cbs_segments

March 13, 2022

```
[1]: import sys
     sys.path.append('../')

     from helpers.utils import read_docx_to_dict
```

```
[2]: filename = "Analysis_Fire_12_30_21_CBS.docx"

     miami_dallas = "Analysis_12_30_21_Colorado_Fire_CBS_w_DallasMiami.docx"
```

```
[3]: data = read_docx_to_dict(filename)
```

```
[4]: import pandas as pd
     pd.options.display.max_rows = 500

     # create dataframe
     df = pd.DataFrame.from_dict(data)
```

```
[5]: miami_dallas_data = read_docx_to_dict(miami_dallas)
```

```
[6]: miami_dallas_df = pd.DataFrame.from_dict(miami_dallas_data)
```

```
[7]: len(df)
```

```
[7]: 75
```

```
[8]: len(miami_dallas_df)
```

```
[8]: 10
```

```
[9]: df = pd.concat([df, miami_dallas_df], ignore_index=True)
     len(df)
```

```
[9]: 85
```

```
[10]: df.tail(10)
```

```
[10]:                    time              location station  \
      75  2021-12-30 6:37 PM  Miami-Ft. Lauderdale    WFOR
```

```
76   2021-12-30 6:07 PM   Miami-Ft. Lauderdale      WFOR
77    021-12-30 6:06 PM        Dallas-Ft. Worth      KTVT
78   2021-12-30 5:37 PM        Dallas-Ft. Worth      KTVT
79   2021-12-30 5:33 PM        Dallas-Ft. Worth      KTVT
80   2021-12-30 5:33 PM        Dallas-Ft. Worth      KTVT
81   2021-12-30 5:19 PM   Miami-Ft. Lauderdale      WFOR
82   2021-12-30 5:19 PM   Miami-Ft. Lauderdale      WFOR
83   2021-12-30 5:18 PM   Miami-Ft. Lauderdale      WFOR
84   2021-12-30 5:18 PM   Miami-Ft. Lauderdale      WFOR

                                                       text
75   THE EVENING ENDING OVERNIGHT. SEVERAL COMMUNIT…
76   WOULDN'T BE THAT LONG IN DURATION. AND THEN TH…
77   THE OMICRON VARIANT. >>> THE CITY OF PARIS SOU…
78   THE EVENING ENDING OVERNIGHT. SEVERAL COMMUNIT…
79   THE EVENING ENDING OVERNIGHT. SEVERAL COMMUNIT…
80   SHORTAGE. WITH FINAL PREPS UNDERWAY FOR THE NE…
81   >> Reporter: NEWS OF THE BOY BEING BADLY BURNE…
82   >> Reporter: NEWS OF THE BOY BEING BADLY BURNE…
83   AND WE SUPPORT C.C. S. O. AND THE OFFICER EARL…
84                                         [w:drawing]
```

```python
[11]: df['text'] = df['text'].str.lower()
```

```python
[12]: df.head(5)
```

```
[12]:                  time                          location station  \
      0  2021-12-30 6:49 PM          Phoenix (Prescott)     KPHO
      1  2021-12-30 6:48 PM          Phoenix (Prescott)     KPHO
      2  2021-12-30 6:37 PM            Ft. Myers-Naples     WINK
      3  2021-12-30 6:37 PM  Greensboro-H.Point-W.Salem     WFMY
      4    21-12-30 6:37 PM                     Atlanta     WGCL

                                                       text
      0  have been destroyed. ap, the associated press …
      1  kusa, the nbc affiliate in denver, this is in …
      2  several communities were evacuated because of …
      3  the evening ending overnight. several communit…
      4  the evening ending overnight. several communit…
```

```python
[13]: from helpers.utils import check_text_likeness
```

```python
[14]: df['matches'] = df.apply(lambda row: check_text_likeness(df, row['text']),
       ↪axis=1)
```

```python
[15]: df.head(5)
```

```
[15]:                 time                    location station  \
      0  2021-12-30 6:49 PM        Phoenix (Prescott)   KPHO
      1  2021-12-30 6:48 PM        Phoenix (Prescott)   KPHO
      2  2021-12-30 6:37 PM           Ft. Myers-Naples   WINK
      3  2021-12-30 6:37 PM  Greensboro-H.Point-W.Salem  WFMY
      4     21-12-30 6:37 PM                    Atlanta   WGCL

                                                    text  \
      0  have been destroyed. ap, the associated press …
      1  kusa, the nbc affiliate in denver, this is in …
      2  several communities were evacuated because of …
      3  the evening ending overnight. several communit…
      4  the evening ending overnight. several communit…

                                                 matches
      0                                             [0]
      1                                             [1]
      2  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…
      3  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…
      4  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…
```

```python
[28]: len(df['matches'])
```

```
[28]: 95
```

```
[ ]:
```

```python
[16]: from helpers.utils import fetch_biggest_text

      df['row_to_use'] = df.apply(lambda row: fetch_biggest_text(df, row['matches']),
       ↪axis=1)
```

```
[ ]:
```

```
[ ]:
```

```python
[17]: df
```

```
[17]:                 time                    location station  \
      0  2021-12-30 6:49 PM        Phoenix (Prescott)    KPHO
      1  2021-12-30 6:48 PM        Phoenix (Prescott)    KPHO
      2  2021-12-30 6:37 PM           Ft. Myers-Naples    WINK
      3  2021-12-30 6:37 PM  Greensboro-H.Point-W.Salem  WFMY
      4     21-12-30 6:37 PM                    Atlanta   WGCL
      5  2021-12-30 6:37 PM  Orlando-Daytona Bch-Melbrn  WKMG
      6  2021-12-30 6:37 PM                    New York   WCBS
      7  2021-12-30 6:37 PM                     Detroit    WWJ
      8  2021-12-30 6:37 PM         Boston (Manchester)    WBZ
```

```
9     021-12-30 6:37 PM      Sacramnto-Stkton-Modesto    KOVR
10    2021-12-30 6:37 PM        Hartford & New Haven     WFSB
11    2021-12-30 6:37 PM                   Baltimore     WJZ
12     021-12-30 6:37 PM    Raleigh-Durham (Fayetvlle)   WNCN
13    2021-12-30 6:37 PM                  Pittsburgh     KDKA
14    2021-12-30 6:37 PM                 Portland, OR    KOIN
15    2021-12-30 6:37 PM               Seattle-Tacoma    KIRO
16    2021-12-30 6:37 PM                 Los Angeles     KCBS
17     021-12-30 6:37 PM    San Francisco-Oak-San Jose   KPIX
18      21-12-30 6:37 PM     Washington, DC (Hagrstwn)    WUSA
19    2021-12-30 6:37 PM                  Louisville     WLKY
20    2021-12-30 6:37 PM        Providence-New Bedford    WPRI
21    2021-12-30 6:37 PM                   Knoxville     WVLT
22    2021-12-30 6:37 PM                Indianapolis     WTTV
23    2021-12-30 6:37 PM                Indianapolis     WTTV
24    2021-12-30 6:37 PM                Indianapolis     WTTV
25    2021-12-30 6:37 PM    Norfolk-Portsmth-Newpt Nws   WTKR
26    2021-12-30 6:37 PM    West Palm Beach-Ft. Pierce   WPEC
27    2021-12-30 6:37 PM    West Palm Beach-Ft. Pierce   WPEC
28    2021-12-30 6:37 PM     Tampa-St. Pete (Sarasota)    WTSP
29    2021-12-30 6:37 PM                     Buffalo     WIVB
30    2021-12-30 6:37 PM    Greenvll-Spart-Ashevll-And   WSPA
31    2021-12-30 6:37 PM                Jacksonville     WJAX
32    2021-12-30 6:37 PM                   Charlotte     WBTV
33    2021-12-30 6:37 PM                  Cincinnati     WKRC
34    2021-12-30 6:37 PM                 Columbus, OH    WBNS
35    2021-12-30 6:37 PM                 Columbus, OH    WBNS
36    2021-12-30 6:37 PM                 Columbus, OH    WBNS
37    2021-12-30 6:37 PM                Philadelphia      KYW
38    2021-12-30 6:12 PM    Sacramnto-Stkton-Modesto     KOVR
39    2021-12-30 6:20 PM    Sacramnto-Stkton-Modesto     KOVR
40     021-12-30 6:07 PM        Phoenix (Prescott)       KPHO
41    2021-12-30 6:00 PM    Sacramnto-Stkton-Modesto     KOVR
42    2021-12-30 5:59 PM    Sacramnto-Stkton-Modesto      KOV
43    2021-12-30 5:55 PM           Ft. Myers-Naples      WINK
44    2021-12-30 5:44 PM                   Baltimore      WJZ
45    2021-12-30 5:44 PM                   Baltimore      WJZ
46    2021-12-30 5:44 PM                   Baltimore      WJZ
47    2021-12-30 5:43 PM               Seattle-Tacoma    KIRO
48    2021-12-30 5:37 PM                     Houston     KHOU
49    2021-12-30 5:37 PM            Dallas-Ft. Worth     KTVT
50    2021-12-30 5:37 PM                       Tulsa     KOTV
51    2021-12-30 5:37 PM                 San Antonio     KENS
52    2021-12-30 5:37 PM                   Milwaukee     WDJT
53    2021-12-30 5:37 PM                      Austin     KEYE
54    2021-12-30 5:37 PM                     Chicago     WBBM
55    2021-12-30 5:37 PM                     Memphis     WREG
```

```
56  2021-12-30 5:37 PM              San Diego    KFMB
57  2021-12-30 5:37 PM    Minneapolis-St. Paul   WCCO
58  2021-12-30 5:37 PM            Kansas City    KCTV
59  2021-12-30 5:37 PM              Las Vegas    KLAS
60  2021-12-30 5:37 PM            New Orleans     WWL
61  2021-12-30 5:37 PM              Las Vegas    KLAS
62  2021-12-30 5:37 PM            New Orleans     WWL
63  2021-12-30 5:37 PM              St. Louis    KMOV
64  2021-12-30 5:37 PM          Oklahoma City    KWTV
65  2021-12-30 5:34 PM             Pittsburgh    KDKA
66  2021-12-30 5:31 PM  Sacramnto-Stkton-Modesto KOVR
67  2021-12-30 5:17 PM                  Tulsa    KOTV
68  2021-12-30 5:14 PM           Portland, OR    KOIN
69  2021-12-30 5:12 PM              San Diego    KFMB
70  2021-12-30 5:07 PM     Albuquerque-Santa Fe  KRQE
71  2021-12-30 5:06 PM      Phoenix (Prescott)   KPHO
72  2021-12-30 5:04 PM  Sacramnto-Stkton-Modesto KOVR
73  2021-12-30 5:02 PM  Sacramnto-Stkton-Modesto KOVR
74  2021-12-30 5:01 PM  Sacramnto-Stkton-Modesto KOVR
75  2021-12-30 6:37 PM     Miami-Ft. Lauderdale  WFOR
76  2021-12-30 6:07 PM     Miami-Ft. Lauderdale  WFOR
77   021-12-30 6:06 PM       Dallas-Ft. Worth    KTVT
78  2021-12-30 5:37 PM       Dallas-Ft. Worth    KTVT
79  2021-12-30 5:33 PM       Dallas-Ft. Worth    KTVT
80  2021-12-30 5:33 PM       Dallas-Ft. Worth    KTVT
81  2021-12-30 5:19 PM     Miami-Ft. Lauderdale  WFOR
82  2021-12-30 5:19 PM     Miami-Ft. Lauderdale  WFOR
83  2021-12-30 5:18 PM     Miami-Ft. Lauderdale  WFOR
84  2021-12-30 5:18 PM     Miami-Ft. Lauderdale  WFOR

                                              text  \
0   have been destroyed. ap, the associated press …
1   kusa, the nbc affiliate in denver, this is in …
2   several communities were evacuated because of …
3   the evening ending overnight. several communit…
4   the evening ending overnight. several communit…
5   the evening ending overnight. several communit…
6   several communities were evacuated because of …
7   the evening ending overnight. several communit…
8   the evening ending overnight. several communit…
9   mudslides, major. >> garrett: jonathan vigliot…
10  and here in southern california, the rain will…
11  the evening ending overnight. several communit…
12  the evening ending overnight. several communit…
13  the evening ending overnight. several communit…
14  the rain will continue through the evening end…
15  the rain will continue through the evening end…
```

```
16  like this, and the risk of mudslides, major. >…
17  evacuated because of flooding like this, and t…
18  several communities were evacuated because of …
19  the evening ending overnight. several communit…
20  and here in southern california, the rain will…
21  the evening ending overnight. several communit…
22  the evening ending overnight. several communit…
23  the evening ending overnight. several communit…
24  the evening ending overnight. several communit…
25  the evening ending overnight. several communit…
26  the evening ending overnight. several communit…
27  the evening ending overnight. several communit…
28  the evening ending overnight. several communit…
29  and here in southern california, the rain will…
30  the evening ending overnight. several communit…
31  and here in southern california, the rain will…
32  the evening ending overnight. several communit…
33  the evening ending overnight. several communit…
34  the evening ending overnight. several communit…
35  the evening ending overnight. several communit…
36  the evening ending overnight. several communit…
37  the evening ending overnight. several communit…
38  tracking the devastating fires in colorado and…
39  here we have evacuations. i will tell you a li…
40  hoping to ski into the new year. and here in s…
41  about. we just talked about the hospital where…
42  together. this house, burning to the ground. 3…
43  rubenstein law, injured in a car accident or s…
44                              e2021-12-30 5:44 pm
45  wildfire-that engulfed parts of the area. in a…
46  wildfire-that engulfed parts of the area. in a…
47  outside of denver have been told to evacuate. …
48  the evening ending overnight. several communit…
49  the evening ending overnight. several communit…
50  several communities were evacuated because of …
51  the evening ending overnight. several communit…
52  the evening ending overnight. several communit…
53  the evening ending overnight. several communit…
54  the evening ending overnight. several communit…
55  the evening ending overnight. several communit…
56  mudslides, major. >> garrett: jonathan vigliot…
57  the evening ending overnight. several communit…
58  and here in southern california, the rain will…
59  mudslides, major. >> garrett: jonathan vigliot…
60  the evening ending overnight. several communit…
61  mudslides, major. >> garrett: jonathan vigliot…
62  the evening ending overnight. several communit…
```

```
63  and here in southern california, the rain will…
64  several communities were evacuated because of …
65  they are calling this now the marshall-fire-an…
66  signatures, here. this is where we have had fl…
67  sun. morning satellite imagery right now we ha…
68  >> to breaking news now, this is a live look i…
69  thousands of people have been ordered to evacu…
70  the evening ending overnight. several communit…
71  into the central rockies, and it is a dangerou…
72  we couple that with relative humidity anywhere…
73  much damage will be assessed as well. >> we st…
74  >> the-fire-crews now left the scene knowing t…
75  the evening ending overnight. several communit…
76  wouldn't be that long in duration. and then th…
77  the omicron variant. >>> the city of paris sou…
78  the evening ending overnight. several communit…
79  the evening ending overnight. several communit…
80  shortage. with final preps underway for the ne…
81  >> reporter: news of the boy being badly burne…
82  >> reporter: news of the boy being badly burne…
83  and we support c.c. s. o. and the officer earl…
84                                       [w:drawing]


                                      matches  row_to_use
0                                         [0]           0
1                                         [1]           1
2   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
3   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
4   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
5   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
6   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
7   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
8   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
9   [2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…          14
10  [2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, …          14
11  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
12  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
13  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
14  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
15  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
16  [2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…          14
17  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
18  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
19  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
20  [2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, …          14
21  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
22  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
```

23	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
24	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
25	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
26	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
27	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
28	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
29	[2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, …		14
30	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
31	[2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, …		14
32	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
33	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
34	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
35	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
36	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
37	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
38		[38]	38
39		[39]	39
40	[2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, …		14
41		[41]	41
42		[42]	42
43		[43]	43
44		[44]	44
45		[45, 46]	45
46		[45, 46]	45
47		[47]	47
48	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
49	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
50	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
51	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
52	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
53	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
54	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
55	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
56	[2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…		14
57	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
58	[2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, …		14
59	[2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…		14
60	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
61	[2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…		14
62	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
63	[2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, …		14
64	[2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…		14
65		[65]	65
66		[66]	66
67		[67]	67
68		[68]	68
69		[69]	69

```
70  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
71                                              [71]          71
72                                              [72]          72
73                                              [73]          73
74                                              [74]          74
75  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
76                                              [76]          76
77                                              [77]          77
78  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
79  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14
80                                              [80]          80
81                                          [81, 82]          81
82                                          [81, 82]          81
83                                              [83]          83
84                                              [84]          84
```

[ ]:

[ ]:

[18]:
```python
from helpers.utils import mark_use_row
mark_use_row(df)
```

[18]: 'done'

[19]:
```python
df.head(20)
```

[19]:
```
                     time                      location station  \
0    2021-12-30 6:49 PM             Phoenix (Prescott)    KPHO
1    2021-12-30 6:48 PM             Phoenix (Prescott)    KPHO
2    2021-12-30 6:37 PM               Ft. Myers-Naples    WINK
3    2021-12-30 6:37 PM   Greensboro-H.Point-W.Salem    WFMY
4      21-12-30 6:37 PM                        Atlanta    WGCL
5    2021-12-30 6:37 PM    Orlando-Daytona Bch-Melbrn    WKMG
6    2021-12-30 6:37 PM                       New York    WCBS
7    2021-12-30 6:37 PM                        Detroit     WWJ
8    2021-12-30 6:37 PM            Boston (Manchester)     WBZ
9     021-12-30 6:37 PM    Sacramnto-Stkton-Modesto     KOVR
10   2021-12-30 6:37 PM        Hartford & New Haven     WFSB
11   2021-12-30 6:37 PM                      Baltimore     WJZ
12    021-12-30 6:37 PM   Raleigh-Durham (Fayetvlle)    WNCN
13   2021-12-30 6:37 PM                     Pittsburgh    KDKA
14   2021-12-30 6:37 PM                   Portland, OR    KOIN
15   2021-12-30 6:37 PM                 Seattle-Tacoma    KIRO
16   2021-12-30 6:37 PM                    Los Angeles    KCBS
17    021-12-30 6:37 PM   San Francisco-Oak-San Jose    KPIX
18     21-12-30 6:37 PM   Washington, DC (Hagrstwn)    WUSA
```

9

```
19  2021-12-30 6:37 PM              Louisville    WLKY

                                                        text  \
0    have been destroyed. ap, the associated press …
1    kusa, the nbc affiliate in denver, this is in …
2    several communities were evacuated because of …
3    the evening ending overnight. several communit…
4    the evening ending overnight. several communit…
5    the evening ending overnight. several communit…
6    several communities were evacuated because of …
7    the evening ending overnight. several communit…
8    the evening ending overnight. several communit…
9    mudslides, major. >> garrett: jonathan vigliot…
10   and here in southern california, the rain will…
11   the evening ending overnight. several communit…
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13   the evening ending overnight. several communit…
14   the rain will continue through the evening end…
15   the rain will continue through the evening end…
16   like this, and the risk of mudslides, major. >…
17   evacuated because of flooding like this, and t…
18   several communities were evacuated because of …
19   the evening ending overnight. several communit…


                                         matches  row_to_use use_row
0                                            [0]           0    True
1                                            [1]           1    True
2    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
3    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
4    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
5    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
6    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
7    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
8    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
9    [2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…          14   False
10   [2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, …          14   False
11   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
12   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
13   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
14   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14    True
15   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
16   [2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…          14   False
17   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
18   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
19   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
```

```
[20]: df['words'] = df['text'].str.lower().str.replace(',', '').str.replace('>', '').
      ↪str.replace('.', '').str.replace('\n', '').str.replace(''', "'").str.replace(
        '!', '').str.replace('?', '').str.replace('%', '').str.replace(')', '').str.
      ↪replace('(', '').str.replace('_', '').str.replace(':', '').str.strip().str.
      ↪split(' ')
```

/Users/loren/.pyenv/versions/3.7.4/lib/python3.7/site-
packages/ipykernel_launcher.py:1: FutureWarning: The default value of regex will
change from True to False in a future version. In addition, single character
regular expressions will *not* be treated as literal strings when regex=True.
  """Entry point for launching an IPython kernel.
/Users/loren/.pyenv/versions/3.7.4/lib/python3.7/site-
packages/ipykernel_launcher.py:2: FutureWarning: The default value of regex will
change from True to False in a future version. In addition, single character
regular expressions will *not* be treated as literal strings when regex=True.

```
[21]: df.head(20)
```

```
[21]:                     time                    location station  \
      0    2021-12-30 6:49 PM           Phoenix (Prescott)    KPHO
      1    2021-12-30 6:48 PM           Phoenix (Prescott)    KPHO
      2    2021-12-30 6:37 PM             Ft. Myers-Naples    WINK
      3    2021-12-30 6:37 PM  Greensboro-H.Point-W.Salem    WFMY
      4      21-12-30 6:37 PM                      Atlanta    WGCL
      5    2021-12-30 6:37 PM  Orlando-Daytona Bch-Melbrn    WKMG
      6    2021-12-30 6:37 PM                     New York    WCBS
      7    2021-12-30 6:37 PM                      Detroit     WWJ
      8    2021-12-30 6:37 PM          Boston (Manchester)     WBZ
      9     021-12-30 6:37 PM    Sacramnto-Stkton-Modesto    KOVR
      10   2021-12-30 6:37 PM       Hartford & New Haven     WFSB
      11   2021-12-30 6:37 PM                    Baltimore     WJZ
      12    021-12-30 6:37 PM  Raleigh-Durham (Fayetvlle)    WNCN
      13   2021-12-30 6:37 PM                   Pittsburgh    KDKA
      14   2021-12-30 6:37 PM                 Portland, OR    KOIN
      15   2021-12-30 6:37 PM              Seattle-Tacoma     KIRO
      16   2021-12-30 6:37 PM                  Los Angeles    KCBS
      17    021-12-30 6:37 PM  San Francisco-Oak-San Jose    KPIX
      18     21-12-30 6:37 PM    Washington, DC (Hagrstwn)    WUSA
      19   2021-12-30 6:37 PM                   Louisville    WLKY

                                                       text  \
      0    have been destroyed. ap, the associated press …
      1    kusa, the nbc affiliate in denver, this is in …
      2    several communities were evacuated because of …
      3    the evening ending overnight. several communit…
      4    the evening ending overnight. several communit…
      5    the evening ending overnight. several communit…
```

```
6   several communities were evacuated because of …
7   the evening ending overnight. several communit…
8   the evening ending overnight. several communit…
9   mudslides, major. >> garrett: jonathan vigliot…
10  and here in southern california, the rain will…
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12  the evening ending overnight. several communit…
13  the evening ending overnight. several communit…
14  the rain will continue through the evening end…
15  the rain will continue through the evening end…
16  like this, and the risk of mudslides, major. >…
17  evacuated because of flooding like this, and t…
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                                            matches  row_to_use use_row  \
0                                               [0]           0    True
1                                               [1]           1    True
2    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
3    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
4    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
5    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
6    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
7    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
8    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
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10   [2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, …          14   False
11   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
12   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
13   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
14   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14    True
15   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
16   [2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…          14   False
17   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
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19   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False


                                              words
0    [have, been, destroyed, ap, the, associated, p…
1    [kusa, the, nbc, affiliate, in, denver, this, …
2    [several, communities, were, evacuated, becaus…
3    [the, evening, ending, overnight, several, com…
4    [the, evening, ending, overnight, several, com…
5    [the, evening, ending, overnight, several, com…
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```

```
9   [mudslides, major, , garrett, jonathan, viglio…
10  [and, here, in, southern, california, the, rai…
11  [the, evening, ending, overnight, several, com…
12  [the, evening, ending, overnight, several, com…
13  [the, evening, ending, overnight, several, com…
14  [the, rain, will, continue, through, the, even…
15  [the, rain, will, continue, through, the, even…
16  [like, this, and, the, risk, of, mudslides, ma…
17  [evacuated, because, of, flooding, like, this,…
18  [several, communities, were, evacuated, becaus…
19  [the, evening, ending, overnight, several, com…
```

[ ]:

```python
[22]: from helpers.utils import parse_words
      df['clean_words'] = df.apply(lambda row: parse_words(row['words']), axis=1)
```

```python
[23]: df.head(20)
```

```
[23]:                    time                     location station  \
      0    2021-12-30 6:49 PM          Phoenix (Prescott)    KPHO
      1    2021-12-30 6:48 PM          Phoenix (Prescott)    KPHO
      2    2021-12-30 6:37 PM             Ft. Myers-Naples    WINK
      3    2021-12-30 6:37 PM  Greensboro-H.Point-W.Salem    WFMY
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      5    2021-12-30 6:37 PM  Orlando-Daytona Bch-Melbrn    WKMG
      6    2021-12-30 6:37 PM                     New York    WCBS
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      18     21-12-30 6:37 PM   Washington, DC (Hagrstwn)    WUSA
      19   2021-12-30 6:37 PM                   Louisville    WLKY

                                                       text  \
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      4    the evening ending overnight. several communit…
```

```
5   the evening ending overnight. several communit…
6   several communities were evacuated because of …
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                                      matches  row_to_use use_row  \
0                                         [0]           0    True
1                                         [1]           1    True
2   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
3   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
4   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
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6   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
7   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
8   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
9   [2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…          14   False
10  [2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, …          14   False
11  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
12  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
13  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
14  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14    True
15  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
16  [2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…          14   False
17  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
18  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False
19  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14   False


                                      words  \
0   [have, been, destroyed, ap, the, associated, p…
1   [kusa, the, nbc, affiliate, in, denver, this, …
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5   [the, evening, ending, overnight, several, com…
6   [several, communities, were, evacuated, becaus…
7   [the, evening, ending, overnight, several, com…
```

```
 8   [the, evening, ending, overnight, several, com…
 9   [mudslides, major, , garrett, jonathan, viglio…
10   [and, here, in, southern, california, the, rai…
11   [the, evening, ending, overnight, several, com…
12   [the, evening, ending, overnight, several, com…
13   [the, evening, ending, overnight, several, com…
14   [the, rain, will, continue, through, the, even…
15   [the, rain, will, continue, through, the, even…
16   [like, this, and, the, risk, of, mudslides, ma…
17   [evacuated, because, of, flooding, like, this,…
18   [several, communities, were, evacuated, becaus…
19   [the, evening, ending, overnight, several, com…

                                            clean_words
 0   [have, been, destroyed, ap, the, associated, p…
 1   [kusa, the, nbc, affiliate, in, denver, this, …
 2   [several, communities, were, evacuated, becaus…
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14   [the, rain, will, continue, through, the, even…
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18   [several, communities, were, evacuated, becaus…
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```

```python
[24]: from helpers.utils import fetch_climate_words_in_words,␣
      ↪fetch_climate_phrases_in_text
```

```python
[25]: fetch_climate_words_in_words(["adapt","for", "climate", "change"])
      # segment_df['climate_words_found'] = segment_df.apply(lambda row:␣
      ↪fetch_climate_words_in_text(row['clean_words']), axis=1)
```

```
[25]: ['adapt', 'climate']
```

```python
[26]: fetch_climate_phrases_in_text("adapt for climate change")
```

```
[26]: ['climate change']
```

```
[27]: df['climate_words_found'] = df.apply(lambda row:
      ↪fetch_climate_words_in_words(row['clean_words']), axis=1)
```

```
[28]: df.head(20)
```

```
[28]:                    time                    location station  \
      0    2021-12-30 6:49 PM         Phoenix (Prescott)    KPHO
      1    2021-12-30 6:48 PM         Phoenix (Prescott)    KPHO
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      10   2021-12-30 6:37 PM       Hartford & New Haven    WFSB
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      13   2021-12-30 6:37 PM                 Pittsburgh    KDKA
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      17     021-12-30 6:37 PM  San Francisco-Oak-San Jose  KPIX
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      19   2021-12-30 6:37 PM                 Louisville    WLKY


                                                      text  \
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```
19   the evening ending overnight. several communit…


                                               matches  row_to_use use_row  \
0                                                  [0]           0    True
1                                                  [1]           1    True
2    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…           14   False
3    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…           14   False
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7    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…           14   False
8    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…           14   False
9    [2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…           14   False
10   [2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, …           14   False
11   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…           14   False
12   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…           14   False
13   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…           14   False
14   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…           14    True
15   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…           14   False
16   [2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…           14   False
17   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…           14   False
18   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…           14   False
19   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…           14   False


                                                 words  \
0    [have, been, destroyed, ap, the, associated, p…
1    [kusa, the, nbc, affiliate, in, denver, this, …
2    [several, communities, were, evacuated, becaus…
3    [the, evening, ending, overnight, several, com…
4    [the, evening, ending, overnight, several, com…
5    [the, evening, ending, overnight, several, com…
6    [several, communities, were, evacuated, becaus…
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11   [the, evening, ending, overnight, several, com…
12   [the, evening, ending, overnight, several, com…
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14   [the, rain, will, continue, through, the, even…
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17   [evacuated, because, of, flooding, like, this,…
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19   [the, evening, ending, overnight, several, com…


                                            clean_words  \
```

```
0   [have, been, destroyed, ap, the, associated, p…
1   [kusa, the, nbc, affiliate, in, denver, this, …
2   [several, communities, were, evacuated, becaus…
3   [the, evening, ending, overnight, several, com…
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17  [evacuated, because, of, flooding, like, this,…
18  [several, communities, were, evacuated, becaus…
19  [the, evening, ending, overnight, several, com…

              climate_words_found
0                                []
1                                []
2                         [severe]
3                         [severe]
4                         [severe]
5                         [severe]
6                         [severe]
7                         [severe]
8                         [severe]
9      [high, severe, temperature]
10                        [severe]
11                        [severe]
12                        [severe]
13                        [severe]
14                        [severe]
15                        [severe]
16                        [severe]
17           [severe, temperature]
18                        [severe]
19                        [severe]
```

```python
df['climate_phrases_found'] = df.apply(lambda row:
    fetch_climate_phrases_in_text(row['text']), axis=1)
```

```python
df.head(20)
```

```
[30]:                       time                          location station  \
      0   2021-12-30 6:49 PM          Phoenix (Prescott)    KPHO
      1   2021-12-30 6:48 PM          Phoenix (Prescott)    KPHO
      2   2021-12-30 6:37 PM            Ft. Myers-Naples    WINK
      3   2021-12-30 6:37 PM  Greensboro-H.Point-W.Salem    WFMY
      4      21-12-30 6:37 PM                     Atlanta    WGCL
      5   2021-12-30 6:37 PM  Orlando-Daytona Bch-Melbrn    WKMG
      6   2021-12-30 6:37 PM                    New York    WCBS
      7   2021-12-30 6:37 PM                     Detroit     WWJ
      8   2021-12-30 6:37 PM         Boston (Manchester)     WBZ
      9     021-12-30 6:37 PM   Sacramnto-Stkton-Modesto    KOVR
      10  2021-12-30 6:37 PM      Hartford & New Haven      WFSB
      11  2021-12-30 6:37 PM                   Baltimore     WJZ
      12    021-12-30 6:37 PM  Raleigh-Durham (Fayetvlle)   WNCN
      13  2021-12-30 6:37 PM                  Pittsburgh    KDKA
      14  2021-12-30 6:37 PM                Portland, OR    KOIN
      15  2021-12-30 6:37 PM              Seattle-Tacoma    KIRO
      16  2021-12-30 6:37 PM                 Los Angeles    KCBS
      17    021-12-30 6:37 PM  San Francisco-Oak-San Jose   KPIX
      18     21-12-30 6:37 PM  Washington, DC (Hagrstwn)    WUSA
      19  2021-12-30 6:37 PM                  Louisville    WLKY

                                                         text  \
      0   have been destroyed. ap, the associated press …
      1   kusa, the nbc affiliate in denver, this is in …
      2   several communities were evacuated because of …
      3   the evening ending overnight. several communit…
      4   the evening ending overnight. several communit…
      5   the evening ending overnight. several communit…
      6   several communities were evacuated because of …
      7   the evening ending overnight. several communit…
      8   the evening ending overnight. several communit…
      9   mudslides, major. >> garrett: jonathan vigliot…
      10  and here in southern california, the rain will…
      11  the evening ending overnight. several communit…
      12  the evening ending overnight. several communit…
      13  the evening ending overnight. several communit…
      14  the rain will continue through the evening end…
      15  the rain will continue through the evening end…
      16  like this, and the risk of mudslides, major. >…
      17  evacuated because of flooding like this, and t…
      18  several communities were evacuated because of …
      19  the evening ending overnight. several communit…

                                                 matches  row_to_use use_row  \
      0                                              [0]           0    True
      1                                              [1]           1    True
```

```
2    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False
3    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False
4    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False
5    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False
6    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False
7    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False
8    [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False
9    [2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…        14    False
10   [2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, …        14    False
11   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False
12   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False
13   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False
14   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    True
15   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False
16   [2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 1…        14    False
17   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False
18   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False
19   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14    False

                                                         words  \
0    [have, been, destroyed, ap, the, associated, p…
1    [kusa, the, nbc, affiliate, in, denver, this, …
2    [several, communities, were, evacuated, becaus…
3    [the, evening, ending, overnight, several, com…
4    [the, evening, ending, overnight, several, com…
5    [the, evening, ending, overnight, several, com…
6    [several, communities, were, evacuated, becaus…
7    [the, evening, ending, overnight, several, com…
8    [the, evening, ending, overnight, several, com…
9    [mudslides, major, , garrett, jonathan, viglio…
10   [and, here, in, southern, california, the, rai…
11   [the, evening, ending, overnight, several, com…
12   [the, evening, ending, overnight, several, com…
13   [the, evening, ending, overnight, several, com…
14   [the, rain, will, continue, through, the, even…
15   [the, rain, will, continue, through, the, even…
16   [like, this, and, the, risk, of, mudslides, ma…
17   [evacuated, because, of, flooding, like, this,…
18   [several, communities, were, evacuated, becaus…
19   [the, evening, ending, overnight, several, com…

                                                   clean_words  \
0    [have, been, destroyed, ap, the, associated, p…
1    [kusa, the, nbc, affiliate, in, denver, this, …
2    [several, communities, were, evacuated, becaus…
3    [the, evening, ending, overnight, several, com…
4    [the, evening, ending, overnight, several, com…
```

```
5    [the, evening, ending, overnight, several, com…
6    [several, communities, were, evacuated, becaus…
7    [the, evening, ending, overnight, several, com…
8    [the, evening, ending, overnight, several, com…
9    [mudslides, major, garrett, jonathan, vigliott…
10   [and, here, in, southern, california, the, rai…
11   [the, evening, ending, overnight, several, com…
12   [the, evening, ending, overnight, several, com…
13   [the, evening, ending, overnight, several, com…
14   [the, rain, will, continue, through, the, even…
15   [the, rain, will, continue, through, the, even…
16   [like, this, and, the, risk, of, mudslides, ma…
17   [evacuated, because, of, flooding, like, this,…
18   [several, communities, were, evacuated, becaus…
19   [the, evening, ending, overnight, several, com…

               climate_words_found climate_phrases_found
0                               []                    []
1                               []                    []
2                         [severe]                    []
3                         [severe]                    []
4                         [severe]                    []
5                         [severe]                    []
6                         [severe]                    []
7                         [severe]                    []
8                         [severe]                    []
9     [high, severe, temperature]                    []
10                        [severe]                    []
11                        [severe]                    []
12                        [severe]                    []
13                        [severe]                    []
14                        [severe]                    []
15                        [severe]                    []
16                        [severe]                    []
17          [severe, temperature]                    []
18                        [severe]                    []
19                        [severe]                    []
```

```python
[31]: # save data to csv
      df.to_csv('reports/cbs_all.csv', encoding='utf-8')
```

```python
[32]: unique_df = df[df['use_row']]
```

```python
[33]: unique_df
```

```
[33]:              time                 location station  \
      0   2021-12-30 6:49 PM      Phoenix (Prescott)    KPHO
```

```
1   2021-12-30 6:48 PM        Phoenix (Prescott)    KPHO
14  2021-12-30 6:37 PM              Portland, OR    KOIN
38  2021-12-30 6:12 PM  Sacramnto-Stkton-Modesto    KOVR
39  2021-12-30 6:20 PM  Sacramnto-Stkton-Modesto    KOVR
41  2021-12-30 6:00 PM  Sacramnto-Stkton-Modesto    KOVR
42  2021-12-30 5:59 PM  Sacramnto-Stkton-Modesto     KOV
43  2021-12-30 5:55 PM         Ft. Myers-Naples    WINK
44  2021-12-30 5:44 PM               Baltimore     WJZ
45  2021-12-30 5:44 PM               Baltimore     WJZ
47  2021-12-30 5:43 PM          Seattle-Tacoma    KIRO
65  2021-12-30 5:34 PM              Pittsburgh    KDKA
66  2021-12-30 5:31 PM  Sacramnto-Stkton-Modesto    KOVR
67  2021-12-30 5:17 PM                   Tulsa    KOTV
68  2021-12-30 5:14 PM             Portland, OR    KOIN
69  2021-12-30 5:12 PM               San Diego    KFMB
71  2021-12-30 5:06 PM        Phoenix (Prescott)    KPHO
72  2021-12-30 5:04 PM  Sacramnto-Stkton-Modesto    KOVR
73  2021-12-30 5:02 PM  Sacramnto-Stkton-Modesto    KOVR
74  2021-12-30 5:01 PM  Sacramnto-Stkton-Modesto    KOVR
76  2021-12-30 6:07 PM      Miami-Ft. Lauderdale    WFOR
77   021-12-30 6:06 PM         Dallas-Ft. Worth    KTVT
80  2021-12-30 5:33 PM         Dallas-Ft. Worth    KTVT
81  2021-12-30 5:19 PM      Miami-Ft. Lauderdale    WFOR
83  2021-12-30 5:18 PM      Miami-Ft. Lauderdale    WFOR
84  2021-12-30 5:18 PM      Miami-Ft. Lauderdale    WFOR


                                                  text  \
0   have been destroyed. ap, the associated press …
1   kusa, the nbc affiliate in denver, this is in …
14  the rain will continue through the evening end…
38  tracking the devastating fires in colorado and…
39  here we have evacuations. i will tell you a li…
41  about. we just talked about the hospital where…
42  together. this house, burning to the ground. 3…
43  rubenstein law, injured in a car accident or s…
44                               e2021-12-30 5:44 pm
45  wildfire-that engulfed parts of the area. in a…
47  outside of denver have been told to evacuate. …
65  they are calling this now the marshall-fire-an…
66  signatures, here. this is where we have had fl…
67  sun. morning satellite imagery right now we ha…
68  >> to breaking news now, this is a live look i…
69  thousands of people have been ordered to evacu…
71  into the central rockies, and it is a dangerou…
72  we couple that with relative humidity anywhere…
73  much damage will be assessed as well. >> we st…
74  >> the-fire-crews now left the scene knowing t…
```

```
76  wouldn't be that long in duration. and then th…
77  the omicron variant. >>> the city of paris sou…
80  shortage. with final preps underway for the ne…
81  >> reporter: news of the boy being badly burne…
83  and we support c.c. s. o. and the officer earl…
84                                         [w:drawing]


                                          matches  row_to_use use_row  \
0                                             [0]           0    True
1                                             [1]           1    True
14  [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…          14    True
38                                           [38]          38    True
39                                           [39]          39    True
41                                           [41]          41    True
42                                           [42]          42    True
43                                           [43]          43    True
44                                           [44]          44    True
45                                      [45, 46]          45    True
47                                           [47]          47    True
65                                           [65]          65    True
66                                           [66]          66    True
67                                           [67]          67    True
68                                           [68]          68    True
69                                           [69]          69    True
71                                           [71]          71    True
72                                           [72]          72    True
73                                           [73]          73    True
74                                           [74]          74    True
76                                           [76]          76    True
77                                           [77]          77    True
80                                           [80]          80    True
81                                      [81, 82]          81    True
83                                           [83]          83    True
84                                           [84]          84    True

                                            words  \
0   [have, been, destroyed, ap, the, associated, p…
1   [kusa, the, nbc, affiliate, in, denver, this, …
14  [the, rain, will, continue, through, the, even…
38  [tracking, the, devastating, fires, in, colora…
39  [here, we, have, evacuations, i, will, tell, y…
41  [about, we, just, talked, about, the, hospital…
42  [together, this, house, burning, to, the, grou…
43  [rubenstein, law, injured, in, a, car, acciden…
44                          [e2021-12-30, 544, pm]
45  [wildfire-that, engulfed, parts, of, the, area…
47  [outside, of, denver, have, been, told, to, ev…
```

```
65  [they, are, calling, this, now, the, marshall-…
66  [signatures, here, this, is, where, we, have, …
67  [sun, morning, satellite, imagery, right, now,…
68  [to, breaking, news, now, this, is, a, live, l…
69  [thousands, of, people, have, been, ordered, t…
71  [into, the, central, rockies, and, it, is, a, …
72  [we, couple, that, with, relative, humidity, a…
73  [much, damage, will, be, assessed, as, well, ,…
74  [the-fire-crews, now, left, the, scene, knowin…
76  [wouldn't, be, that, long, in, duration, and, …
77  [the, omicron, variant, , the, city, of, paris…
80  [shortage, with, final, preps, underway, for, …
81  [reporter, news, of, the, boy, being, badly, b…
83  [and, we, support, cc, s, o, and, the, officer…
84                                   [[wdrawing]]


                                    clean_words  \
0   [have, been, destroyed, ap, the, associated, p…
1   [kusa, the, nbc, affiliate, in, denver, this, …
14  [the, rain, will, continue, through, the, even…
38  [tracking, the, devastating, fires, in, colora…
39  [here, we, have, evacuations, i, will, tell, y…
41  [about, we, just, talked, about, the, hospital…
42  [together, this, house, burning, to, the, grou…
43  [rubenstein, law, injured, in, a, car, acciden…
44                            [e2021, 12, 30, pm]
45  [wildfire, that, engulfed, parts, of, the, are…
47  [outside, of, denver, have, been, told, to, ev…
65  [they, are, calling, this, now, the, marshall,…
66  [signatures, here, this, is, where, we, have, …
67  [sun, morning, satellite, imagery, right, now,…
68  [to, breaking, news, now, this, is, a, live, l…
69  [thousands, of, people, have, been, ordered, t…
71  [into, the, central, rockies, and, it, is, a, …
72  [we, couple, that, with, relative, humidity, a…
73  [much, damage, will, be, assessed, as, well, w…
74  [the, fire, crews, now, left, the, scene, know…
76  [wouldn't, be, that, long, in, duration, and, …
77  [the, omicron, variant, the, city, of, paris, …
80  [shortage, with, final, preps, underway, for, …
81  [reporter, news, of, the, boy, being, badly, b…
83  [and, we, support, cc, s, o, and, the, officer…
84                                   [[wdrawing]]


        climate_words_found climate_phrases_found
0                        []                    []
1                        []                    []
```

24

```
14                    [severe]                 []
38                          []                 []
39                          []                 []
41                    [effect]                 []
42                          []                 []
43                          []                 []
44                          []                 []
45                      [high]                 []
47                       [ice]                 []
65                          []                 []
66                    [record]                 []
67     [energy, high, severe]                  []
68            [high, record]                   []
69                    [record]      [record breaking]
71                    [effect]                 []
72                          []                 []
73          [drought, extreme]                 []
74                      [heat]                 []
76              [heat, warm]                   []
77                          []                 []
80  [history, record, rising]                  []
81                          []                 []
83                          []                 []
84                          []                 []
```

```python
[34]: total_words = unique_df['clean_words'].str.len().sum()
      total_words
```

[34]: 3558

```python
[35]: def words_found_master_list(df_clean_words):
          """Given a column of words, aggregate master list"""
          words_found = list()
          for chunk in df_clean_words:
              words_found += chunk

          return words_found
```

```python
[37]: words_found = words_found_master_list(unique_df['clean_words'])
      len(words_found)
```

[37]: 3558

```python
[39]: from nltk.corpus import stopwords
      from nltk import pos_tag
      from nltk.stem import WordNetLemmatizer
      from nltk.tokenize import word_tokenize
```

```python
from wordcloud import STOPWORDS

def master_stopwords_list():
    """Creates a master list of stopwords from pre-existing stopwords found in
 ↪nltk and wordcloud"""
    stop_words = set(stopwords.words("english"))
    final_stopwords = list(STOPWORDS) + list(stop_words)
    return [i.lower() for i in set(final_stopwords)]

def lemmatize_words(words):
    """Given a list of words, distill to root words"""
    lem = WordNetLemmatizer()

    lemma_list = []
    for word, tag in pos_tag(words):
        wntag = tag[0].lower()
        wntag = wntag if wntag in ['a', 'r', 'n', 'v'] else None
        if not wntag:
            lemma = word
        else:
            lemma = lem.lemmatize(word, pos=wntag)
        lemma_list.append(lemma)
    return lemma_list

def clean_lemmatized_words(lemma_words):
    """Removes stop words from the lemma list"""
    nonstop_lemma_words = []
    final_stopwords = master_stopwords_list()

    for word in lemma_words:
        if word not in final_stopwords:
            nonstop_lemma_words.append(word)

    return list(filter(None, nonstop_lemma_words))
```

```python
[40]: clean_lemma_words = clean_lemmatized_words(lemmatize_words(words_found))
```

```python
[41]: from nltk.probability import FreqDist

lfdist = FreqDist(clean_lemma_words)
lfdist
```
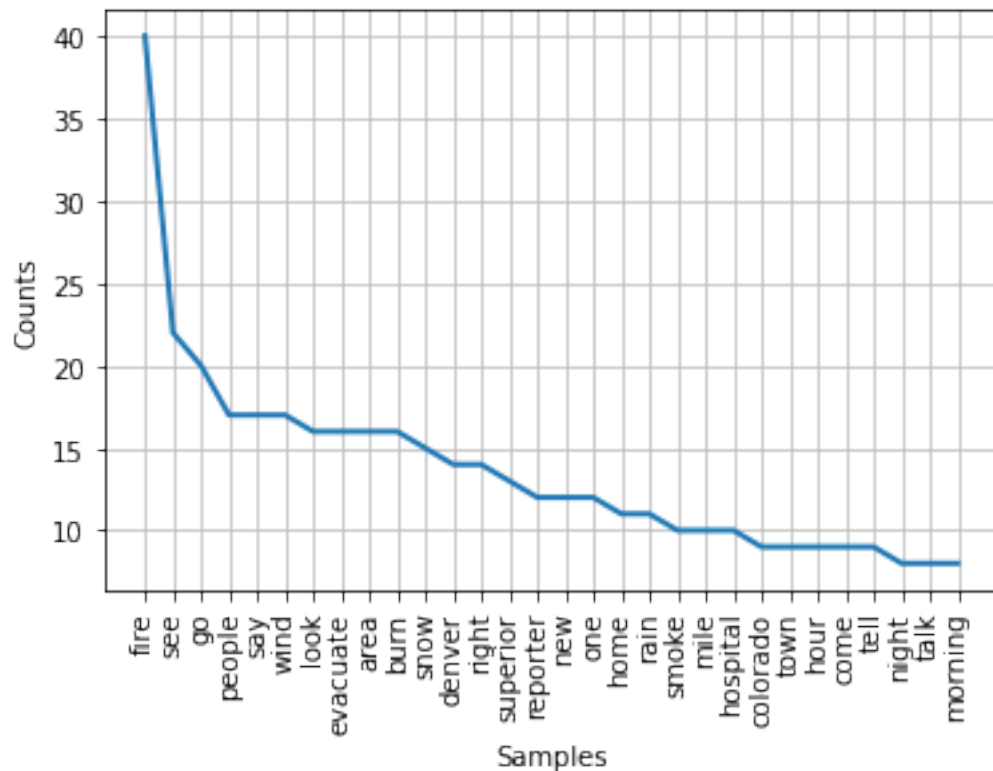
```python
[41]: FreqDist({'fire': 40, 'see': 22, 'go': 20, 'people': 17, 'say': 17, 'wind': 17,
      'look': 16, 'evacuate': 16, 'area': 16, 'burn': 16, …})
```

```python
[42]: import matplotlib.pyplot as plt
lfdist.plot(30,cumulative=False)
```

```
plt.show()
```


[43]:
```python
from wordcloud import WordCloud
from wordcloud import ImageColorGenerator
from wordcloud import STOPWORDS
import matplotlib.pyplot as plt

wordcloud = WordCloud(width = 3000, height = 2000, random_state=1,
 ↪background_color='black', colormap='Set2', collocations=False, stopwords =
 ↪master_stopwords_list()).generate_from_frequencies(lfdist)

# Plot
plt.figure( figsize=(15,10))
plt.imshow(wordcloud, interpolation='bilinear')
plt.axis("off")
plt.show()

#plt.savefig('word_cloud.png')
```

```
[44]: import sys
      sys.path.append('../')
      from helpers.words import CLIMATE_CHANGE_RELATED_WORDS,␣
       ↪CLIMATE_CHANGE_RELATED_PHRASES
```

```
[45]: import pandas as pd
      pd.options.display.max_rows = 500
      words_df = pd.DataFrame(lfdist.items(), columns=['Word', 'Count'])

      words_df.sort_values(by=['Count'], ascending=False, inplace=True)
      len(words_df)
      # 1374 total words

      words_df['Count'].sum()

      # create data
      climate_change_words_df = words_df.loc[words_df['Word'].
       ↪isin(CLIMATE_CHANGE_RELATED_WORDS)]

      climate_words_count = climate_change_words_df['Count'].sum()
      non_climate_words_count = words_df['Count'].sum() - climate_words_count
```
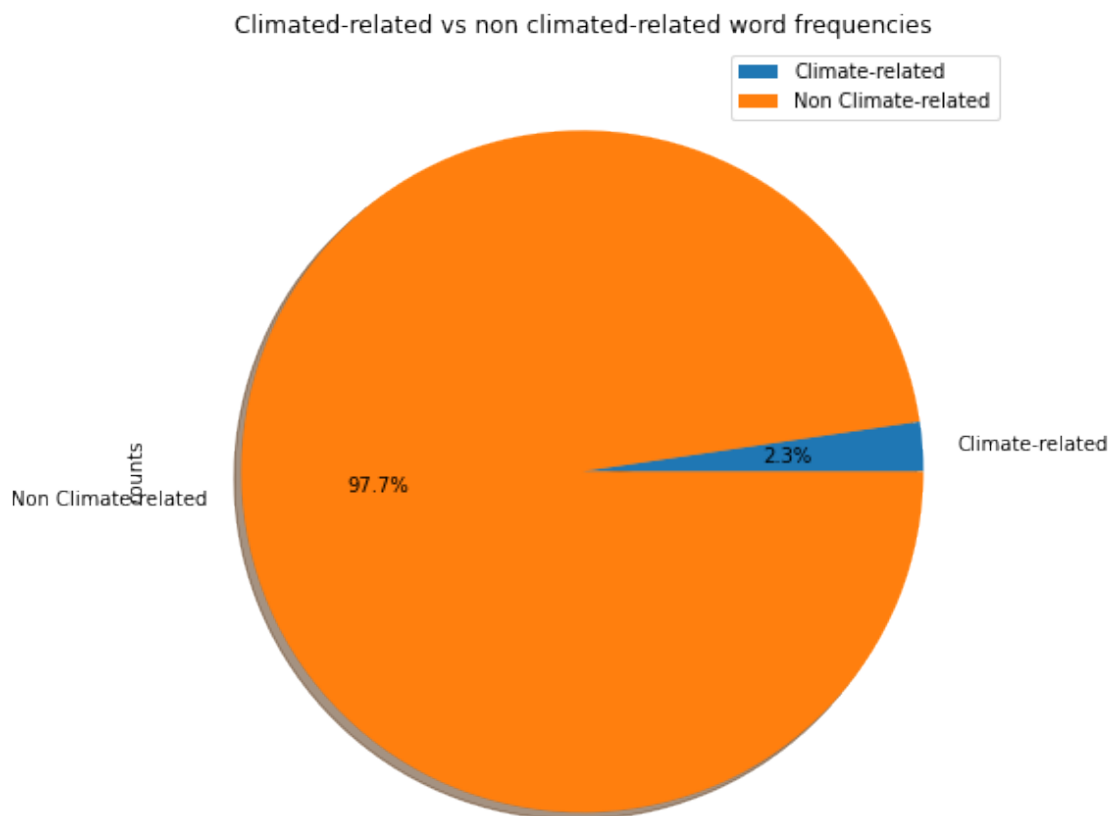
```python
comparison_df = pd.DataFrame({'Words': ['Climate-related', 'Non␣
 ↪Climate-related'],
                              'counts': [climate_words_count,␣
 ↪non_climate_words_count]})
comparison_df.set_index('Words', inplace=True)
print(comparison_df)

plot = comparison_df.plot.pie(y='counts', title="Climated-related vs non␣
 ↪climated-related word frequencies", legend=True, autopct='%1.1f%%',␣
 ↪shadow=True, figsize=(8, 8))

fig = plot.get_figure()
#fig.savefig("comparison.png")
```

```
                      counts
Words
Climate-related           41
Non Climate-related     1713
```


Climated-related vs non climated-related word frequencies
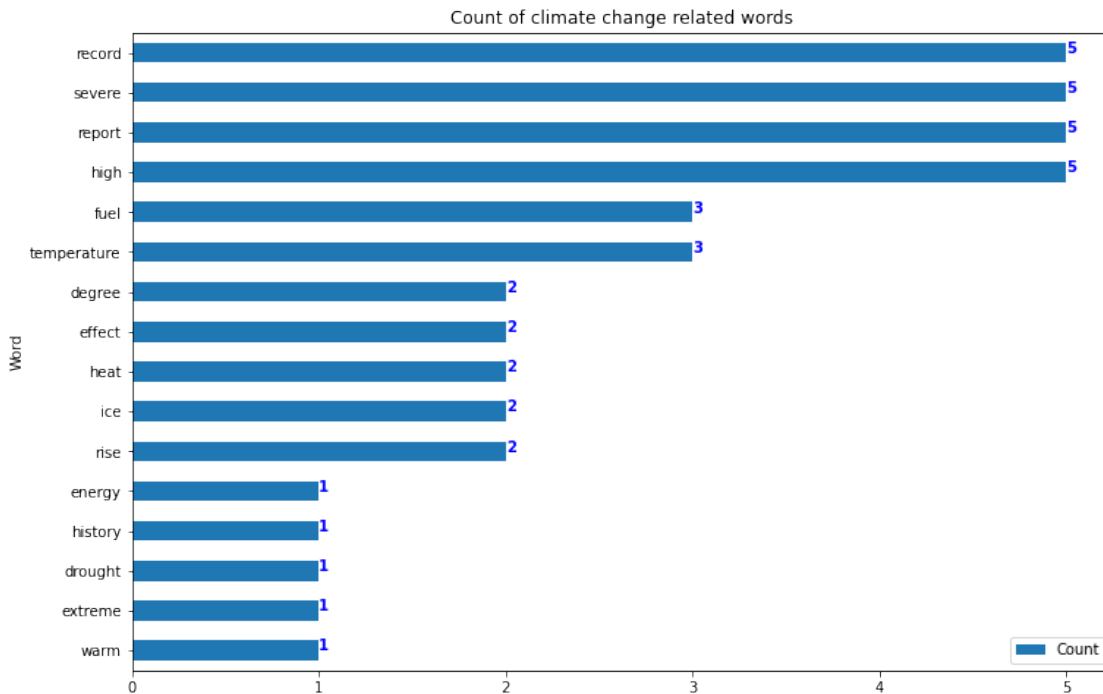
```
[46]:  # find climate related word frequencies

       # set figure size
       fig, ax = plt.subplots(figsize=(12, 8))
       # plot horizontal bar plot
       climate_change_words_df.sort_values(by='Count').plot.barh(x="Word", y="Count",
        ↪ax=ax)
       # set the title
       plt.title("Count of climate change related words")

       for i, v in enumerate(climate_change_words_df['Count'].sort_values()):
           ax.text(v, i , str(v),
                   color = 'blue', fontweight = 'bold')

       plt.show()
       # plt.savefig('climate-related-words-breakdown.png', transparent=False)
```



```
[47]:  # find segments
       climate_change_words_found = list(climate_change_words_df['Word'].unique())
       climate_change_words_found
```

```
[47]:  ['high',
        'report',
        'severe',
```

```
    'record',
    'temperature',
    'fuel',
    'rise',
    'ice',
    'heat',
    'effect',
    'degree',
    'warm',
    'extreme',
    'drought',
    'history',
    'energy']
```

[49]:
```
unique_df[unique_df["climate_words_found"].str.len() != 0].to_csv('reports/
    ↪cbs_final.csv', encoding='utf-8')
```

[50]:
```
unique_df[unique_df["climate_words_found"].str.len() != 0]
```

[50]:
```
                     time                   location station  \
    14  2021-12-30 6:37 PM             Portland, OR    KOIN
    41  2021-12-30 6:00 PM  Sacramnto-Stkton-Modesto    KOVR
    45  2021-12-30 5:44 PM                Baltimore     WJZ
    47  2021-12-30 5:43 PM           Seattle-Tacoma    KIRO
    66  2021-12-30 5:31 PM  Sacramnto-Stkton-Modesto    KOVR
    67  2021-12-30 5:17 PM                    Tulsa    KOTV
    68  2021-12-30 5:14 PM             Portland, OR    KOIN
    69  2021-12-30 5:12 PM                San Diego    KFMB
    71  2021-12-30 5:06 PM       Phoenix (Prescott)    KPHO
    73  2021-12-30 5:02 PM  Sacramnto-Stkton-Modesto    KOVR
    74  2021-12-30 5:01 PM  Sacramnto-Stkton-Modesto    KOVR
    76  2021-12-30 6:07 PM      Miami-Ft. Lauderdale    WFOR
    80  2021-12-30 5:33 PM         Dallas-Ft. Worth    KTVT

                                                       text  \
    14  the rain will continue through the evening end…
    41  about. we just talked about the hospital where…
    45  wildfire-that engulfed parts of the area. in a…
    47  outside of denver have been told to evacuate. …
    66  signatures, here. this is where we have had fl…
    67  sun. morning satellite imagery right now we ha…
    68  >> to breaking news now, this is a live look i…
    69  thousands of people have been ordered to evacu…
    71  into the central rockies, and it is a dangerou…
    73  much damage will be assessed as well. >> we st…
    74  >> the-fire-crews now left the scene knowing t…
    76  wouldn't be that long in duration. and then th…
```

```
80   shortage. with final preps underway for the ne…


                                           matches   row_to_use use_row  \
14   [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 1…        14     True
41                                            [41]         41     True
45                                        [45, 46]         45     True
47                                            [47]         47     True
66                                            [66]         66     True
67                                            [67]         67     True
68                                            [68]         68     True
69                                            [69]         69     True
71                                            [71]         71     True
73                                            [73]         73     True
74                                            [74]         74     True
76                                            [76]         76     True
80                                            [80]         80     True


                                           words  \
14   [the, rain, will, continue, through, the, even…
41   [about, we, just, talked, about, the, hospital…
45   [wildfire-that, engulfed, parts, of, the, area…
47   [outside, of, denver, have, been, told, to, ev…
66   [signatures, here, this, is, where, we, have, …
67   [sun, morning, satellite, imagery, right, now,…
68   [to, breaking, news, now, this, is, a, live, l…
69   [thousands, of, people, have, been, ordered, t…
71   [into, the, central, rockies, and, it, is, a, …
73   [much, damage, will, be, assessed, as, well, ,…
74   [the-fire-crews, now, left, the, scene, knowin…
76   [wouldn't, be, that, long, in, duration, and, …
80   [shortage, with, final, preps, underway, for, …


                                       clean_words  \
14   [the, rain, will, continue, through, the, even…
41   [about, we, just, talked, about, the, hospital…
45   [wildfire, that, engulfed, parts, of, the, are…
47   [outside, of, denver, have, been, told, to, ev…
66   [signatures, here, this, is, where, we, have, …
67   [sun, morning, satellite, imagery, right, now,…
68   [to, breaking, news, now, this, is, a, live, l…
69   [thousands, of, people, have, been, ordered, t…
71   [into, the, central, rockies, and, it, is, a, …
73   [much, damage, will, be, assessed, as, well, w…
74   [the, fire, crews, now, left, the, scene, know…
76   [wouldn't, be, that, long, in, duration, and, …
80   [shortage, with, final, preps, underway, for, …
```

```
    climate_words_found climate_phrases_found
14               [severe]                    []
41               [effect]                    []
45                 [high]                    []
47                  [ice]                    []
66               [record]                    []
67  [energy, high, severe]                   []
68         [high, record]                    []
69               [record]      [record breaking]
71               [effect]                    []
73     [drought, extreme]                    []
74                 [heat]                    []
76           [heat, warm]                    []
80  [history, record, rising]                []
```

[ ]:

[ ]:

[ ]: