005                          42
unveilyourfaves                    41
zhra.006                           41
wewantjusticeforjohnnydepp       38
Name: username, dtype: int64
```

pauu.eg

```
In [133]: df_abuser.query('username == "pauu.eg"').datetime.sort_values().diff().sort_values().to_frame().value_counts().head(20)
```

```
Out[133]: datetime
0 days 00:00:03    6
0 days 00:00:06    3
0 days 00:00:00    2
0 days 00:02:51    2
0 days 00:05:45    2
0 days 00:00:41    2
0 days 00:04:10    2
0 days 00:00:22    2
0 days 00:00:20    2
0 days 00:00:53    2
0 days 00:00:09    2
0 days 00:00:08    2
0 days 00:00:02    2
0 days 00:00:05    2
0 days 00:04:44    1
0 days 00:07:33    1
0 days 00:07:26    1
0 days 00:05:57    1
0 days 00:05:33    1
0 days 00:04:52    1
dtype: int64
```

```
In [133]: df_abuser.query('username == "pauu.eg"').n_likes.value_counts(), df_abuser.query(
    'username == "pauu.eg"'
).n_replies.value_counts()
```

```
Out[133]: (1.0      48
0.0      27
2.0      20
3.0       4
4.0       3
6.0       3
7.0       3
13.0      3
8.0       1
26.0      1
24.0      1
9.0       1
Name: n_likes, dtype: int64,
0.0      113
1.0       2
Name: n_replies, dtype: int64)
```

```
In [133]: df_abuser.query('username == "pauu.eg"').date.value_counts()
```

```
Out[133]: 2020-04-22    28
2020-04-19    27
2020-04-23    15
2020-04-20    10
2020-04-26    10
2020-04-21     9
2020-04-25     6
2020-04-18     4
2020-03-17     3
2020-05-02     2
2020-05-08     1
Name: date, dtype: int64
```

amberheardabottleofwineopen.eg

```
In [133]: df_abuser.query('username == "amberheardabottleofwineopen"').datetime.sort_values().diff().sort_values().to_frame().value_counts().head(20)
```

```
Out[133]: datetime
0 days 00:00:04    21
0 days 00:00:05    19
0 days 00:00:07     4
0 days 00:00:06     3
0 days 00:00:08     2
0 days 00:00:15     1
dtype: int64
```

```
In [133]: df_abuser.query('username == "amberheardabottleofwineopen"').n_likes.value_counts(), df_abuser.query(
    'username == "amberheardabottleofwineopen"'
).n_replies.value_counts()
```

```
Out[133]: (0.0      48
1.0       3
Name: n_likes, dtype: int64,
0.0      51
Name: n_replies, dtype: int64)
```

```
In [133]: df_abuser.query('username == "amberheardabottleofwineopen"').date.value_counts()
```

```
Out[133]: 2020-07-31    51
Name: date, dtype: int64
```

samanthastar53

```
In [133]: df_abuser.query('username == "samanthastar53"').datetime.sort_values().diff().sort_values().to_frame().value_counts().head(20)
```

```
Out[133]: datetime
0 days 00:00:44     2
1 days 23:36:55     1
0 days 14:58:54     1
0 days 16:57:47     1
0 days 19:25:05     1
0 days 20:11:48     1
0 days 20:28:43     1
0 days 23:53:33     1
1 days 00:04:43     1
1 days 00:10:33     1
1 days 00:25:44     1
1 days 04:14:32     1
1 days 05:01:16     1
1 days 13:11:27     1
1 days 13:34:38     1
1 days 17:13:42     1
0 days 00:00:15     1
0 days 13:08:12     1
2 days 18:17:54     1
2 days 22:54:47     1
dtype: int64
```

```
In [133]: df_abuser.query('username == "samanthastar53"').n_likes.value_counts(), df_abuser.query(
    'username == "samanthastar53"'
).n_replies.value_counts()
```

```
Out[133]: (0.0      22
1.0      17
2.0       8
3.0       6
4.0       5
6.0       2
5.0       2
8.0       2
Name: n_likes, dtype: int64,
0.0      19
1.0       2
Name: n_replies, dtype: int64)
```

```

7.0      1
9.0      1
18.0     1
Name: n_likes, dtype: int64,
0.0      56
1.0      5
5.0      1
4.0      1
Name: n_replies, dtype: int64)

In [133]: df_abuser.query('username == "samanthastar53"').date.value_counts()

```

```

Out[133]: 2020-11-06    6
2020-12-09    4
2021-01-13    4
2020-12-10    4
2020-11-10    3
2020-11-07    3
2020-12-11    3
2021-01-09    3
2020-11-12    3
2020-11-08    2
2021-01-22    2
2020-12-26    2
2020-12-24    2
2020-11-04    2
2020-12-13    2
2020-11-05    2
2020-11-23    2
2021-02-06    2
2020-11-11    1
2020-11-18    1
2020-12-30    1
2020-12-28    1
2021-02-09    1
2021-03-09    1
2020-11-26    1
2020-12-29    1
2020-12-05    1
2020-11-14    1
2020-12-19    1
2021-03-20    1
2020-11-15    1
2021-01-30    1
2021-02-11    1
2021-01-14    1
Name: date, dtype: int64

```

Amber Heard is abuser

- Top Users:
 - pauu.eg 115
 - 86 posts
 - 301 followers
 - 153 following
 - amberheardabottleofwineopen 51
 - 55 posts
 - 51 followers
 - 20 following
 - c_shortt 50
 - suspicious account, made all neagative comments related to amber.
 - samanthastar53 49
 - 5 posts
 - 34 followers
 - 102 following
 - johnnyforever_2005 43
 - suspicious account, made all neagative comments related to amber.
 - zhra.006 40
 - suspicious account, made all neagative comments related to amber.
 - sahartaleb___ 38
 - suspicious account, made all neagative comments related to amber.
 - wewantjusticeforjohnnydepp 36
 - suspicious account, made all neagative comments related to amber.
 - diann__lee 30
 - 79 posts
 - 255 followers
 - 1.443 following
 - johnnydepp_gothic 29
 - suspicious account, made all neagative comments related to amber.
 - ...
 - ...
- Top Dates:
 - 2020-11-11 73
 - 2020-12-18 72
 - 2021-02-11 63
 - 2020-07-31 56
 - 2020-11-07 42
 - 2020-11-12 42
 - ...
 - ...

Fire Amber Heard

- Negative Comments
- Amber Turd

- Fuck Amber Heard
- Amber Heard is a liar
- Amber Heard is an abuser
- **Fire Amber Heard**
- Support Amber Heard

```
In [133]: # fire = [i for i in top_texts if 'fire' in i]
fire = ['boycottamber', 'fireamberheardfromaquaman', 'fireamberheard', 'fire her', 'fired',
        'fire amber', 'remove amber', 'removeamber', 'remove-amber', 'removed']
```

```
In [134]: neg_text = neg_text|set(fire)
```

```
In [134]: df_fire = df_comments[df_comments.message.str.contains('|'.join(fire))]
df_fire.shape
```

```
Out[134]: (3687, 16)
```

```
# df_fire.message.value_counts().head(60)
```

A Heat Map for the Count of Comments Containing "Fire Amber"

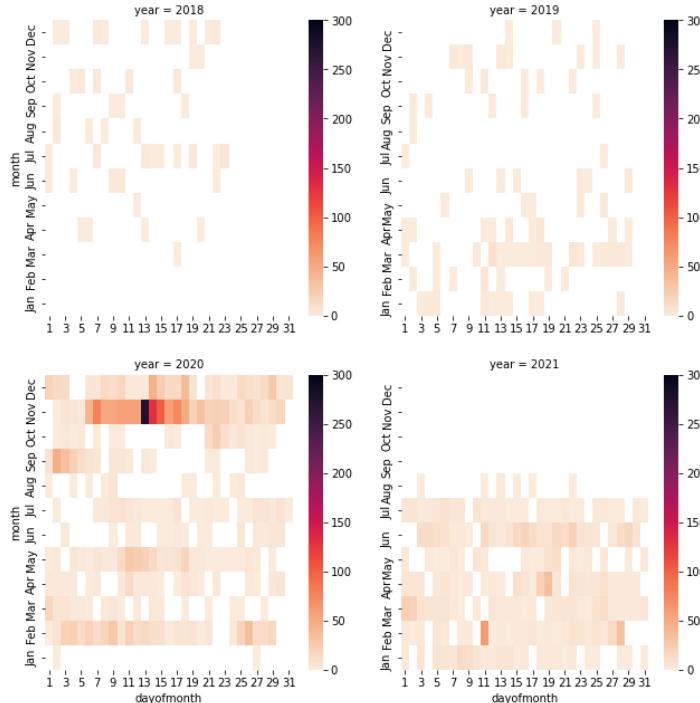
```
In [134]: daily_counts = df_fire.groupby(['year', 'dayofmonth', 'month']).size().reset_index(name='count')
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']

def draw_heatmap(*args, **kwargs):
    data = kwargs.pop('data')
    d = data.pivot(index=args[1], columns=args[0], values=args[2])
    d = d.reindex(index=months[::-1])
    sb.heatmap(d, **kwargs)

g = sb.FacetGrid(daily_counts, col='year', col_wrap=2, height=4.5)
g.map_dataframe(draw_heatmap, 'dayofmonth', 'month', 'count', cmap='rocket_r', vmin=0, vmax=300);

plt.suptitle('A Heat Map for the Count of Comments Containing "Fire Amber"', y=1.04, fontsize=18)
g.fig.subplots_adjust(wspace=0.15, hspace=0.2)
for axis in g.axes.flat:
    axis.tick_params(labelbottom=True, labelleft=True)
```

A Heat Map for the Count of Comments Containing "Fire Amber"



```
In [134]: len(df_fire)
```

```
Out[134]: 3687
```

Most Repeated Comments Containing "Fire Amber"

```
In [134]: df = df_fire.groupby(['message']).agg({'id': 'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
df.rename(columns={'id': 'repeated_times'})
```

```
df.sort_values('repeated_times', ascending=False).head(25)
```

	message	repeated_times	n_likes	n_replies
64	#fireamberheard	94	191.0	1.0
20	#boycottamberheard	83	286.0	2.0
1817	https://www.change.org/p/dc-entertainment-remo...	67	91.0	11.0

200	#removeamberheardfromaquaman2	54	941.0	11.0
209	#removeamberheardsfromaquaman2	47	79.0	4.0
2992	.#justiceforjohnnydepp #amberheardisanabuser ...	32	3.0	0.0
123	#justiceforjohnnydepp #amberheardisanabuser ...	26	15.0	1.0
1618	fire her	23	86.0	2.0
1602	fire amber heard	13	72.0	3.0
1320	@wewantjusticeforjohnnydepp #johnnydepp #amber...	12	1.0	0.0
155	#justiceforjohnnydepp #fireamberheard	12	18.0	0.0
108	#johnnydeppisanangel #johnnydeppisinnocent #ju...	10	81.0	2.0
2449	she should be fired	10	255.0	15.0
29	#boycottamberheard #justiceforjohnnydepp #ambe...	10	21.0	1.0
1842	https://www.thetimes.co.uk/edition/news/amber-...	10	3.0	0.0
119	#justiceforjohnny #nojohnnynopirates #amberhea...	9	38.0	1.0
28	#boycottamberheard #justiceforjohnnydepp	9	51.0	0.0
139	#justiceforjohnnydepp #boycottamberheard	8	29.0	0.0
1819	https://www.change.org/p/dc-entertainment-remo...	8	12.0	0.0
41	#boycottamberheard 🇺🇸	7	12.0	2.0
180	#justiceforjohnnydepp https://www.change.org/p...	6	6.0	0.0
213	#removeamberheardsfromaquaman2 🇺🇸	6	9.0	0.0
79	#fireamberheard #justiceforjohnnydepp	5	9.0	0.0
140	#justiceforjohnnydepp #boycottamberheard #ambe...	5	9.0	1.0
94	#fireamberheardfromaquaman	5	8.0	1.0

```
In [134]: df_fire.message.value_counts().head(10)
```

```
Out[134]:
#fireamberheard
94
#boycottamberheard
83
https://www.change.org/p/dc-entertainment-remove-amber-heard-from-aquaman-2
67
#removeamberheardsfromaquaman2
54
#removeamberheardsfromaquaman2
47
#justiceforjohnnydepp #amberheardisanabuser #amberturd #amberheardisaliar #johnnydeppisinnocent #boycottthesun #boycottwarnerbros #boycottamberhe
eard #wearewithyoujohnnydepp #johnnydeppismyhero #fuckthesun #fuckamberheard 32
#justiceforjohnnydepp #amberheardisanabuser #amberturd #amberheardisaliar #johnnydeppisinnocent #boycottthesun #boycottwarnerbros #boycottamberhe
ard #wearewithyoujohnnydepp #johnnydeppismyhero #fuckthesun #fuckamberheard 26
fire her
23
fire amber heard
13
#justiceforjohnnydepp #fireamberheard
12
Name: message, dtype: int64
```

Top Users Commented with "Fire Amber"

```
In [134]: # The total number of different users posted justiceforjohnnydepp
df_fire.username.nunique()
```

```
Out[134]: 2617
```

```
In [134]: df_nfire = df_fire.groupby(['username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
        .rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)
df_nfire.head(25)
```

	username	n_comments	n_likes	n_replies
2077	samanthastar53	87	141.0	10.0
2608	zhra.006	35	9.0	2.0
2065	sahartaleb__	34	23.0	1.0
2520	wewantjusticeforjohnnydepp	26	2.0	0.0
413	becauseitsjohnnydepp	22	25.0	2.0
759	divulgaaa.bahia	21	56.0	0.0
1486	littleflowerofmercy	20	2458.0	10.0
2397	timv777	19	121.0	3.0
572	chiara_arcozzi_	15	80.0	2.0
744	di22mendez	15	53.0	1.0
1271	johnnydepp_gothic	14	96.0	2.0
887	facundo_monroy_	13	26.0	0.0
1720	muhammadsafi_	12	234.0	16.0
2021	romaravera	12	6.0	0.0
615	colepoff	11	20.0	0.0
1551	mackenzilaplante	11	3.0	0.0
2018	roksana_jafari	10	10.0	0.0

1145	its_optical_sophiel	9	50.0	10.0
1868	pabloziegl	9	33.0	0.0
2045	ryan_swift_bat13	9	1.0	0.0
2121	sh_qqp99	8	23.0	0.0
1137	isabel.bolivia	8	8.0	1.0
1444	lbockov	8	45.0	3.0
1758	natchayaleejin	8	13.0	2.0
1796	nicolas.parravicini	7	0.0	0.0

```
In [134... neg_users = neg_users|set(df_nfire.username)
```

```
In [135... barh(get_top(df_fire, 'username', 15, 'username', 'n_comments'), 'Top users commentd "Fire Amber"', 10)
```

"Fire Amber" Users Contributions on Each Date

```
In [135... df = df_fire.groupby(['date', 'username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
      .rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)
df.head(15)
```

	date	username	n_comments	n_likes	n_replies
2443	2021-02-11	zhra.006	32	3.0	0.0
2442	2021-02-11	sahartaleb__	30	18.0	1.0
1426	2020-11-13	di22mendez	15	53.0	1.0
1652	2020-11-14	mackenzilaplante	11	3.0	0.0
1701	2020-11-15	becauseitsjohnnydepp	10	17.0	1.0
1710	2020-11-15	divulgaaa.bahia	9	31.0	0.0
2190	2020-12-14	muhammad safi__	8	103.0	8.0
523	2020-04-11	romaravera	8	3.0	0.0
2720	2021-04-19	sh_qqp99	8	23.0	0.0
1291	2020-11-11	facundo_monrroy_	7	13.0	0.0
2786	2021-05-20	auroastra	7	30.0	0.0
2150	2020-12-10	becauseitsjohnnydepp	6	6.0	0.0
2936	2021-06-21	be_allways_kind_but_honest	6	7.0	0.0
796	2020-08-09	berniemckinley	6	1.0	0.0
280	2020-02-09	lbockov	6	33.0	3.0

"Fire Amber" Peak Dates

```
In [135... df = df_fire.groupby(['date']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
      .rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)
df.head(15)
```

	date	n_comments	n_likes	n_replies
313	2020-11-13	275	11011.0	99.0
314	2020-11-14	131	212.0	14.0
315	2020-11-15	101	1330.0	13.0
307	2020-11-07	78	3045.0	57.0
317	2020-11-17	74	1166.0	22.0
390	2021-02-11	62	21.0	1.0
316	2020-11-16	59	826.0	29.0
310	2020-11-10	57	284.0	22.0
311	2020-11-11	57	1327.0	2.0
312	2020-11-12	56	2516.0	7.0
308	2020-11-08	52	464.0	30.0
309	2020-11-09	52	165.0	26.0
318	2020-11-18	50	3266.0	3.0
268	2020-09-02	48	573.0	46.0
342	2020-12-14	45	4161.0	23.0

```
In [135... df_fire['datetime'].max()
```

```
Out[135... Timestamp('2021-08-22 23:12:22')
```

```
In [135... df_fire['datetime'].min()
```

```
Out[135... Timestamp('2018-03-25 20:05:51')
```

```
In [135... fig = (
```

```

    )
    .update_traces(
        marker_color="red",
        opacity=1,
        textposition="auto",
        marker_line_color="red",
        marker_line_width=0.5,
    )
    .update_xaxes(tickangle=45)
)
fig.show("svg")

```

In [135]:

```

bar_peaks(
    get_top(df_fire, "date", 4, "date", "n_comments").sort_values("date"),
    "title",
)

```

Time difference

In [135]:

```
df_fire.datetime.sort_values().diff().sort_values().value_counts().head(15)
```

Out[135]:

0 days 00:00:10	19
0 days 00:00:07	17
0 days 00:00:04	15
0 days 00:00:05	15
0 days 00:00:03	14
0 days 00:00:12	13
0 days 00:00:11	12
0 days 00:00:09	10
0 days 00:00:57	9
0 days 00:00:59	9
0 days 00:00:40	9
0 days 00:00:06	9
0 days 00:00:42	8
0 days 00:00:13	8
0 days 00:00:56	8

Name: datetime, dtype: int64

In [135]:

```
df_fire.username.value_counts().head(15)
```

Out[135]:

samanthastar53	87
zhra.006	35
sahartaleb_	34
wewantjusticeforjohnnydepp	26
becauseitsjohnnydepp	22
divulgaaa.bahia	21
littleflowerofmercy	20
timv777	19
chiara_arcozzii_	15
d122mendez	15
johnnydepp_gothic	14
facundo_monroy_	13
romaravera	12
muhommadsafi_	12
colepoff	11

Name: username, dtype: int64

divulgaaa.bahia

In [135]:

```

df_fire.query(
    'username == "divulgaaa.bahia"'
).datetime.sort_values().diff().sort_values().value_counts().head(20)

```

Out[135]:

datetime	
0 days 00:00:10	1
0 days 00:00:57	1
15 days 14:56:18	1
15 days 07:21:56	1
4 days 18:47:21	1
1 days 16:10:39	1
0 days 11:18:00	1
0 days 10:54:25	1
0 days 08:33:35	1
0 days 07:35:44	1
0 days 07:11:08	1
0 days 05:32:59	1
0 days 02:28:39	1
0 days 02:08:19	1
0 days 02:04:19	1
0 days 01:59:11	1
0 days 00:31:38	1
0 days 00:26:36	1
0 days 00:01:21	1
154 days 03:56:37	1

dtype: int64

In [136]:

```

df_fire.query('username == "divulgaaa.bahia"]').n_likes.value_counts(), df_fire.query(
    'username == "divulgaaa.bahia"'
).n_replies.value_counts()

```

Out[136]:

(3.0	4
1.0	4
2.0	4
0.0	4
7.0	2
5.0	2
8.0	1

Name: n_likes, dtype: int64

```
0.0    21  
Name: n_replies, dtype: int64)
```

```
In [136]: df_fire.query('username == "divulgaaa.bahia"').date.value_counts()
```

```
Out[136]:  
2020-11-15    9  
2020-11-14    3  
2020-11-16    2  
2020-11-18    1  
2021-05-26    1  
2020-11-17    1  
2020-12-08    1  
2020-11-13    1  
2020-12-23    1  
2020-11-22    1  
Name: date, dtype: int64
```

isabel.bolivia

```
In [136]: df_fire.query(  
    'username == "isabel.bolivia" '  
) .datetime.sort_values().diff().sort_values().value_counts().head(20)
```

```
Out[136]:  
datetime  
2 days 10:41:05    1  
4 days 22:30:41    1  
7 days 00:45:31    1  
10 days 11:23:41   1  
10 days 14:02:55   1  
12 days 00:05:55   1  
22 days 12:54:20   1  
dtype: int64
```

```
In [136]: df_fire.query('username == "isabel.bolivia"').n_likes.value_counts(), df_fire.query(  
    'username == "isabel.bolivia" '  
) .n_replies.value_counts()
```

```
Out[136]:  
(1.0    4  
0.0    2  
2.0    2  
Name: n_likes, dtype: int64,  
0.0    7  
1.0    1  
Name: n_replies, dtype: int64)
```

```
In [136]: df_fire.query('username == "isabel.bolivia"').date.value_counts()
```

```
Out[136]:  
2021-04-27    1  
2021-02-23    1  
2021-03-25    1  
2021-03-07    1  
2021-03-12    1  
2021-05-04    1  
2021-03-15    1  
2021-04-17    1  
Name: date, dtype: int64
```

Fire Amber Heard

- Top Users:
 - divulgaaa.bahia 21
 - 21 posts
 - 112 followers
 - 5.991 following
 - johnnydepp_gothic 14
 - suspicious account, made all negative comments related to amber.
 - comments repeated within some hours.
 - isabel.bolivia 8
 - 765 posts
 - 448 followers
 - 2,207 following
 - comments in different times and different dates.
 - variety of number of likes and replies but still very low number.
 - pabloziegl 8
 - 88 posts
 - 165 followers
 - 693 following
 - sh_qqp99 8
 - 0 posts
 - 0 followers
 - 230 following
 - Date Joined: 23 June 2015

- ...

- Top Dates:
 - 2020-11-13 21
 - 2020-11-14 21
 - 2020-11-15 20
 - 2020-12-18 14
 - 2021-04-19 13
 - 2020-11-17 10
 - ..

Support Amber Heard

- Negative Comments
- Amber Turd
- Fuck Amber Heard
- Amber Heard is a liar
- Amber Heard is a abuser
- Fire Amber Heard
- **Support Amber Heard**

```
In [136]: support = [i for i in top_texts if 'sup' in i]
support
```

```
Out[136]: ['support amber heard', 'suport amber heard']
```

```
In [136]: support = support + ['wearewithamber', 'support amber', 'supportamber', 'justice for amber', 'istandwithamber',
                           'wearewithyouamber', 'justiceforamber']
```

```
In [136]: df_support = amber[amber.message.str.contains("|".join(support))]
print(df_support.shape)
df_support.head()
```

```
(1177, 16)
```

	message	datetime	id	n_replies	n_likes	media_id	parent_id	user_id	username	is_verified	
559	support amber heard ❤️ ❤️ all the round the wor...	2020-05-22 16:00:29	17848783103108926	0.0	0.0	2314639163877400576	n	29669818597	siachidesign	False	https://www.instagram.com/p/CBzJLjAqDfI/
1938	@greenloverlola1 real fans of j didn't support...	2020-08-02 12:13:15	18108663892158336	NaN	0.0	2366414216337029120	17870737063857668	36018230242	greenloverlola1	True	https://www.instagram.com/p/CBzJLjAqDfI/
2524	#wearewithyouamberheard #amberheard #justicefo...	2020-07-23 20:09:17	17906664943469068	0.0	3.0	2354457800847320576	n	5401459905	zaislice	False	https://www.instagram.com/p/CBzJLjAqDfI/
5211	#wearewithyouamberheard #istandwith...	2020-07-29 05:58:11	17854249718119956	0.0	0.0	2363466428698750976	n	8890463520	fateme_ajn	False	https://www.instagram.com/p/CBzJLjAqDfI/
5672	support amber heard ❤️ ❤️ all the round the wor...	2020-07-17 17:12:16	17901918277494104	0.0	0.0	2354674862277974016	n	29669818597	siachidesign	False	https://www.instagram.com/p/CBzJLjAqDfI/

```
In [136]: df_support.username.nunique()
```

```
Out[136]: 215
```

```
In [136]: len(neg_users)
```

```
Out[136]: 14601
```

```
In [137]: neg_users = neg_users - set(df_support.username)
```

```
In [137]: len(neg_users)
```

```
Out[137]: 14511
```

```
In [137]: df_support.message.value_counts()
```

```
Out[137]: support amber heard ❤️ ❤️ ❤️ all the round the world my friends  
272  
suport amber heard ❤️ ❤️ ❤️ all around the world my friends  
153  
[tags: #mera #justiceleague #aquaman #3daystokill #londonfields #theinformers #crazydrive #theward #artist #activist #wearewithyouamberheard]  
47  
#amberheard #justiceforamberheard #johnnydepp #johnnydeppisawifebeater #johnnydeppisanabuser  
42  
@goddesamber #amberheardeedit #amberheardeedit #justiceforamberheard #istandwithamberheard #aquaman #londonfields #zacksnydersjusticeleague #justiceleague  
e #thestand #scarlettjohansson #milakunis #meganfox #emmawatson #emmastone #alexandradaddario #anyataylorjoy #haileesteinfeld #galgadot #brielarson #mar  
gotrobbie #angelinajolie #jenniferlawrence 30  
  
...  
@natchayaleejin in the world of justice, we wait for the outcome of the trial #wearewithyouamberheard #istandwithamberheard #justiceforamberheard  
1  
@natchayaleejin i believe in her, she is a strong woman, justice is for amber, she will win, and we are with her always #wearewithyouamberheard #istandw  
ithamberheard #justiceforamberheard  
1  
@natchayaleejin #wearewithyouamberheard #istandwithamberheard #justiceforamberheard 🌟🌟  
1  
@prideofgypsies how can you support amber heard, someone who is equally a domestic abuser?  
1  
@madev__v #justiceforamberheard 🙏  
1  
Name: message, Length: 428, dtype: int64
```

```
In [137]: get_top(df_support, 'username', 15, 'username', 'n_comments')
```

```
Out[137]:
```

	username	n_comments
0	siachidesign	430
1	londonfields	74

	username	count
2	motivatornetwork	58
3	justiceforheard	56
4	heardsource	56
5	andmen.1998	40
6	goddesamber	36
7	fatemajn	32
8	aherdfan	29
9	amberphotoshoot	27
10	mukul.c001	21
11	abelherrera3139	17
12	inspiringheard	13
13	rayu.zuki	10
14	wamarlance	9

```
In [137]: barh(get_top(df_support, 'username', 15, 'username', 'n_comments'), 'Top users commentd "Support Amber Heard"')
```

```
In [137]: df_support['datetime'].max()
```

```
Out[137]: Timestamp('2021-08-27 16:58:24')
```

```
In [137]: df_support['datetime'].min()
```

```
Out[137]: Timestamp('2018-08-03 18:48:07')
```

```
In [137]: get_top(df_support, 'date', 15, 'date', 'n_comments')
```

	date	n_comments
0	2020-07-29	25
1	2020-08-04	22
2	2020-07-25	22
3	2020-07-20	22
4	2020-07-23	19
5	2020-07-26	19
6	2020-07-28	17
7	2020-05-21	17
8	2020-07-22	14
9	2020-07-15	14
10	2020-08-07	13
11	2020-08-02	12
12	2020-08-13	11
13	2020-07-06	10
14	2020-07-31	10

```
In [137]: fig = (
    px.bar(
        get_top(df_support, "date", df_support.shape[0], "date", "n_comments"),
        x="date",
        y="n_comments",
        title="Peak days of 'Support Amber Heard' comments",
    )
    .update_traces(
        marker_color="red",
        opacity=1,
        textposition="auto",
        marker_line_color="red",
        marker_line_width=0.5,
    )
    .update_xaxes(tickangle=45)
)
fig.show("svg")
```

```
In [137]: bar_peaks(
    get_top(df_support, "date", 10, "date", "n_comments").sort_values("date"),
    "title",
)
```

Time difference

```
In [138]: df_support.datetime.sort_values().diff().sort_values().value_counts().head(15)
```

0 days 00:00:21	14
0 days 00:00:17	13
0 days 00:00:08	12
0 days 00:00:18	11
0 days 00:00:20	10
0 days 00:00:28	10

```

0 days 00:00:07    9
0 days 00:00:15    9
0 days 00:00:06    8
0 days 00:00:10    8
0 days 00:00:13    8
0 days 00:00:12    7
0 days 00:00:27    7
0 days 00:00:25    6
0 days 00:00:39    6
Name: datetime, dtype: int64

In [138]: get_top(df_support, 'username', 15, 'username', 'n_comments').iloc[:2].username.values
Out[138]: array(['siachidesign', 'heardupdate'], dtype=object)

siachidesign

In [138]: df_support.query('username == "siachidesign"').datetime.sort_values().diff().sort_values().to_frame().value_counts().head(20)
Out[138]: datetime
0 days 00:00:08    11
0 days 00:00:21    11
0 days 00:00:20    10
0 days 00:00:18    10
0 days 00:00:17    9
0 days 00:00:07    8
0 days 00:00:28    7
0 days 00:00:15    7
0 days 00:00:06    7
0 days 00:00:13    7
0 days 00:00:16    6
0 days 00:00:27    6
0 days 00:00:25    6
0 days 00:00:12    6
0 days 00:00:11    6
0 days 00:00:10    6
0 days 00:00:09    6
0 days 00:00:39    5
0 days 00:00:30    5
0 days 00:00:37    5
dtype: int64

In [138]: df_support.query('username == "siachidesign"').n_likes.value_counts(), df_turd.query(
    'username == "siachidesign"'
).n_replies.value_counts()
Out[138]: (0.0    399
1.0    29
2.0     2
Name: n_likes, dtype: int64,
Series([], Name: n_replies, dtype: int64))

In [138]: df_support.query('username == "siachidesign"').date.value_counts()
Out[138]: 2020-08-04    21
2020-07-20    21
2020-07-25    21
2020-07-26    19
2020-05-21    15
...
2020-09-25    1
2020-10-29    1
2020-11-19    1
2020-08-27    1
2020-06-30    1
Name: date, Length: 96, dtype: int64

motivatornetwork

In [138]: df_support.query('username == "motivatornetwork"').datetime.sort_values().diff().sort_values()
Out[138]: 1696880    0 days 00:00:17
554163    0 days 00:00:21
5731     0 days 00:00:22
1622590    0 days 00:00:27
718345    0 days 00:00:32
775967    0 days 00:00:36
248054    0 days 00:00:38
1071072    0 days 00:00:42
351620    0 days 00:00:42
1071065    0 days 00:00:46
248057    0 days 00:01:25
676191    0 days 00:01:26
676190    0 days 00:01:48
226318    0 days 00:01:49
248015    0 days 00:01:59
1696883    0 days 00:02:14
248051    0 days 00:02:19
280769    0 days 00:02:27
212952    0 days 00:03:28
723897    0 days 00:03:33
351622    0 days 00:03:39
1154296    0 days 00:03:57
312359    0 days 00:04:04
764810    0 days 00:05:08
312357    0 days 00:05:18
1018305    0 days 00:06:27
312355    0 days 00:06:39
22049     0 days 00:07:16
525811    0 days 00:10:20
248056    0 days 00:14:25
718339    0 days 00:15:33
130449    0 days 00:15:33
1421541    0 days 00:24:15
1608693    0 days 00:27:20
...    ...

```

```
//5961    0 days 00:30:48
1622589   0 days 04:40:53
312363    0 days 05:18:02
147795    0 days 07:46:04
248042    0 days 08:45:39
197856    0 days 10:15:27
248021    0 days 15:48:19
648487    0 days 18:25:53
1018289   0 days 21:20:12
248019    1 days 01:58:50
351626    1 days 02:17:30
822510    1 days 02:21:02
1357542   1 days 02:47:53
1696885   1 days 09:10:09
116851     2 days 15:01:03
1071068   3 days 06:15:15
723899    3 days 16:11:38
585205    3 days 23:14:09
941882    4 days 00:59:13
5744      5 days 21:26:53
1154301   38 days 19:15:57
212957    39 days 23:28:03
554169    42 days 07:46:38
1274418    NaT
Name: datetime, dtype: timedelta64[ns]
```

```
In [138]: df_support.query('username == "motivatornetwork").n_likes.value_counts(), df_support.query(
    'username == "motivatornetwork"
).n_replies.value_counts()
```

```
Out[138]: (1.0    32
2.0    14
3.0     7
6.0     3
4.0     1
0.0     1
Name: n_likes, dtype: int64,
0.0    16
1.0     4
4.0     3
8.0     1
3.0     1
2.0     1
Name: n_replies, dtype: int64)
```

```
In [138]: df_support.query('username == "motivatornetwork").date.value_counts()
```

```
Out[138]: 2020-06-05    7
2020-02-22    6
2020-02-28    5
2020-02-24    5
2020-02-29    4
2020-03-02    4
2020-02-26    3
2020-03-05    3
2020-02-25    3
2020-07-18    3
2020-04-26    2
2020-03-11    2
2020-02-27    2
2020-03-19    2
2020-03-01    1
2020-03-18    1
2020-02-20    1
2020-03-15    1
2020-02-19    1
2020-07-22    1
2020-02-18    1
Name: date, dtype: int64
```

Support Amber Heard

- Top Users:
 - siachidesign 430
 - 48 posts
 - 1,320 followers
 - 302 following
 - created around 15 February 2020
 - seems bot, many comments with the same text within seconds.
 - rarely to find like or reply on his comment.
 - motivatornetwork 55
 - 126 posts
 - 117 followers
 - 214 following.
 - created around November-December 2016.
 - most comments have 1 like or 2 likes, no replies.
 - ...
- Top Dates:
 - 2020-08-04 21
 - 2020-07-20 21
 - 2020-07-25 21
 - 2020-07-26 19
 - ..

Contains F*ck

- #justiceforjohnnydepp
- Contains "Amber"
- Contains "F*ck"
- Contains "Ames"

- contains Agree
- -----
- @sinadeinert @sinadeinertcf
- Red
- I am inevitable
- Only Numbers

A Heat Map for the Count of Comments Containing "F*ck"

```
In [138...]: df_fuc = df_comments[df_comments["message"].str.contains("fuck")]
daily_counts = df_fuc.groupby(['year', 'dayofmonth', 'month']).size().reset_index(name='count')
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']

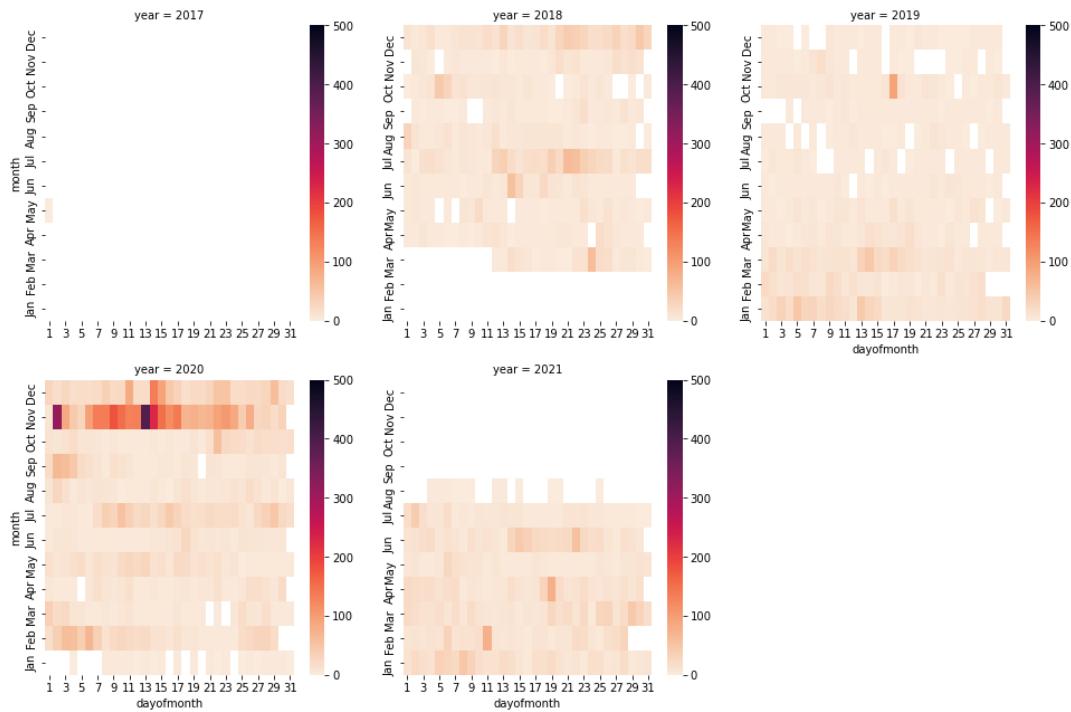
print('\nNote: The Peaks Also on Nov 2020\n')
def draw_heatmap(*args, **kwargs):
    data = kwargs.pop('data')
    d = data.pivot(index=args[1], columns=args[0], values=args[2])
    d = d.reindex(index=months[::-1])
    sb.heatmap(d, **kwargs)

g = sb.FacetGrid(daily_counts, col='year', col_wrap=3, height=4.5)
g.map_dataframe(draw_heatmap, 'dayofmonth', 'month', 'count', cmap='rocket_r', vmin=0, vmax=500)

plt.suptitle('A Heat Map for the Count of Comments Containing "F*ck"', y=1.04, fontsize=18)
g.fig.subplots_adjust(wspace=0.15, hspace=0.2)
for axis in g.axes.flat:
    axis.tick_params(labelbottom=True, labelleft=True)
```

Note: The Peaks Also on Nov 2020

A Heat Map for the Count of Comments Containing "F*ck"



```
In [138...]: len(df_fuc)
```

```
Out[138...]: 15476
```

The Most Repeated Comments Containing "F*ck"

```
In [139...]: df = df_fuc.groupby(['message']).agg({'id': 'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
df.rename(columns={'id': 'repeated_times'})
```

```
df.sort_values('repeated_times', ascending=False).head(25)
```

	message	repeated_times	n_likes	n_replies
5245	fuck amber heard	291	762.0	68.0
5635	fuck her	185	122.0	14.0
73	#fuckamberheard	165	272.0	7.0
2144	@johnnydepp #wearewithyoujohnnydepp #amberhear...	124	23.0	0.0
5221	fuck amber	105	158.0	3.0
12882	👉👉👉👉 fuck you and your bullshit copy/paste tags	85	16.0	3.0
5155	fuck	80	125.0	0.0
5912	fuck no	75	392.0	7.0
6094	fuck that bitch	74	69.0	19.0
6672	fuck you	63	25.0	0.0
5251	fuck amber heard #justiceforjohnnydepp	62	121.0	5.0

6324		fuck this bitch	60	45.0	2.0
5973		fuck off	47	14.0	6.0
5339		fuck amber heard! #justiceforjohnnydepp	40	74.0	16.0
11974		what the fuck	39	103.0	1.0
7163		fucking bitch	36	0.0	1.0
12791		#justiceforjohnnydepp #amberheardisanabuser ...	32	3.0	0.0
182		#justiceforjohnnydepp #amberheardisanabuser ...	26	15.0	1.0
6697		fuck you amber	26	43.0	3.0
140		#fuckthesun	24	19.0	0.0
6647		fuck yes	18	19.0	0.0
6078		fuck that	17	59.0	1.0
5176		fuck @amberheard	17	14.0	0.0
88		#fuckamberheard #justiceforjohnnydepp	16	7.0	0.0
7916		holy fuck	16	20.0	5.0

Top Users Commented with "F*ck"

```
In [139]: # The total number of different users posted justiceforjohnnydepp
df_fuc.username.unique()
```

Out[139]: 11865

```
In [139]: df_nfuc = df_fuc.groupby(['username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
        .rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

df_nfuc.head(25)
```

	username	n_comments	n_likes	n_replies
6285	kingskippy1987	103	151.0	17.0
4195	funkfried4	103	21.0	3.0
8852	queenmusicvideoe	70	14.0	0.0
4791	hosein.sarsam	45	78.0	5.0
8851	queenmusicvideo	41	0.0	0.0
9456	sahartaleb___	37	35.0	1.0
11821	zhra.006	36	5.0	0.0
2137	c_shortt	31	100.0	4.0
10182	staffordcarlis1	30	0.0	0.0
8366	ohgodnotsimone	26	109.0	3.0
1570	babikate6	24	2.0	0.0
10848	ticetm6	24	2.0	1.0
8082	ngnrzi	22	22.0	0.0
4452	gradyjustin764	21	14.0	1.0
5740	johnnydepp_gothic	20	96.0	2.0
9528	same_pic_of_thanos	19	103.0	2.0
9852	shinndig	17	74.0	0.0
3071	dcebucteddy	17	65.0	7.0
5659	joe604	17	337.0	31.0
2896	dana_milash	14	10.0	0.0
1811	birdmallon	14	66.0	0.0
8944	ranchkh24	14	41.0	10.0
1906	bonecrackii	14	34.0	1.0
1154	andmen.1998	14	133.0	0.0
9634	scarlettsexiest	13	3.0	0.0

"F*ck" Users Contributions on Each Date

```
In [139]: df = df_fuc.groupby(['date', 'username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()
        .rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)

df.head(15)
```

	date	username	n_comments	n_likes	n_replies
7763	2020-11-02	queenmusicvideoe	70	14.0	0.0
10695	2020-12-11	kingskippy1987	56	15.0	0.0
7762	2020-11-02	queenmusicvideo	41	0.0	0.0
11938	2021-02-11	zhra.006	32	3.0	0.0
11935	2021-02-11	sahartaleb___	30	18.0	1.0
7694	2020-11-02	babikate6	24	2.0	0.0
8371	2020-11-09	ngnrzi	22	22.0	0.0
8686	2020-11-12	c_shortt	18	48.0	2.0

10206	2020-11-24	bonecrackii	14	34.0	1.0
7890	2020-11-04	dana_milash	14	10.0	0.0
8579	2020-11-11	c_shortt	13	52.0	2.0
7742	2020-11-02	m_~sp	12	0.0	0.0
7761	2020-11-02	purpleh_bh	11	0.0	0.0
11633	2021-01-13	shinndig	11	3.0	0.0
11768	2021-01-28	balikaya_defne_7	10	20.0	0.0

```
In [139... fuc_dates = df_fuc.groupby(['date']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)
fuc_dates.head(15)
```

Out[139...]

	date	n_comments	n_likes	n_replies
918	2020-11-13	393	7008.0	177.0
907	2020-11-02	314	1615.0	2.0
919	2020-11-14	227	1495.0	29.0
914	2020-11-09	181	681.0	17.0
915	2020-11-10	153	1326.0	35.0
920	2020-11-15	152	1291.0	13.0
922	2020-11-17	139	1248.0	17.0
912	2020-11-07	136	1896.0	50.0
913	2020-11-08	136	191.0	12.0
949	2020-12-14	135	2295.0	21.0
917	2020-11-12	133	185.0	11.0
916	2020-11-11	131	270.0	15.0
921	2020-11-16	118	336.0	9.0
928	2020-11-23	104	591.0	19.0
911	2020-11-06	96	455.0	20.0

```
In [139... bar_peaks(fuc_dates[['date', 'n_comments']].head(10), '"F*ck" Comments Peaks')
```

Contains Agree

- #justiceforjohnnydepp
- Contains "Amber"
- Contains "F*ck"
- **Contains "Agree"**
- -----
- @sinadeinert @sinadeinertcf
- Red
- I am inevitable
- Only Numbers

```
In [139... df_agree = df_comments[df_comments["message"].str.contains("agree")]
print(df_agree.shape)
df_agree.head()
```

Out[139...]

	message	datetime	id	n_replies	n_likes	media_id	parent_id	user_id	username	is_verif
858	i've been a victim of emotional abuse, the mos...	2020-02-03 00:42:26	18006776428275864	1.0	58.0	2235162134629858816	n	8056784446	uncute.slut	Fa
1184	@lea_seydoux_myplatonicpassion #katyperry #ra...	2021-05-26 12:58:01	17956322701419604	NaN	1.0	2582068684691097088	17882889281210796	9673947311	lea_seydoux_myplatonicpassion	T
2409	totally agree 😊😊	2020-06-01 03:32:22	18100154578152792	0.0	0.0	2318954103417754624	n	2970832866	noelia.villalta	Fa
2416	agreeeeeeee	2020-06-02 11:23:04	17895069952518566	0.0	1.0	2318954103417754624	n	29391791686	_ilaria22__	Fa
2419	@amberheard totally reptile 🦎 and i agree with...	2020-06-02 18:05:47	17875233562691908	0.0	1.0	2318954103417754624	n	462111525	shenzrlife02	Fa

A Heat Map for the Count of Comments Containing "Agree"

```
In [139... daily_counts = df_agree.groupby(['year', 'dayofmonth', 'month']).size().reset_index(name='count')
months = ['Jan', 'Feb', 'Mar', 'Apr', 'May', 'Jun', 'Jul', 'Aug', 'Sep', 'Oct', 'Nov', 'Dec']

def draw_heatmap(*args, **kwargs):
    data = kwargs.pop('data')
    d = data.pivot(index=args[1], columns=args[0], values=args[2])
    d = d.reindex(index=months[::-1])
    sb.heatmap(d, **kwargs)
```

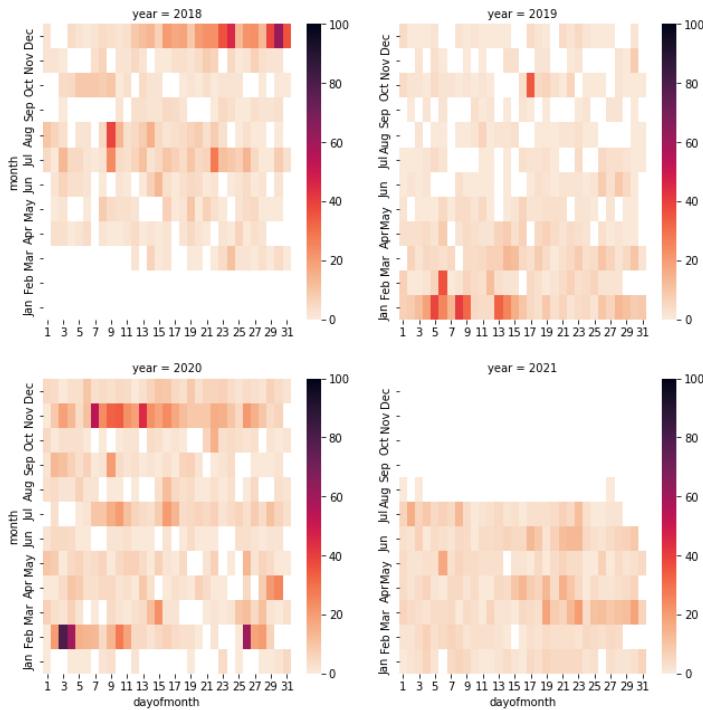
```

g = sb.FacetGrid(daily_counts, col='year', col_wrap=2, height=4.5)
g.map_dataframe(draw_heatmap, 'dayofmonth', 'month', 'count', cmap='rocket_r', vmin=0, vmax=100);

plt.suptitle('A Heat Map for the Count of Comments Containing "Agree"', y=1.04, fontsize=18)
g.fig.subplots_adjust(wspace=0.15, hspace=0.2)
for axis in g.axes.flat:
    axis.tick_params(labelbottom=True, labelleft=True)

```

A Heat Map for the Count of Comments Containing "Agree"



```
In [139...]: len(df_agree)
```

Out[139... 5404

The Most Repeated Comments Containing "Agree"

```
In [139]: df = df_agree.groupby(['message']).agg({'id': 'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index().rename(columns={'id': 'repeated_times'})  
df.sort_values('repeated_times', ascending=False).head(25)
```

Out[139]:		message	repeated_times	n_likes	n_replies
3043		agree	183	181.0	3.0
3247		agreed	85	69.0	3.0
3719		i agree	46	13.0	3.0
3523		disagree	36	40.0	1.0
3116		agree with caption	25	73.0	0.0
3174		agree!	15	7.0	0.0
3294		agreed!	13	12.0	2.0
742	@cupofmegan #meganfoxedit #meganfoxedits #mega...		13	0.0	0.0
4561		totally agree	13	7.0	0.0
3139		agree with the caption	12	21.0	0.0
47		100% agree	12	21.0	6.0
1657	@lea_seydoux_myplatonicpassion #katyperry #ra...		11	15.0	0.0
3323		agreed.	9	9.0	0.0
1138	@goddesamber #scarlettjohansson #alexandradadd...		7	0.0	0.0
3310		agreed!!!	6	17.0	0.0
4010		i agree. i like it	6	0.0	0.0
31	#nicolekidman #jenniferlawrence #naomiwatts #s...		6	0.0	0.0
23	#kateupton#haileestinfeld #maisiewilliams #ba...		6	0.0	0.0
10	#brycedallashoward #hayleyatwell #brielarson #...		5	0.0	0.0
3488		couldn't agree more	5	3.0	0.0
3048		agree 100%	5	3.0	0.0
1697	@lea_seydoux_myplatonicpassion #katyperry #ra...		5	7.0	0.0
11	#brycedallashoward #hayleyatwell #brielarson #...		5	3.0	0.0
3188		agree!!!	5	1.0	0.0
39	\n\n\n\n\n\n\n\n\n\n#galgadot #gal_gadot #al...		5	0.0	0.0

Top Users Commented with "Agree"

```
In [140]: # The total number of different users Commented with "Agree"  
df_agree.username.nunique()
```

```
Out[140]: 4403
```

```
In [140]: df_nagree = df_agree.groupby(['username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()  
.rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)  
  
df_nagree.head(25)
```

```
Out[140]:
```

	username	n_comments	n_likes	n_replies
2356	lea_seydoux_myplatonicpassion	61	75.0	0.0
1658	heard_addicted	29	51.0	4.0
2757	missdanicosplay	20	26.0	0.0
2410	liliacypriani	14	21.0	2.0
970	cupofmegan	13	0.0	0.0
1790	imnicolekidmanfan	12	3.0	0.0
4270	wintersoldier121	12	202.0	0.0
449	aquamans_army	11	25.0	0.0
1066	dc_addict	11	34.0	0.0
1720	hottiesofmcu	10	7.0	1.0
1573	goddesamber	10	0.0	0.0
3408	rocket1604	10	49.0	1.0
855	cine.te.philia	10	11.0	0.0
2593	mariachiara_barbieri	9	26.0	0.0
1577	goldensamfraser	9	26.0	0.0
3087	onlymarvelfc	9	0.0	0.0
1706	hollywoodpostonly	8	0.0	0.0
3860	the.batfan	8	14.0	0.0
519	austinebner23	7	18.0	0.0
12	2222_meee_2222	7	24.0	0.0
2616	marvel_and_dc_things	7	19.0	0.0
1635	hannah_in.wonderland	7	6.0	0.0
3778	superbrad28	7	35.0	3.0
1956	jd_sweetprince	7	7.0	0.0
2685	melbsmymom	7	7.0	0.0

"Agree" Users Contributions on Each Date

```
In [140]: df = df_agree.groupby(['date', 'username']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()  
.rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)  
  
df.head(15)
```

```
Out[140]:
```

	date	username	n_comments	n_likes	n_replies
1035	2018-12-24	missdanicosplay	6	9.0	0.0
1068	2018-12-26	cine.te.philia	6	7.0	0.0
4700	2021-04-21	the.batfan	6	3.0	0.0
367	2018-07-22	missdanicosplay	5	6.0	0.0
1178	2018-12-30	lane_ch12	5	0.0	0.0
1687	2019-02-12	qwerttyui99000	5	0.0	0.0
3784	2020-11-10	katie_annemlr	5	5.0	0.0
2340	2019-12-23	imnicolekidmanfan	4	1.0	0.0
3870	2020-11-13	mac_alpha_man_stiles	4	3.0	0.0
4044	2020-11-26	charliothy	4	8.0	0.0
1957	2019-04-19	themethanetank	3	0.0	0.0
2821	2020-03-15	lagunlaa	3	1.0	0.0
1343	2019-01-06	superbrad28	3	0.0	3.0
4654	2021-04-15	goddesamber	3	0.0	0.0
3582	2020-10-22	aaronsmovies8587	3	4.0	0.0

```
In [140]: agree_dates = df_agree.groupby(['date']).agg({'message':'count', 'n_likes': 'sum', 'n_replies': 'sum'}).reset_index()  
.rename(columns={'message':'n_comments'}).sort_values('n_comments', ascending=False)  
  
agree_dates.head(15)
```

```
Out[140]:
```

	date	n_comments	n_likes	n_replies
536	2020-02-03	80	702.0	11.0
235	2018-12-30	62	295.0	14.0

556	2020-02-26	61	349.0	7.0
537	2020-02-04	60	739.0	17.0
773	2020-11-07	54	238.0	5.0
229	2018-12-24	46	1293.0	10.0
779	2020-11-13	45	774.0	54.0
244	2019-01-08	41	209.0	6.0
241	2019-01-05	39	139.0	6.0
234	2018-12-29	39	162.0	7.0
123	2018-08-09	39	46.0	14.0
236	2018-12-31	36	67.0	2.0
273	2019-02-06	36	34.0	0.0
228	2018-12-23	36	122.0	9.0
470	2019-10-17	35	236.0	2.0

```
In [140]: bar_peaks(agree_dates[['date', 'n_comments']].head(3), '"Agree" Comments Peaks')
```

@sinadeinert @sinadeinertcf #sinas22 ❤

- #justiceforjohnnydepp
- Contains "Amber"
- Contains "F*ck"
- Contains "Agree"
- -----
- @sinadeinert @sinadeinertcf
- Red
- I am inevitable
- Only Numbers

This comment repeated 418 times in the same day!

```
In [140]: df1 = df_comments.query(" message ==@top_repeated[0][0] ").datetime.to_frame()
df1.head()
```

```
Out[140]:          datetime
973469  2020-08-24 20:06:15
973470  2020-08-24 20:06:15
973471  2020-08-24 20:06:16
973472  2020-08-24 20:06:17
973473  2020-08-24 20:06:18
```

```
In [140]: df1.groupby(df1.datetime.dt.hour)[["datetime"]].count().to_frame().rename(
    columns={"datetime": "n_comments"})
.reset_index().rename(columns={"datetime": "hour"})
```

```
Out[140]:   hour  n_comments
0      5       219
1      6       187
2     20        12
```

```
In [140]: df = df_comments.query(" message ==@top_repeated[0][0] ").datetime.to_frame()
fig = px.histogram(df, x="datetime", nbins=20)
fig.show("svg")
```

```
In [140]: df_comments.query(" message ==@top_repeated[0][0] ").username.value_counts()
```

```
Out[140]: sinasbutterfly      364
whogiovanna        25
desativei.dbbdbd     17
ilysmsiina        12
Name: username, dtype: int64
```

```
In [140]: df_comments.query(" message ==@top_repeated[0][0] ").is_verified.value_counts()
```

```
Out[140]: False      418
Name: is_verified, dtype: int64
```

@sinadeinert @sinadeinertcf #sinas22 ❤

- This comment repeated 418 times in the same day on these hours:

- 5 219
- 06 187
- 20 12

- By those users (all of them NOT VERIFIED):
 - sinasbutterfly 364 -whogiovanna 25 -desativei.dbbdbd 17 -ilysmsiina 12

@sinadeinert #sinas22 ❤️

```
In [141]: df_1_1 = df_comments.query(' message == "@sinadeinert #sinas22 ❤️" ')
df_1_1.head()
```

	message	datetime	id	n_replies	n_likes	media_id	parent_id	user_id	username	is_verified	account_url
973476	@sinadeinert #sinas22 ❤️	2020-08-24 20:23:14	17844181808338172	0.0	0.0	2382515382839532032	n	10216933845	sinasbutterfly	False	https://www.instagram.com/sinasbutterfly
973477	@sinadeinert #sinas22 ❤️	2020-08-24 20:23:14	17844253259336034	0.0	0.0	2382515382839532032	n	10216933845	sinasbutterfly	False	https://www.instagram.com/sinasbutterfly
973478	@sinadeinert #sinas22 ❤️	2020-08-24 20:23:15	17864073887047444	0.0	0.0	2382515382839532032	n	10216933845	sinasbutterfly	False	https://www.instagram.com/sinasbutterfly
973479	@sinadeinert #sinas22 ❤️	2020-08-24 20:23:15	17895144304586232	0.0	0.0	2382515382839532032	n	10216933845	sinasbutterfly	False	https://www.instagram.com/sinasbutterfly
973480	@sinadeinert #sinas22 ❤️	2020-08-24 20:23:16	18069435310235024	0.0	0.0	2382515382839532032	n	10216933845	sinasbutterfly	False	https://www.instagram.com/sinasbutterfly

```
In [141]: df_1_1.shape[0]
```

```
Out[141]: 207
```

```
In [141]: df_1_1.date.value_counts()
```

```
Out[141]: 2020-08-24    201
2020-08-25      6
Name: date, dtype: int64
```

```
In [141]: df_1_1.datetime.dt.hour.value_counts()
```

```
Out[141]: 18    151
23     13
19     13
21     12
20     11
0      6
17     1
Name: datetime, dtype: int64
```

```
In [141]: df_1_1.username.value_counts()
```

```
Out[141]: sinasbutterfly    189
whogiovanna       11
desativei.dbdbbd      7
Name: username, dtype: int64
```

```
In [141]: df_1_1.is_verified.value_counts()
```

```
Out[141]: False    207
Name: is_verified, dtype: int64
```

@sinadeinert #sinas22 ❤️

- This comment repeated 207 times in the same day on these hours:
 - 18 151
 - 19 13
 - 23 13
 - 21 12
 - 20 11
 - 0 6
 - 17 1
- By those users (all of them NOT VERIFIED):
 - sinasbutterfly 189
 - whogiovanna 11
 - desativei.dbdbbd 7

@sinadeinert @sinadeinertcf #sinas22 ❤️                        @savannah.clarke @heyon Jeong @alex_dnt @isolde_dnt

```
In [141]: df_1_2 = df_comments.query(
    " message == '@sinadeinert @sinadeinertcf #sinas22 ❤️ 
```

	message	datetime	id	n_replies	n_likes	media_id	parent_id	user_id	username	is_verified	account_url
973733	@sinadeinert @sinadeinertcf #sinas22 ❤️                       	2020-08-24 17:54:37	18160767436023476	0.0	0.0	2382515382839532032	n	10216933845	sinasbutterfly	False	https://www.instagram.com/sinasbutterfly
973734	@sinadeinert @sinadeinertcf #sinas22 ❤️                       	2020-08-24 17:54:38	17985302140305956	0.0	0.0	2382515382839532032	n	10216933845	sinasbutterfly	False	https://www.instagram.com/sinasbutterfly
973735	@sinadeinert @sinadeinertcf #sinas22	2020-08-24	17985302140305956	0.0	0.0	2382515382839532032	n	10216933845	sinasbutterfly	False	https://www.instagram.com/sinasbutterfly

973820	 @sinadeinert 	24 07:32:19	178758810288108088	0.0	0.0	2382515382839532032	n 10216933845	sinasbutterfly	False	https://www.instagram.com/
973821	 @sinadeinertcf #sinas22 	2020-08-24 07:32:20	1787332303688500	0.0	0.0	2382515382839532032	n 10216933845	sinasbutterfly	False	https://www.instagram.com/
973822	 @sinadeinertcf #sinas22 	2020-08-24 07:32:21	17888209621635858	0.0	0.0	2382515382839532032	n 10216933845	sinasbutterfly	False	https://www.instagram.com/

In [141]: df[1].shape[0]

137

```
In [141]: df_1_2.date.value_counts()
```

```
Out[141...]: 2020-08-24    137  
Name: date, dtype: int64
```

```
In [141]: df_1_2.datetime.dt.hour.value_counts()
```

```
Out[141...    7      135
       17      2
Name: datetime, dtype: int64
```

```
In [142]: df_1_2.username.value_counts()
```

```
Out[142]: sinasbutterfly    137  
          NAME: user_name    dtype: int64
```

In [142]:

2015-08 False 137

- This comment repeated 167 times in the same day on these hours:
 - 7 135
 - 17 2
 - By this not verified user:
 - sinasbutterfly 137

@sinadeinert

```
In [142]: df_1_3 = df_comments.query(' message == "@sinadeinert" ')
df_1_3.head()
```

Out[142...]	message	datetime	id	n_replies	n_likes	media_id	parent_id	user_id	username	is_verified	ac
	613519 @sinadeinert	2020-08-24 17:28:13	17924776702430142	0.0	0.0	2382890348743399424	n	6361102186	desativado123398	False	https://www.instagram.com/desativa
	613520 @sinadeinert	2020-08-24 17:28:15	17884496128706744	0.0	0.0	2382890348743399424	n	6361102186	desativado123398	False	https://www.instagram.com/desativa
	613526 @sinadeinert	2020-08-24 17:34:36	18130303330128104	0.0	0.0	2382890348743399424	n	35352867118	always.bangtan	False	https://www.instagram.com/always
	613564 @sinadeinert	2020-08-24 22:09:12	17894797966564560	0.0	0.0	2382890348743399424	n	20496528031	larinasfavs	False	https://www.instagram.com/l
	613565 @sinadeinert	2020-08-24 22:09:14	17888534464638304	0.0	0.0	2382890348743399424	n	20496528031	larinasfavs	False	https://www.instagram.com/l

In [142]: df[1].shape[0]

134

```
In [142]: df_1_3.date.value_counts()
```

```
Out[142...]:
```

	date	count
2020-08-24	113	
2020-08-25	21	

Name: date, dtype: int64

```
In [142]: df[3].datetime.dt.hour.value_counts()
```

```
Out[142]:
```

5	30
13	23
7	18
18	17
17	11
6	10
11	7
19	6
12	6
14	4
22	2

Name: datetime, dtype: int64

```
In [142]: df_1_3.username.value_counts()
```

```
Out[142]:
```

desativei.obrigada.por.tudo	24
sinasbutterfly	18
sinasluvrc	11
kkkjjkjii	9
wavssina	9
dreamsranieri	8
sabyaffects	7
vibewurea	7
lovely_joalin	6
desativado123398	6
sabithinker	6
larinasfavs	5
wunderbar_sina	4
sabysgiaw	4
charmantssina	3
deinertcurls	3
always.bangttan	2
famous.sinas	2

Name: username, dtype: int64

```
In [142]: df_1_3.is_verified.value_counts()
```

```
Out[142]:
```

False	134
-------	-----

Name: is_verified, dtype: int64

@sinadeinert

- This comment repeated 134 times in the two days:
 - 2020-08-24 113
 - 2020-08-25 21
- In those hours
 - 5 30
 - 13 23
 - 7 18
 - 18 17
 - 17 11
 - 6 10
 - ...
- By this not verified user:
 - desativei.obrigada.por.tudo 24
 - sinasbutterfly 18
 - sinasluvrc 11
 - kkkjjkjii 9
 - wavssina 9
 - dreamsranieri 8
 - ...

Red

- #justiceforjohnnydepp
- Contains "Amber"
- Contains "F*ck"
- Contains "Agree"
- -----
- @sinadeinert @sinadeinertcf
- Red
- I am inevitable
- Only Numbers

```
In [142]: df_red = df_comments.query(' message == "red" ')
```

```
Out[142]: df_red.head()
```

	message	datetime	id	n_replies	n_likes	media_id	parent_id	user_id	username	is_verified	ac
36045	red	2020-12-00:29:58	17889257659768024	0.0	0.0	2461433123156382720	n	22364216171	tahirdarkub	False	https://www.instagram.com/tahirdarkub
55463	red	2018-03-21:32:07	17919010036121604	0.0	1.0	1743650688645557760	n	4198084078	fabioo_79	False	https://www.instagram.com/fabioo_79
107270	red	2019-07-12:45:35	18048351244161016	0.0	0.0	2097797387641861376	n	14027786480	danielmendoza5486	False	https://www.instagram.com/danielmen
109003	red	2021-07-12:24:41	17961216790439608	0.0	3.0	2609385706551819264	n	48046672318	ma.hde5528	False	https://www.instagram.com/ma.hde5528
190136	red	2020-12-21:55:40	17880636355949640	0.0	0.0	2463433737814054912	n	5776619446	alvesp080	False	https://www.instagram.com/alvesp080

```
In [142]: df_red.date.value_counts()
```

```
Out[142]:
```

2018-04-09	178
2018-04-08	155
2018-04-10	153
2018-06-11	128
2018-06-10	70
2018-06-15	1

```
2019-05-15      +
2020-01-11      1
2018-04-13      1
2018-04-14      1
2020-09-09      1
Name: date, Length: 81, dtype: int64
```

```
In [143]: red_dates = get_top(df_red, "date", 10, "date", "n_comments")
red_dates
```

```
Out[143]: date n_comments
```

	date	n_comments
0	2018-04-09	178
1	2018-04-08	155
2	2018-04-10	153
3	2018-06-11	128
4	2018-06-10	70
5	2018-05-27	56
6	2018-05-03	56
7	2018-04-20	38
8	2020-12-14	22
9	2018-04-19	21

```
In [143]: bar_peaks(red_dates, "title")
```

```
Out[143]: df_red.username.value_counts()
```

```
abdv1._          3
the.legendary.owl 3
baydenjack       3
sharzmahmood     3
abe_xiong         3
..
caio_._camo       1
hdjeoskdjddkdksm 1
bobbyoliverpoptart 1
zo_notfinal.wav   1
masoud_heidari.1  1
Name: username, Length: 1006, dtype: int64
```

I am invitable

- #justiceforjohnnydepp
- Contains "Amber"
- Contains "F*ck"
- Contains "Agree"
- -----
- @sinadeinert @sinadeinertcf
- Red
- I am inevitable
- Only Numbers

```
In [143]: df_inev = df_comments.query(' message == "i am inevitable" ')
df_inev.head()
```

```
Out[143]: message datetime id n_replies n_likes media_id parent_id user_id username is_verified acc
```

	message	datetime									
			id	n_replies	n_likes	media_id	parent_id	user_id	username	is_verified	acc
993242	i am inevitable	2019-05- 15 08:24:51	18062326633066476	0.0	0.0	2043370785717132288	n	5557721675	ronak.jain15	False	https://www.instagram.com/ron
993263	i am inevitable	2019-05- 15 16:38:36	17853256882422760	0.0	0.0	2043370785717132288	n	11161354018	_maddie_cookie_	False	https://www.instagram.com/_maddie
993265	i am inevitable	2019-05- 15 17:59:27	17963838115266740	0.0	0.0	2043370785717132288	n	6677024448	cholo_blackpanther	False	https://www.instagram.com/cholo_bla
993271	i am inevitable	2019-05- 15 19:38:44	17963433061265200	0.0	0.0	2043370785717132288	n	7199686219	swastikshukla1308	False	https://www.instagram.com/swastiksh
993278	i am inevitable	2019-05- 16 04:02:31	18033199981150260	0.0	0.0	2043370785717132288	n	8299889227	bxvin_	False	https://www.instagram.com/bxvin_

```
In [143]: df_inev.date.value_counts()
```

```
Out[143]: 2019-05-14    128
2019-05-15      21
2019-05-16      1
2019-05-25      1
Name: date, dtype: int64
```

```
In [143]: ineq_dates = get_top(df_inev, "date", 10, "date", "n_comments")
ineq_dates
```

```
Out[143]: date n_comments
```

	date	n_comments
0	2019-05-14	128
1	2019-05-15	21

```
1 2019-05-15      21
2 2019-05-16      1
3 2019-05-25      1
```

```
In [143]: bar_peaks(inev_dates, "title")
```

the peak day of **I am inevitable** comment is 14 May 2019

```
In [143]: df_inev.username.value_counts()
```

```
Out[143]: ronak.jain15      1
its_rajdeep_m      1
j.a.k.e.t.a.y.l.o.r      1
dhruvv.agrawal      1
melylunac_      1
...
lyfaday      1
karthicckhere      1
jamesquinn3630      1
saini_lovers      1
doughboii.2120      1
Name: username, Length: 151, dtype: int64
```

This text used 136 times by different 136 users in 3 consecutive days

- in those dates
 - 2019-05-14 114
 - 2019-05-15 20
 - 2019-05-16 1
 - 2019-05-25 1

Only Numbers

- #justiceforjohnnydepp
- Contains "Amber"
- Contains "F*ck"
- Contains "Agree"
- -----
- @sinadeinert @sinadeinertcf
- Red
- I am inevitable
- **Only Numbers**

```
In [143]: numbers = []
```

```
In [143]: for i in range(0, 100):
    i = str(i)
    if df_comments.query("message==@i").shape[0] > 100:
        print(i, df_comments.query("message==@i").shape[0])
        numbers.append(i)
```

```
0 133
1 2043
2 2099
3 1238
4 792
5 588
6 270
7 271
8 336
9 471
10 993
11 146
```

```
In [144]: df_num = df_comments.query("message in @numbers")
```

```
In [144]: df_num.date.value_counts()
```

```
Out[144]: 2018-08-16    346
2018-07-13    322
2019-11-22    189
2018-07-12    189
2018-12-31    165
...
2021-08-21      1
2019-09-14      1
2018-09-14      1
2018-09-20      1
2018-06-23      1
Name: date, Length: 1000, dtype: int64
```

```
In [144]: df_num.username.value_counts()
```

```
Out[144]: poison_roar_ivy      45
nicolaspezeshkian      19
nasrabadi_vahid      17
rgjas8      16
hcarney50      14
...
mamaofboyzz      1
elnaz_e_naaz      1
b.doliveira      1
jaramillo8207      1
rubenizuriets      1
Name: username, Length: 8169, dtype: int64
```

Negative Text

```
In [144]: neg_text
Out[144]: {'death',
'death',
'go kys',
'raped',
'#fuckamberheard',
'50 million',
'7 million',
'@amberheard fuck you',
'abuse',
'abuser',
'abusing',
'aggressively pull',
'amber abus',
'amber heard abus',
'amber lunge',
'amber-heard-abus',
'amberheardisaliar',
'amberheardisanabuser',
'amberheardisanabuserandliar',
'amberisanabuser',
'ambertheabuser',
'amberturd',
'assaulted johnny',
'because she is a woman',
'because she's a woman',
'bitch',
'boycottamber',
'boycottamberheard',
'burn',
'burn in hell',
'change.org',
'clawing',
'clown',
'cunt',
'deathtoamber',
'diecount',
'disgusting',
'domestic violence',
'exposing her ass',
'fake victim',
'felony',
'fire amber',
'fire her',
'fireamberheard',
'fireamberheardfromaquaman',
'fired',
'fuck amber',
'fuck @amberheard',
'fuck amber',
'fuck amber heard',
'fuck her',
'fuck herself',
'fuck off',
'fuck that bitch',
'fuck this bitch',
'fuck u @amberheard',
'fuck you @amberheard',
'fuck you amber',
'fuckamber',
'fuckamberheard',
'fucked the right off',
'fucking abuser',
'fucking bitch',
'fucking bullshit',
'fuckthesun',
'garbage',
'get raped',
'go die',
'gold digger',
'how can you still have fans',
'jail',
'jailforamberheard',
'johnnydeppforever',
'justice for johnny',
'kill amber',
'kill her',
'kys',
'lawsuit',
"no one will believe you're a victim because you're a man",
'nojohnnynopotc',
'nominated for shit',
'petition',
'piece of shit',
'prison',
'punched',
'remove amber',
'remove-amber',
'removeamber',
'removeamberheardsfromaquaman2',
'removed',
'scammer',
'shit',
'shit',
'stupid',
'stupid ass',
'threw a vodka bottle',
'tugging',
'vent',
'wearewhityoujohnnydepp',
'wearewithyoujohnnydepp',
'whorish'}
```

```
In [144]: neg_distr = f'WTF!! ARES
```

```
'no_will': 10,
'kill hen': 161,
'kys': 147,
'kill amber': 124,
'she should kys': 2,
'go kys amber': 1,

'death': 1799,
'death': 1256,
'burn': 792,
death': 710,
deserves it': 178,
burn in hell': 63,
go to hell': 105,
go die': 18,
gotohell': 5,
to death amber': 2,
burninhell': 2,
death to amber': 1,
deathtoamber': 1,
diecunt': 1,

'abus': 17574,
abuse': 14013,
shit': 9747,
abuser': 8568,
bitch': 5989,
liar': 3134,
stupid': 2412,
amberheardisanabuser': 2033,
fired': 1840,
disgusting': 1545,
abusing': 1155,
bullshit': 1130,
shut': 1025,
amber turd': 731,
cunt': 645,
expos': 550,
clown': 506,
amberturd': 505,
whor': 383,
boycottamber': 329,
boycottamberheard': 324,
amberheabuser': 167,
amberheardisanabuserandliar': 144,
amber abus': 121,
amberisanabuser': 105,
amber heard abus': 75,
stupid ass': 55,
scammer': 32,
amber-heard-abus': 31,
violencehasnogender': 16,
exposingamberheard': 11,

'clawing': 8,
fire amber': 113,
fireamber': 356,
fire hen': 318,
fireamberheard': 350,
fireamberheardfromaquaman': 22,
remove amber': 106,
removeamber': 106,
remove-amber': 198,
removeamberheardsfromaquaman2': 57,
removed': 315,

fuck amber': 1115,
fuck amber heard': 783,
fuck hen': 613,
fuckamber': 518,
#fuckamberheard': 489,
fuckamberheard': 494,
fuck off': 425,
fuckthesun': 335,
fuck that bitch': 182,
fucking bitch': 160,
fuck this bitch': 135,
fuck you amber': 120,
fucking abuser': 73,
fuck @amberheard': 42,
fuck you @amberheard': 39,
fucking bullshit': 31,
@amberheard fuck you': 23,
fuck herself': 21,
fuck u @amberheard': 16,
fuck amber': 16,
fuck amber herd': 14,
fucked the right off': 1,

beaten': 173,
beaten up': 21,
get raped': 15,
raped': 158,

victim': 3166,
assault': 482,
alcoholic': 170,
aggressive': 145,
fake victim': 33,
aggressively pull': 5,
amber lunge': 5,
tugging': 5,
assaulted johnny': 16,
punched': 168,
```

```
'threw a vodka bottle': 14,
'vodka bottle': 59,

'violence': 1196,
'violent': 1017,
'petition': 865,
'domestic violence': 636,
'change.org': 479,
'felony': 6,
'exposing her ass': 1,

'50 million': 70,
'7 million': 86,
'gold digger': 376,
'golddigger': 71,

'because she is a woman': 31,
'because she's a woman': 51,
'how can you still have fans': 1,
"no one will believe you're a victim because you're a man": 1,

'jailforamberheard': 153,
'lawsuit': 209,
'jail': 1825,
'prison': 646}
```

```
In [144]: my_set = set()
for key in neg_dict.keys():
    my_set.add(key)

my_set
```

```
Out[144]: {'death',
'death',
'raped',
'#fuckamberheard',
'50 million',
'7 million',
 '@amberheard fuck you',
'abus',
'abuse',
'abuser',
'abusing',
'aggressive',
'aggressively pull',
'alcoholic',
'amber abus',
'amber heard abus',
'amber lunge',
'amber turd',
'amber-heard-abus',
'amberheardisaliar',
'amberheardisanabuser',
'amberheardisanabuserandliar',
'amberisanabuser',
'ambertheabuser',
'amberturd',
'assault',
'assaulted johnny',
'beaten',
'beaten up',
'because she is a woman',
'because she's a woman',
'bitch',
'boycottamber',
'boycottamberheard',
'bullshit',
'burn',
'burn in hell',
'burninhell',
'change.org',
'clawing',
'clown',
'cunt',
'death',
'death to amber',
'deathtoamber',
'deserves it',
'diecunt',
'disgusting',
'domestic violence',
'expos',
'exposing her ass',
'exposingamberheard',
'fake victim',
'felony',
'fire amber',
'fire her',
'fireamber',
'fireamberheard',
'fireamberheardfromaquaman',
'fired',
'fuck amber',
'fuck @amberheard',
'fuck amber',
'fuck amber heard',
'fuck amber herd',
'fuck her',
'fuck herself',
'fuck off',
'fuck that bitch',
'fuck this bitch',
'fuck u @amberheard',
'fuck you @amberheard',
'fuck you amber',
'fuckamber',
'fuckamberheard',
'fucked the right off',
```

```
'fucking abuser',
'fucking bitch',
'fucking bullshit',
'fuckthesun',
'get raped',
'go die',
'go kys amber',
'go to hell',
'gold digger',
'golddigger',
'gotohell',
'how can you still have fans',
'jail',
'jailforamberheard',
'kill',
'kill amber',
'kill her',
'kys',
'lawsuit',
'liar',
"no one will believe you're a victim because you're a man",
'petition',
'prison',
'punched',
'remove amber',
'remove-amber',
'removeamber',
'removeamberheardsfromaquaman2',
'removed',
'scammer',
'she should kys',
'shit',
'shit',
'stupid',
'stupid ass',
'threw a vodka bottle',
'to death amber',
'tugging',
'victim',
'violence',
'violencehasnogender',
'vent',
'vodka bottle',
'whor'}
```

Negative Users

```
In [144]: len(neg_users)
Out[144]: 14511

In [144]: # To Save the negative commented users in a dictionary pkl file
import pickle

with open('negative_users.pkl', 'wb') as f:
    pickle.dump(neg_users, f)

with open('negative_text.pkl', 'wb') as f:
    pickle.dump(neg_dict, f)

In [144]: # To Load the set of negatively commented users
with open('negative_users.pkl', 'rb') as f:
    neg_users = pickle.load(f)

# To Load the dictionary of negative text
with open('negative_text.pkl', 'rb') as f:
    neg_dict = pickle.load(f)
```

Conclusions

- Introduction
- Exploratory Data Analysis
- **Conclusions**

```
In [144]: print(
    f"The data contains {df_posts.shape[0]} posts with {df_comments.shape[0]} comments"
)
The data contains 193967 posts with 1751113 comments

In [145]: print(
    f"Posts were made by {df_posts['username'].nunique()} users, and {df_comments['username'].nunique()} users commented"
)
Posts were made by 36137 users, and 681174 users commented
```

END OF NOTEBOOK



