exploration

February 22, 2024

```
[1]: from pathlib import Path
     import pickle
     import matplotlib.pyplot as plt
     import numpy as np
     import pandas as pd
     import re
     import seaborn as sns
     import sklearn.preprocessing
     import sklearn.feature_extraction.text
     import sklearn.cluster
     import sklearn.metrics.pairwise
     import spacy
     import sentence_transformers
     #loading the english language small model of spacy, just for stop words
     en = spacy.load('en_core_web_sm')
     stopwords = list(en.Defaults.stop_words)
     HEADLINE CSV = "../data/mc-onlinenews-mediacloud-20240221094242-content.csv"
     # Save outputs to these locations
     MODEL_PATH = Path("../data/models")
     MODEL_PATH.mkdir(exist_ok=True)
```

/var/folders/7c/4fzv15450s1bt_03bv1b6hb80000gn/T/ipykernel_7355/115874715.py:6: DeprecationWarning:

Pyarrow will become a required dependency of pandas in the next major release of pandas (pandas 3.0),

(to allow more performant data types, such as the Arrow string type, and better interoperability with other libraries)

but was not found to be installed on your system.

If this would cause problems for you,

please provide us feedback at https://github.com/pandas-dev/pandas/issues/54466

import pandas as pd

1 Read in Headlines from Media Cloud Search Results

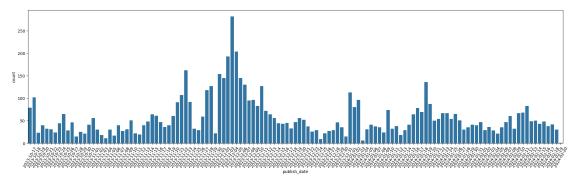
First, we downloaded data from the Media Cloud Search tool to get headlines from the "Nigeria - National" collection which matched the following keyword query: ("African caravans" OR "loss and damage" OR "climate justice" OR "african activist for climate justice" OR "oxfam nigeria" OR Nasarawa OR cop28 OR cop27) -(gaza)

The output from the Media Cloud Search tool was downloaded directly to a CSV file, which we will read in and analyze. This data could also be programmatically obtained via the Media Cloud API, but it is helpful to have a domain expert come up with query key terms.

```
[2]: headlines_df = pd.read_csv(HEADLINE_CSV, index_col=False, header=0)
     headlines df["publish_date"] = pd.to_datetime(headlines_df["publish_date"]).dt.
      ⇔date
     print(headlines_df.shape)
     headlines_df.head()
    (7181, 8)
[2]:
                                                            \
                                                         id
        ad1cc3ad9202576cb48eda269e5778cb02612510e2055f...
        b498b5bfd5f6413d039c369f72ef4fe0a401bd42a6430e...
       7975940c289be72c3fa8dc4146e1940500a5d3c20a9b13...
        ab0e394b3174637df349d7049118f2723c1a0a5b2b980c...
        900f0a7a9f1b7f725b632c41ae5bfa97bf857ee130217c...
                      indexed_date language
                                                       media_name
        2024-02-14 01:10:58.620137
                                                   cknnigeria.com
        2024-02-21 01:46:13.086362
                                                     dailypost.ng
     2 2024-02-21 03:34:12.494652
                                                 vanguardngr.com
                                          en
     3 2024-02-21 06:01:37.704358
                                              opinionnigeria.com
                                          en
        2024-02-21 02:25:48.058767
                                                    gistmania.com
                                          en
                 media_url publish_date
     0
            cknnigeria.com
                              2024-02-20
     1
              dailypost.ng
                              2024-02-19
     2
           vanguardngr.com
                              2024-02-19
     3
        opinionnigeria.com
                              2024-02-19
     4
             gistmania.com
                              2024-02-19
                                                      title
                                                            \
     0
        20 Year Lady "Slaughters " Husband One Month A...
     1
                       We've lost 46 members to hardship'
     2
        Bandits attack: Police confirm killing of DCO,...
     3
                A Filthy Cap In Hand -By Ike Willie-Nwobu
        Kano Correctional Centre Explains Disappearanc...
                                                        url
       https://www.cknnigeria.com/2024/02/20-year-lad...
```

- 1 https://dailypost.ng/2024/02/19/weve-lost-46-m...
- 2 https://www.vanguardngr.com/2024/02/bandits-at...
- 3 https://www.opinionnigeria.com/a-filthy-cap-in...
- 4 https://www.gistmania.com/talk/topic,586440.0...

```
[3]: # Sanity check attention article count
fig, ax = plt.subplots(figsize=[24,6])
sns.countplot(x=headlines_df["publish_date"].sort_values())
plt.xticks(rotation=60)
plt.show()
plt.clf()
```



<Figure size 640x480 with 0 Axes>

2 Using Sentence Transformers to Cluster Headlines

This section creates vector representations of the headlines using sentence transformers. Each headline is assigned a numerical vector representation, which are then clustered into topics. In order to make sense of the topics, you can view most frequent words in each cluster and the headlines closest to the cluster's center point.

```
[4]:  # Fast sentence transformer model sent_transformer = sentence_transformers.SentenceTransformer('all-MiniLM-L6-v2')
```

```
[5]: headlines = headlines_df["title"].to_numpy()
sent_embeds = sent_transformer.encode(headlines, show_progress_bar=True)
normalized_sent_embeds = sklearn.preprocessing.normalize(sent_embeds)
print("Sanity check (#docs, embedding size):", normalized_sent_embeds.shape)
```

Batches: 0% | 0/225 [00:00<?, ?it/s]
Sanity check (#docs, embedding size): (7181, 384)

[6]: # Setting the random state helps keep results reproducible, so others canure-run the notebook
We did see similar clusters when re-running with different random states.

```
kmeans_model = sklearn.cluster.KMeans(15, random_state=199)
     kmeans_fit = kmeans_model.fit(normalized_sent_embeds)
     with open(MODEL_PATH / "kmeans_explore.pickle", "wb") as fp:
         pickle.dump(kmeans_fit, fp)
    huggingface/tokenizers: The current process just got forked, after parallelism
    has already been used. Disabling parallelism to avoid deadlocks...
    To disable this warning, you can either:
            - Avoid using `tokenizers` before the fork if possible
            - Explicitly set the environment variable TOKENIZERS PARALLELISM=(true |
    false)
[7]: headlines_df['cluster_label'] = kmeans_fit.labels_
     headlines_df.head()
[7]:
                                                        id \
     0 ad1cc3ad9202576cb48eda269e5778cb02612510e2055f...
     1 b498b5bfd5f6413d039c369f72ef4fe0a401bd42a6430e...
     2 7975940c289be72c3fa8dc4146e1940500a5d3c20a9b13...
     3 ab0e394b3174637df349d7049118f2723c1a0a5b2b980c...
     4 900f0a7a9f1b7f725b632c41ae5bfa97bf857ee130217c...
                      indexed_date language
                                                     media_name
     0 2024-02-14 01:10:58.620137
                                                 cknnigeria.com
     1 2024-02-21 01:46:13.086362
                                                   dailypost.ng
                                         en
     2 2024-02-21 03:34:12.494652
                                                vanguardngr.com
                                         en
     3 2024-02-21 06:01:37.704358
                                             opinionnigeria.com
     4 2024-02-21 02:25:48.058767
                                                  gistmania.com
                 media_url publish_date
     0
            cknnigeria.com
                             2024-02-20
     1
              dailypost.ng
                             2024-02-19
     2
           vanguardngr.com
                             2024-02-19
     3 opinionnigeria.com
                             2024-02-19
             gistmania.com
                             2024-02-19
                                                     title \
     0
        20 Year Lady "Slaughters " Husband One Month A...
     1
                       We've lost 46 members to hardship'
     2 Bandits attack: Police confirm killing of DCO,...
     3
                A Filthy Cap In Hand -By Ike Willie-Nwobu
     4 Kano Correctional Centre Explains Disappearanc...
                                                      url cluster_label
     0 https://www.cknnigeria.com/2024/02/20-year-lad...
                                                                      8
     1 https://dailypost.ng/2024/02/19/weve-lost-46-m...
                                                                      9
     2 https://www.vanguardngr.com/2024/02/bandits-at...
                                                                      2
     3 https://www.opinionnigeria.com/a-filthy-cap-in...
                                                                      8
```

```
4 https://www.gistmania.com/talk/topic,586440.0...
                                                             2
[8]: # Count documents in each cluster
    headlines_df.groupby("cluster_label").count()["id"]
[8]: cluster_label
    0
         422
         454
    1
    2
         453
    3
         113
    4
         826
    5
         289
    6
         486
    7
         507
         680
    8
    9
         632
         676
    10
         407
    11
    12
         424
         444
    13
    14
         368
    Name: id, dtype: int64
[9]: # Topic frequency over date
    # Sanity check attention article count
    date_cluster_group_df = headlines_df.groupby(by=["publish_date",_

¬"cluster_label"]).count().reset_index()[["publish_date", "cluster_label",

¬"id"]]
    date_cluster_group_df = date_cluster_group_df.sort_values("publish_date")
    date_cluster_group_df = date_cluster_group_df.rename(columns = {"id":_u

¬"daily count"})
    print(date_cluster_group_df.head())
    fig, ax = plt.subplots(figsize=[24,6])
    sns.lineplot(date_cluster_group_df, x="publish_date", y="daily_count", u
     ⇔hue="cluster_label",
                palette =['#e6194b', '#3cb44b', '#ffe119', '#4363d8', '#f58231', __
     plt.xticks(rotation=60)
    plt.show()
    plt.clf()
      publish_date cluster_label daily_count
   0
        2023-10-17
                             0
                                         4
        2023-10-17
                             14
                                         6
   12
        2023-10-17
                             12
                                         1
    11
```

2023-10-17

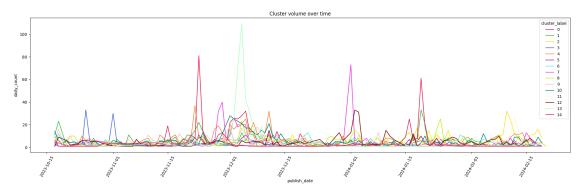
8 2023-10-17

/var/folders/7c/4fzv15450s1bt_03bv1b6hb80000gn/T/ipykernel_7355/957046797.py:9:
UserWarning:

5

The palette list has fewer values (14) than needed (15) and will cycle, which may produce an uninterpretable plot.

sns.lineplot(date_cluster_group_df, x="publish_date", y="daily_count",
hue="cluster label",



<Figure size 640x480 with 0 Axes>

The plot above is shows a few spikes which are interesting for us around the Cop28 event. The spike of cluster 13 at the beginning of December 2023, for example.

```
Sanity check shape is (# docs, #words): (7181, 8830)
Sanity check vocabulary: ['000' '000mw' '01' '012' '02' '031' '05' '051' '060' '08' '09' '099' '100' '1000' '100b' '100bn' '100k' '100kg' '100m' '100mva' '101' '102' '105' '107' '10bn' '10million' '10th' '10yrs']
```

/Users/virginia/miniconda3/envs/oxfam/lib/python3.11/site-packages/sklearn/feature_extraction/text.py:408: UserWarning: Your stop_words may be inconsistent with your preprocessing. Tokenizing the stop words generated tokens ['ll', 've'] not in stop_words.
warnings.warn(

```
[11]: def get_top_words(document_idxs, doc_word_counts, vocabulary, n=20):
    """Given the indices of selected documents, sum the word counts within only
    ⇔those
```

```
selected docs, then return the top n words that are most frequent in the \sqcup
       \hookrightarrow cluster
          Args:
              document_idxs (1d numpy array): locations of selected documents
              doc word counts (2d numpy array): (# docs, vocab size), count of each
       ⇒vocab word in the doc
              vocabulary (list[str]): vocabulary as a list
              n (int): top n most frequent words to return
          Returns:
              list[str]: the top n most frequent words in the cluster in decreasing,
       \hookrightarrow order
          11 11 11
          selected_docs = doc_word_counts[document_idxs]
          word_counts_in_selected_docs = np.resize(np.sum(selected_docs, axis=0),__
       →vocabulary.shape)
          # Sort word counts in increasing order, so last element is biggest
          top_word_idx = np.argsort(word_counts_in_selected_docs)[-n:]
          # Reverse order to give most frequent word first
          top_words = vocabulary[top_word_idx].tolist()
          top words.reverse()
          return top_words
[12]: def get_docs_closest_to_centroid(centroid_vector, doc_embeddings, doc_texts,_u
       -n=20):
          HHHH
          Args:
              centroid_vector (np.array): vector that's the mathematical center of \Box
       → the cluster in vector space, shape (embedding_size, )
              doc_embeddings (np.array): embeddings of the document in the cluster, __
       ⇒shape (#docs, embedding_size)
              doc_texts (pd.DataFrame): dataframe of documents in the cluster
              n (int, optional): Number of documents to return . Defaults to 20.
          Returns:
              pd.DataFrame: The subset of the dataframe for the top n documents \sqcup
       ⇒closest to the center of the cluster
          distances = sklearn.metrics.pairwise.cosine_distances(doc_embeddings,__
       # Indices of elements closest to center (sort in increasing order)
          sorted_indices = np.argsort(distances)[:n]
          typical_headlines = doc_texts.loc[sorted_indices]
          return typical_headlines
```

```
[13]: def show article volume for cluster over time(dataframe, cluster id,
       ⇔time_col="publish_date", cluster_col="cluster_label",□

match_placeholder="matches_cluster"):
          """Plots the daily volume of articles for that cluster vs all other articles
          sorted_by_date = dataframe.sort_values(time_col)
          sorted_by_date[match_placeholder] = (sorted_by_date[cluster_col] ==_u
       ⇔cluster_id)
          fig, ax = plt.subplots(figsize=[24,6])
          sns.countplot(sorted_by_date, x=time_col, hue=match_placeholder).
       ⇔set(title=f"Volume for cluster {cluster_id}")
          plt.xticks(rotation=60)
          plt.show()
          plt.clf()
[14]: pd.set_option("display.max_rows", 30, "display.max_columns", None,
      ⇔'max_colwidth', 800)
      centroids = kmeans_fit.cluster_centers_
      for i in range(15):
          print("Cluster", i)
          cluster_element_idx = np.where(headlines_df["cluster_label"] == i)[0]
          print("\tNumber of docs in cluster:", cluster_element_idx.shape)
          # Top words can give you a general idea of what's talked about in the
       →topic, but it can be difficult to interpret
          top_words = get_top_words(cluster_element_idx, doc_word_counts, vocabulary)
          print("\tTop words:", top_words)
          # What are the "prototypical" headlines for each cluster? These are the
       →headlines closest to the cluster center for each cluster
          center = centroids[i]
          cluster_texts = headlines_df.loc[cluster_element_idx].reset_index()
          cluster_embeddings = normalized_sent_embeds[cluster_element_idx]
          typical_headlines = get_docs_closest_to_centroid(center,_
       ⇒cluster_embeddings, cluster_texts)
          print("\tTypicial headlines close to center of cluster")
          display(typical_headlines[["media_name", "publish_date", "title"]])
          # A sample of random headlines from the cluster gives an indication of \Box
       whether the cluster's topic is consistent or makes less sense
          # further from the centroid
          print("\tRandom headlines")
          display(headlines_df.loc[cluster_element_idx].sample(10)[["media_name",u
       ⇔"publish date", "title"]])
```

```
print("\tArticle volume for cluster")
    show_article_volume_for_cluster_over_time(headlines_df, i)
Cluster 0
        Number of docs in cluster: (422,)
        Top words: ['climate', 'cop28', 'change', 'action', 'africa', 'nigeria',
'fossil', 'methane', 'energy', 'global', 'emissions', 'transition', 'un', 'cop',
'28', 'fuels', 'summit', 'green', 'nnpc', 'calls']
        Typicial headlines close to center of cluster
                      media_name publish_date \
                   leadership.ng
                                   2023-12-07
136
176
             tribuneonlineng.com
                                   2023-12-05
223
             tribuneonlineng.com
                                   2023-12-04
98
              ripplesnigeria.com
                                   2023-12-13
181
             tribuneonlineng.com
                                   2023-12-05
339
            realnewsmagazine.net
                                   2023-11-22
             newsdiaryonline.com
                                   2023-12-04
198
130
                authorityngr.com
                                   2023-12-09
44
                     guardian.ng
                                   2023-12-28
58
                  independent.ng
                                   2023-12-20
394
             tribuneonlineng.com
                                   2023-11-02
156
                  businessday.ng
                                   2023-12-06
                 vanguardngr.com
                                   2023-12-07
149
301
              premiumtimesng.com
                                   2023-11-29
229
                  businessday.ng
                                   2023-12-03
196
                                   2023-12-04
                   leadership.ng
79
                   leadership.ng
                                   2023-12-15
397
                  independent.ng
                                   2023-11-01
298
    nationalaccordnewspaper.com
                                   2023-11-30
109
                     punchng.com
                                   2023-12-11
                                                                                 1.1
                     title
 \hookrightarrow
136
                                    COP28: Nigeria Secures Over $5 Billion_
 →Commitments For Climate Action
176 COP28: Consider Africa peculiarities in addressing climate change effects;

→Kyari tells world leaders

223
                              COP28: Consider Africa's peculiarities in_
 →addressing climate change effects
                             COP28: Nations adopt first-ever climate deal to⊔
 ⇔transition from fossil fuels
                                          COP28: FG harps on Nigeria's commitment
181
 ⇔to combat climate crisis
                              World Economic Forum to accelerate⊔
 →multistakeholder climate action at COP28
```

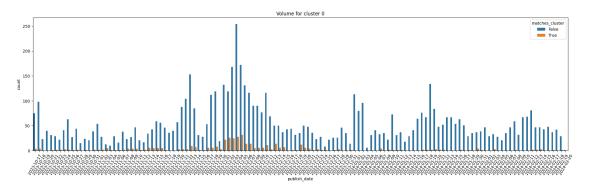
```
198
                                             COP28: Nigeria's delegation in line⊔
 ⇒with climate commitments
                                 COP28: Nigeria pledges 20% reduction in_
 ⇒greenhouse gas emissions by 2030
                                                     COP 28: What is Africa's
 ⇒position on climate change?
                                     COP28: Maintain Political Will In Climate
 →Governance, CSOs Task Govt
          Upcoming COP28 summit must respond decisively to gaps in global ⊔
 ⇔climate action - Amina Mohammed
                                          COP 28: Collaboration crucial to
 →tackling the climate emergency
                                          COP 28: Collaboration crucial to
 →tackling the climate emergency
                        COP28: African leaders, activists set to bring
 →continental climate change demands
                         COP28: Elumelu leads global leaders to drive equitable
 ⇔climate action for Africa
196
                                       COP28: Elumelu Leads Drive For Equitable
 →Climate Action For Africa
79
                                 COP28: Presidency, UNDP, EU Push For
 →Acceleration Of Climate Action Plan
                      COP28: UNCTAD, Partners To Show How Trade Can Advance⊔
 →Pro-Development Climate Goals
                          COP28: Time for Africa to take the lead in climate
 ⇔change action By UCHE ANUNNE
109
                                                   COP28: UN chief asks
 ⇔countries to check global warming
        Random headlines
               media_name publish_date \
5426
                pulse.ng
                           2023-11-24
5213
                ait.live
                            2023-11-28
4197
             dailypost.ng
                           2023-12-05
4870
             dailypost.ng
                            2023-12-01
6115
      newtelegraphng.com
                           2023-11-15
1629
               von.gov.ng
                           2024-01-19
6310
             guardian.ng
                            2023-11-09
                            2023-12-02
4808 nigeriancurrent.com
4097
             guardian.ng
                            2023-12-05
2931
        dailynigerian.com
                            2023-12-19
          title
5426
                            2,000 Kaduna women take to the street, demands for
```

⇔climate justice

```
5213
                              Climate Change: President Tinubu To Attend COP28
 →Summit In Dubai
4197
                  Climate Change: Nigeria Police to launch 'Go Green Initiative'
 →January - IGP
4870
                      COP28: IMF mulls debt-for-climate swap deal for Nigeria, __
 ⇔other countries
                       New Report Warns On Global Efforts To Limit Warming To 1.
 →5°C Is Failing
1629
                                                           ECI unveils AI for
 ⇔climate research
6310
                                                    China says climate talks
 ⇒with US a success
4808
                     At Climate summit Tinubu pledges commitment to methane
 ⇔emission reduction
4097 Climate and Energy Campaigners Demand that African Leaders to End Fossil
 →Fuel Investment
2931
                     NNPCL, TotalEnergies sign MoU on adoption of methane
 →detection technology
```

Article volume for cluster

285 tribuneonlineng.com



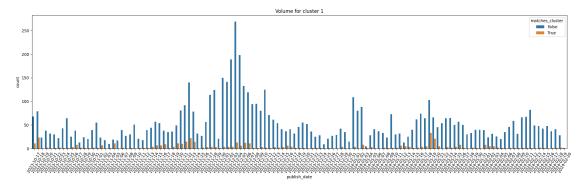
```
Cluster 1
       Number of docs in cluster: (454,)
        Top words: ['court', 'supreme', 'election', 'pdp', 'apc', 'sule',
'appeal', 'gov', 'kano', 'inec', 'governors', 'governor', 'elections',
'victory', 'state', '2023', 'affirms', 'verdict', 'judiciary', 'governorship']
        Typicial headlines close to center of cluster
              media_name publish_date \
145
                legit.ng
                           2024-01-08
111
    newsdiaryonline.com
                           2024-01-19
60
             guardian.ng
                           2024-01-20
362
            blueprint.ng
                           2023-11-15
71
                pulse.ng
                           2024-01-20
```

2023-11-23

```
224 tribuneonlineng.com
                           2023-12-05
146
             guardian.ng
                           2024-01-08
137
          channelstv.com
                           2024-01-12
147
                legit.ng
                           2024-01-05
295
          channelstv.com
                           2023-11-23
280
     africanexaminer.com
                           2023-11-24
113
           nairaland.com
                           2024-01-19
345
      premiumtimesng.com
                           2023-11-17
70
       pmnewsnigeria.com
                           2024-01-20
256
           leadership.ng
                           2023-11-29
105
      pmnewsnigeria.com
                           2024-01-19
                legit.ng
100
                           2024-01-19
103
             punchng.com
                           2024-01-19
56
          newmail-ng.com
                           2024-01-21
         title
145
                         Supreme Court: PDP, APC governors who will know their
 ⇔fate this week
                 APC applauds Supreme Court judgements in six governorship⊔
111
 ⇔election petitions
           APC accepts outcomes of Supreme Court judgment on 6 governorship
 ⇔elections - Morka
362
                      Governor Sule vs Ombugadu: 'Our expectations at the Appeal ⊔
 →Court' -CSOs
                   We accept outcomes of Supreme Court judgment on 6⊔
 ⇒governorship polls - APC
                Court Judgement: Bauchi PDP Governors' forum restates confidence
 →in Judiciary
224
                                   Kano election: 500 lawyers to back Gawuna at
 →Supreme Court
146
                                       Brutal post-election litigation: Eyes on_
 →the judiciary
137 Election Dispute: Victory For Yusuf, Lawal, Mutfwang, Sanwo-Olu, Others Atu
 →Supreme Court
                        APC, PDP NNPP: 4 Supreme Court's election judgements to
147
 ⇒watch in 2024
295
                             Supreme Court'll Do Justice To Mutfwang, Lawal's⊔
 →Sack - PDP Govs
280
                             Supreme Court'll Do Justice To Mutfwang, Lawal's
 →Sack - PDP Govs
113
                            Gubernatorial Appeals: Judgement Day For Sule,
 →Fubara, Oborevwori
                                    Kano Governorship: APC chief hails Appeal⊔
345
 →Court judgement
70
                               APC accepts Supreme Court judgements on
 →governorship elections
```

```
256
           Kano Governorship Appeal: Judge Faces Judicial Council's Wrath Over
 →Clerical Error
105
                    Sule to PDP members: Protests against my victory at Supreme_
 →Court in vain
             Just in: PDP's Ombugadu calls for calm after losing at Supreme∟
 →Court to Gov Sule
                              Final verdict: Supreme Court upholds elections of
 ⇒six governors
                                       Supreme Court: I'm done contesting⊔
56
 ⇔elections, says Sule
        Random headlines
              media_name publish_date \
         nigerianeye.com
5833
                           2023-11-20
2236
            blueprint.ng
                           2024-01-05
471
                pulse.ng
                           2024-02-10
5968
                legit.ng
                           2023-11-17
1583
             punchng.com
                           2024-01-19
6070
                legit.ng
                           2023-11-15
7129
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6069
     newtelegraphng.com
                           2023-11-15
3232
     opinionnigeria.com
                           2023-12-13
          independent.ng
4651
                           2023-12-03
                                                                                 Ш
                                       title
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5833
                                                              FULL LIST: State
 ⇒governors sacked by court so far and reasons
2236
                                                                                 Ш
      Dealing with post-election litigation
471
                                                             Kano Governor
 ⇒receives 3 APC LGA chairmen who defected to NNPP
5968
                                              APC loses as appeal court affirms
 →Bala Mohammed's election as Bauchi governor
                                                            Final verdict:
1583
 Supreme Court upholds elections of six governors
6070
                                                                          LP, PDP
 ⇔vs Sanwo-Olu: "Our decision is unanimous"
7129
                                                                  Election
 →Litigations, Conflicting Court Orders Worry INEC
6069
                                                                                 Ш
           APC Emasculating INEC, Judiciary
3232 The Psychology of Judge Shopping: A Threat to Democracy in Nigeria -
 -Rivers State In Focus -By John Egbeazien Oshodi
4651
                                                                       NBA Abuja
 →Chair Tasks Nigerians On Justice Promotion
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Article volume for cluster <Figure size 640x480 with 0 Axes>



Cluster 2

Number of docs in cluster: (453,)

Top words: ['police', 'abuja', 'arrest', 'arrests', 'kidnappers',
'ndlea', 'suspected', 'rescue', 'kidnap', 'kill', 'trafficking', 'fct', 'drug',
'arrested', 'suspects', 'drugs', 'victims', 'kidnapped', 'kidnapper', 'alleged']

Typicial headlines close to center of cluster

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106	icirnigeria.org	2024-02-10	
133	vanguardngr.com	2024-02-09	
120	pulse.ng	2024-02-10	
95	vanguardngr.com	2024-02-10	
99	osundefender.com	2024-02-10	
381	theeagleonline.com.ng	2023-12-01	
316	tori.ng	2023-12-21	
167	tribuneonlineng.com	2024-01-26	
130	tori.ng	2024-02-09	
109	channelstv.com	2024-02-10	
80	theeagleonline.com.ng	2024-02-11	
43	informationng.com	2024-02-16	
125	pmnewsnigeria.com	2024-02-10	
185	tribuneonlineng.com	2024-01-24	
98	premiumtimesng.com	2024-02-10	
24	tori.ng	2024-02-17	
90	informationng.com	2024-02-11	
229	newtelegraphng.com	2024-01-19	
67	thisisradionow.com	2024-02-12	

→ title

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223
                                    Philip-Okoye: Police Arrest Notorious Abujau
 ⇒kidnapper, 15 Others
106
                            Child trafficking: Police rescue 12 children, arrest
 →3 suspects in Abuja
133 Insecurity: Police IRT neutralise three notorious kidnappers, gunrunners
 ⇒along Abuja-Keffi road
                                              Police raid kidnappers' camp,
 ⇔neutralise many in Abuja
                                              Police raid kidnappers' camp, u
 ⇔neutralise many in Abuja
                                     Police Destroy Bandits' Camps, Kill
 →Notorious Abuja Kidnappers
                                         Kaduna: Police arrest eight for alleged⊔
 →kidnapping, robbery
                           Police Arrest Three Bandits, Rescue Nine Abducted
316
 ⇔Victims In Niger State
                         Insecurity: Police parade 17 suspected kidnappers,
 ⇔bandits, others in Abuja
                  Police IRT Eliminate Three Notorious Kidnappers, Gunrunners
 →Along Abuja-Keffi Road
                                   Police Kill 'Wanted Notorious Kidnappers' In_
 →Abuja, Destroy Camps
                                      Abuja: Police raid kidnappers' camp, kill⊔
 ⇔kingpin, many others
                Police Nab Most Wanted Abuja Kidnapper After Wike's N20mu
 →Bounty, Rescue Two Victims
                                                Police neutralise kidnappers,
125
 ⇔destroy camps in Abuja
                                     Abuja kidnapping: I'm an armed robber, not
 →kidnapper - Suspect
                                       Again, police engage Abuja kidnappers in
 ⇒shootout, kill many
      Nigerian Police Raid Two Kidnappers' Camps In Abuja, Arrest Suspected
 →Killer Of Community Head
                                Police Eliminate 'Many Notorious Kidnappers,'
 →Destroy Camps In Abuja
                                      Abuja Kidnappings: Its No Longer Going To⊔
 →Be Business As Usual
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67
 →Abuja, Destroy Camps
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                pulse.ng
                            2024-01-25
106
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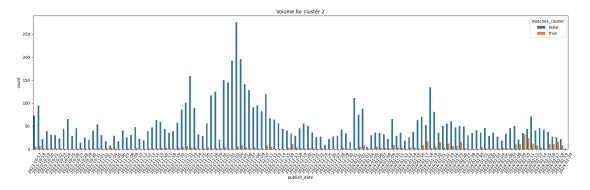
1694	independent.ng	2024-01-18
110	<pre>guardian.ng</pre>	2024-02-17
2046	pmnewsnigeria.com	2024-01-10
5533	osundefender.com	2023-11-23
152	dailytrust.com	2024-02-16
454	tribuneonlineng.com	2024-02-10
5765	<pre>guardian.ng</pre>	2023-11-21

title

1393 NSCDC Arrest Four Suspects Operating Petroleum Dump Site In Niger 1168 There's a surge in kidnap cases in Nigeria, here are some tips to stay safe 106 Police arrest killers of FCT village head 1694 Abuja Kidnappings And Hypocrisy Of Pantami, Sadiya Umar-Farouk Police arrest wanted Abuja kidnap kingpin, Dahiru Adamu 110 2046 How strange woman stole day- old-baby from mother at Lafia hospital 5533 Five Kids Rescued From Traffickers In Plateau 152 Abuja: Wanted kidnapper nabbed after Wike's N20m bounty 454 Police neutralise notorious kidnappers in FCT 5765 Police arrested two for ATM card swap in Niger

Article volume for cluster

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Cluster 3

Number of docs in cluster: (113,)
Top words: ['inec' 'tipubu' 'recs'

Top words: ['inec', 'tinubu', 'recs', 'senate', 'appoints', 'commissioners', 'new', 'electoral', 'resident', 'confirms', '10', 'swears', 'president', 'auditor', 'general', 'seven', 'states', 'chira', 'appointment', 'nominees']

Typicial headlines close to center of cluster

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44	channelstv.com	2023-11-01	
86	gistmania.com	2023-10-25	
42	gistmania.com	2023-11-01	

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95
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87
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88
              dailypost.ng
                             2023-10-25
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97
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            businessday.ng
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44
                                Senate Confirms Seven Of 10 INEC RECs Appointed ⊔
 →By Tinubu
         President Tinubu Appoints 9 New Resident Electoral Commissioners (RECs)
 →For INEC
              Seven Out Of 10 INEC RECs Appointed By President Tinubu Confirmed
42

→By Senate

                    UPDATED: Tinubu appoints 10 new INEC Resident Electoral
 →Commissioners
                       Tinubu Appoints Nine New Resident Electoral Commissioners
95
 →for INEC
87
                              Tinubu appoints 9 new INEC Resident Electoral
 →Commissioners
                                  Senate approves nomination of seven INEC RECs_
 →by Tinubu
88
                                                            Tinubu appoints nine
 →INEC RECs
100
                                                            Tinubu appoints nine
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 →INEC RECs
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                                                        Tinubu appoints nine new_
 →INEC RECS
             Updated; President Tinubu Appoints Ten INEC Resident Electoral
 →Commissioners
                     Breaking: Tinubu appoints nine INEC Resident Electoral
 →Commissioners
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102

newsdiaryonline.com

2023-10-25

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76
                                               President Tinubu appoints 9 new_
 →INEC RECs
49
                           Senate approves appointment of 7 of Tinubu's 10 new_
 →INEC RECs
            President Tinubu Appoints Nine New Resident Electoral Commissioners
 →for INEC
    Tinubu writes Senate, seeks confirmation of 10 INEC Resident Electoral
 →Commissioners
106
                                                         Tinubu appoints 9 RECs⊔
 →for INEC
92
                                       Tinubu appoints 9 new INEC resident
 Tinubu Approves Appointment of Nine INEC Resident Electoral
 →Commissioners
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6544
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                            2023-11-01
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6599
                        Tinubu writes Senate, seeks confirmation of new INEC
 ⊶RECs
6524
                       Senate okays Chira as Auditor-General, confirms seven⊔
 →INEC
6530
                                         Senate Screens 10 Nominees For INEC
 ⊶RECs
6554
                    Senate Confirms Auditor-General, Seven Commissioners For
 →INEC
7159
                      IReV is not election result collation system, INEC_
 ⊶declares
6752
                                               Tinubu Appoints Nine New INEC
 ⊶RECs
6743 President Tinubu Appoints Nine New Resident Electoral Commissioners for
 →INEC
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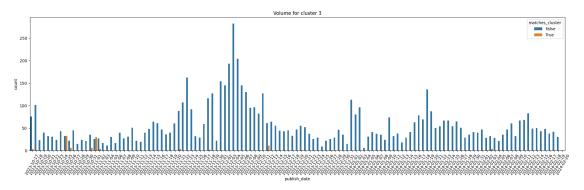
Gov Sule appoints four new Permanent⊔

Secretaries

Senate approves nomination of 7 INEC Resident Electoral Grant Gran

Article volume for cluster

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Cluster 4

Number of docs in cluster: (826,)

Top words: ['fg', 'states', '2024', 'budget', 'energy', 'price', 'farmers', 'development', 'food', 'nbs', 'power', 'fuel', 'sector', 'gas',

'new', 'revenue', '2023', 'fct', 'billion', 'bank']

Typicial headlines close to center of cluster

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307	vanguardngr.com	2023-12-16	
481	leadership.ng	2023-12-03	
354	tribuneonlineng.com	2023-12-11	
177	nairametrics.com	2024-01-17	
407	newsdiaryonline.com	2023-12-07	
416	dailypost.ng	2023-12-07	
75	businessday.ng	2024-02-08	
479	guardian.ng	2023-12-03	
498	thenationonlineng.net	2023-12-02	
213	premiumtimesng.com	2024-01-06	
74	${\tt dailytrust.com}$	2024-02-08	
680	punchng.com	2023-11-17	
684	naijaloaded.com.ng	2023-11-17	
678	${\tt nairaland.com}$	2023-11-17	
598	thenewsnigeria.com.ng	2023-11-24	
690	hallmarknews.com	2023-11-16	
703	championnews.com.ng	2023-11-14	
509	pmnewsnigeria.com	2023-12-02	
723	pulse.ng	2023-11-10	

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Ш
              title
307
                            Taraba budgets N311bn for 2024, dedicates N15.5bn
 ⇔for Green Initiative
481 Energy Sustainability Initiatives Create $575bn Investment Opportunities
 →For Nigeria - NMDPRA
                      Polaris Bank pledges support for infrastructure
 ⇔development, others in Ogun
                                  FG, IFAD allocate N40 million agro inputs,
 ⇒gear to Enugu farmers
                                            Niger Delta: NDDC seeks investors in⊔
 ⇔green innovations
                                                Niger Delta: NDDC seeks green⊔
 →technology investors
                        Shettima inaugurates committee as FG eyes $2.5bn green
 →economy opportunity
                   Refiners demand proper investment as NMDPRA seeks $575b_

→decarbonisation funding
                              Sokoto, Nasarawa unveil N270.1b, N199.9b spending
 ⇔plans respectively
                              N585.2 Million Payment: The questions minister
213
 →Betta Edu must answer
                                     Shettima inaugurates committee to unlock $2.

→5bn Green Economy

                                        Fuel scarcity: Marketers blame low_
 ⇒supply, NNPCL disagrees
                                        Fuel Scarcity: Marketers Blame Low_
 →Supply, NNPCL Disagrees
                                        Fuel Scarcity: Marketers Blame Low_
 →Supply, NNPCL Disagrees
          NEC Meeting: We Must Develop Our Agric Sector to Self-sufficiency-
 ⇒Shettima to Governors
                       Yuguda, Uwaleke to headline CAMCAN workshop on national
690
 →devt plan financing
                      Yuguda, Uwaleke to headline CAMCAN workshop on national
 →devt plan financing
          We need long-term financing to address water infrastructure shortage
 ⇒in Lagos - Sanwo-Ol
723
                       FG generates №14.4 trillion as revenue from extractive
 ⇔sector in 24 months
                                         Shettima inaugurates panel to unlock $2.
 ⇒5bn green economy
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20

Random headlines

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4828
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 →Infrastructure Agreement
3832
                    UK to support developing countries with £140m to switch to _{\sqcup}
 ⇔cleaner energy
5286 NESREA, CODE Strengthen Partnership On Cleaner Environment Inu
 →Oil-producing Communities
6734 Reactions as fourth meeting to operationalise Loss and Damage Fund ends
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3626
                                                    No 'single solution' for
 ⇔energy transition
                                       Using asphalt for road construction not
 ⇒banned, says FG
3693
                                          FG to roll out 1,000 electric buses in⊔
 →the next year
6848
                "No more N9k": Marketers identify cabal behind the rising cost_
 of cooking gas
5383
                                 Federal Govt To Create 1m Jobs, Provide 40, 000_{\sqcup}
 →Housing Units
362
               High unemployment, food insecurity threaten fragile states'
 ⇔economies - Report
        Article volume for cluster
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Volume for cluster 4

250

200

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'kan', 'na', 'ba', 'zaben', 'za', 'su', 'apc', 'bindiga', 'jihar', 'shugaban',
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title

109 'Yansanda Sun Kama Wasu Mutane 3 Da Ake Zargi Da⊔ ⇒Satar Jariri A Nasarawa

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213
                          Majalisar dokokin jihar Nasarawa ta zabi sabon⊔
 ⇒shugabanta da mataimakinsa
                        Abin ba dadi: Yan bindiga sun sace shugaban karamar
 →hukuma a jihar Nasarawa
                   Mulki na Allah ne, Kakakin majalisar Nasarawa ya roi yan⊔
 ⇔adawa kan nasarar Sule
                                     'Yan Bindiga Sun Sace Shugaban Karamar
 ∽Hukuma A Jihar Nasarawa
                   MC ta kira yar Tinubu da sunan sarauniyar Najeriya a wajen⊔
 ⇔taro, bidiyon ya yadu
237
                        Kotun daukaka kara a Abuja ta tabbatar da nasarar
 →Abdullahi Sule a Nasarawa
241 Kotun Daukaka Kara Ta Tabbatar Da Nasarar Abdullahi Sule Bayan Kotun
 →Sauraron Zabe Ta Tsigeshi
                         Nasarawa: Yan sanda sun cafke masu sace yara suna kai
 ⇒su Kudancin Najeriya
                              Shugaban sojin sama ya nemi afuwa kan kisan yanu
 ⊶farar hula a Nasarawa
                   Shari'ar zabe: 'Yan sanda sun girke jami'ansu don dakile⊔
 ⊶rikici a jihar Nasarawa
                      Nasarawa: "Ka koma ga Allah don cikar nasarar ka", Ayodele⊔
 ⇒ga dan takarar PDP
                           'Yan sanda sun kama mutum 8 da suka yi garkuwa da⊔
 →'yan makaranta a Ekiti
                   Ziyarar Gwamnan Nasarawa wajen Ganduje daga nasara a kotu ya<sub>U</sub>
 ⇒jawo alamar tambaya
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- Jam'iyyar NNPP ta sake cin zabe, rike kujerar majalisar⊔ ⊶dokoki a jihar Nasarawa
- 139 'Dan APC ya jero kura-kuren Buhari da Shugaba Tinubu yake∟ ⇒maimaitawa a gwamnati
- 79 Kotun olin Nijeriya Ta Tabbatar Da Za en Sule A $_{\!\sqcup}$ $_{\!\hookrightarrow}$ Matsayin Gwamnan Nasarawa
- 221 Yanzu: Kotu ta sake kwace kujerar kakakin Majalisa, ta⊔ ⇒bai wa PDP a Nasarawa
- 270 Kotun daukaka kara ta sanya Laraba a matsayin ranar yanke⊔ →hukunci zaben Nasarawa

Random headlines

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 ⇒kashe shi a Kano
4604
                     Jama'a sun soki Tinubu a kan daukar mutum 1400 zuwa Dubai⊔
 ⊶ana kashe Biliyoyi
1097
                            Shugaban sojin sama ya nemi afuwa kan kisan yan⊔
 ⇔farar hula a Nasarawa
1007
                                       Jariri Ya Yi Batan Dabo A Asibitin Waziri
 →Gidado Da Ke Kano
3489
                              Yadda Kasar Sin Ke Ba Da Gudummawar Tinkarar⊔
 →Sauyin Yanayi A Duniya
                         Wata soja ta fallasa cin zarafin da wasu manyan soji keu
 yi mata a bidiyo
2323 Shugaban Karamar Hukumar Nasarawa Ya Shaki Iskar 'Yanci Bayan Biyan Kudin∪
 →Fansa Miliyan N10
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Article volume for cluster

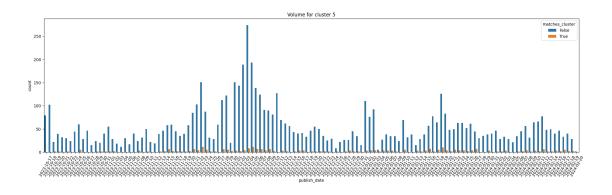
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5166

4299

→APC - Sule Lamido

→ Shugaban Kenya



Wahalar rayuwa: Abin da talaka ya shuka yake girba a gwamnatin

Tallafin man fetur: Yadda Tinubu zai kawo cigaba a Afrika⊔

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Cluster 6

Number of docs in cluster: (486,)

Top words: ['nasarawa', 'state', 'assembly', 'sule', 'speaker', 'apc', 'gov', 'pdp', 'new', 'governor', '2024', 'budget', 'united', 'govt',
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286
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    Nasarawa governorship
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316
                                               Gov Sule Presents N199.9bn 2024
 →Budget To Nasarawa Assembly
                                               Gov Sule presents N199.9bn 2024
 ⇒budget to Nasarawa Assembly
                                  Nasarawa United Administration: State Govt
 →Appoints 5- Member Committee
                                        Gov Sule presents N199.9bn 2024 budget to
 →Nasarawa State Assembly
325
                                                 Gov Sule presents N199.9bn 2024
 ⇒budget for Nasarawa State
                                    State govt appoints 5-member management \Box
 ⇒committee for Nasarawa United
                                           Nasarawa State Assembly Passes N8.2bn⊔
 →2023 Supplementary Budget
                                                                            Ш
 →Nasarawa gov signs 2024 budget
313
                                        Governor Sule Presents N199.9bn Budget to
 →Nasarawa State Assembly
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164
                                                       Nasarawa to hold local
 →council election August 31
                                        Nasarawa Stakeholders Laud Governor
 →Sule's Developmental Strides
                                                   Nasarawa Assembly approves<sub>□</sub>
 Gov Sule's N199.9bn budget
                                                          Nasarawa Gov signs⊔
 →N199bn 2024 budget into law
                                      Re-run: INEC Assures Of Credible,
 →Transparent Election In Nasarawa
                                      Re-run: INEC assures of credible,
 →transparent election in Nasarawa
                                                        Nasarawa Assembly passes
 →2024 Appropriation Bill
432 Nasarawa parliamentary staff join nationwide strike, demand financial
 →autonomy for state Assemblies
252
                                                        We Will Invest In⊔
 →Nasarawa to Improve Livelihood
298
                         N199.9bn 2024 budget'll boost Nasarawa citizens' living
 ⇔standard - Commissioner
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6313
                             Digital Agriculture: Group Trains 250 Female
 →Farmers In Nasarawa State
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                                         Nasarawa United coach blames poor pitch
 ⊶for draw with EFCC
2940
                                                                    Nasarawa:
 →Year of the Protester
5327
                                    NNL: Nasarawa United Coach Blames Poor Pitch
 →For Draw With EFCC
1049
                           Nasarawa Traditional Council Leads Campaign on⊔
 →Environmental Sanitation.
```

Enyinna Chuta, ex-DVC Nasarawa State⊔

6495

→University dies, aged 86

2820 Remi Tinubu's pet project donates №100k each to 250 elderly →people in Nasarawa

6874

Lithium Reserves, The New Investment Bride Reshaping⊔

→Nasarawa's Economy

1304

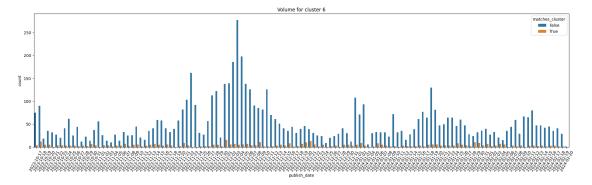
We Won't Allow Anarchy In Nasarawa,

Governor Sule Warns

1838 Union passes 'vote of no confidence' on Nasarawa College of Education $_{\sqcup}$ $_{\hookrightarrow}$ Governing Council chair

Article volume for cluster

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Cluster 7

Number of docs in cluster: (507,)

Top words: ['tinubu', 'president', 'cop28', '2024', 'new', 'nigerians', 'year', 'summit', 'dubai', 'nigeria', 'budget', 'climate', 'security', 'text', 'abuja', 'address', 'electric', '100', 'buses', 'economic']

Typicial headlines close to center of cluster

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483	newtelegraphng.com	2023-10-29	
479	dailytimesng.com	2023-10-31	
505	vanguardngr.com	2023-10-18	
196	theeagleonline.com.ng	2024-01-01	
115	guardian.ng	2024-01-09	
113	independent.ng	2024-01-10	
123	independent.ng	2024-01-07	
458	businessday.ng	2023-11-20	
202	sharpedgenews.com	2024-01-01	
209	ogtv.com.ng	2024-01-01	
463	thenewsnigeria.com.ng	2023-11-19	
194	punchng.com	2024-01-01	

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409
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                                         Tinubu Will Ensure Nigeria's Resources
 →Benefit Citizens - Abbas
                                         Tinubu Will Ensure Nigeria's Resources
 →Benefit Citizens - Abbas
                                         Tinubu will ensure Nigeria's resources⊔
 ⇔benefit citizens - Abbas
505
                                                       Hardship: Nigerians⊔
 ⇒should be patient with Tinubu
                                                2024: Tinubu admits hardships,
 ourges Nigerians to endure
                                                                       Dear
 →President Tinubu: Just do it
113
                                                                       Dear_
 →President Tinubu: Just Do It...
                                            Tinubu's Parameters For Assessing
 →His Administration In 2024
                              Tinubu needs to devote quality time to reviving
 →Nigeria's wobbling economy
                                                             Read Tinubu's New_
 →Year message To Nigerians
                                             Tinubu's pledge to Nigerians:
 ⇔expect a fulfilling Year 2024
                                                 How Tinubu will shock Nigerians
 →- APGA Chief, Obi-Okoli
                                                        Tough times never last,
 →Tinubu assures Nigerians
                                                 FULL SPEECH: Tinubu sends New_
 →Year message to Nigerians
409 JUST-IN: Tinubu Prioritises Security, Job Creation, Poverty Reduction,
 →Presents 2024 Budget To NASS
                                        Tinubu will kill Nigerians with his⊔
 →'shambolic policies' - Atiku
                                    Tinubu will ensure Nigerians enjoy natural
 →resources - Speaker Abbas
105
                                                                        Thank
 →You President Tinubu, But...
```

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182
                                       [FULL TEXT] President Tinubu's 2024 New_
 →Year address to Nigerians
144
                                                   President Tinubu's 2024 New
 →Year address to Nigerians
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3304 theeagleonline.com.ng
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                                                      title
      Redefining Justice: The Tinubu Approach vs. Buhari's Regime - Lessons from
 →Sowore, Bakare, Igboho And Kanu -By John Egbeazien Oshodi
477
                                                      North-central group sets
 →up committee, tasks Tinubu on National intelligence service
5877
 → How Tinubu will shock Nigerians - APGA Chief, Obi-Okoli
                                                                   Tinubu's call
 ofor collaboration on governance splits opposition parties
                                                           Tinubu pioneers
 -eco-friendly transportation with roll out of 100 electric buses
 →Tinubu travels for COP28 Climate Summit in Dubai Wednesday
 Nigerians hail Tinubu as president trims foreign trips entourage
2222
                                                                                Ш
        Tinubu approves 3 airlines for 2024 hajj pilgrimage
5062
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             Tinubu to attend COP28 Climate Summit in Dubai
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                                                              Africa can become
 the world's green manufacturing powerhouse, by Bola Tinubu
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title

431 Army drone strike: No religious crisis, ethnic cleansing in Kaduna \neg \Box \Box \Box Gov Sani

167 Tension as DSS arrests Miyetti Allah's President in $_{\sqcup}$

-Nasarawa

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210
                               Insecurity: Miyetti Allah plans vigilante group in⊔
 -Nasarawa
423
                       Kaduna Bombing: Sultan Of Sokoto Calls For Justice,
 ⊶Mourns Victims
430
                      Army Airstrike: No Religious, Ethnic Cleansing In Kaduna -
 ⊶Gov Sani
                                                                         The
 →Kaduna bombing
588
                                                         Kaduna: The road to⊔
 →lasting peace
                                                                          0n_{\sqcup}
394
 →Kaduna bombing
                                  Miyetti Allah unveils 1,144 nomad vigilantes in
 →Nasarawa
292
                                 Plateau Killings: Alia Calls For Unity To Fight
 →Terrorism
                             Ibadan Blast, Abuja Kidnaps And Calamities -By_
 ⊶Festus Adedayo
                       Politics - Nasarawa PDP chieftain, Haladu Akwashiki
 odefects to APC
                       Wike: Reports of killing of 100 people in Abuja false,
644
 ⇔exaggerated
                        Beyond Visitation To Bombing Mishap's Victims -By Femi⊔
 ⊶0luwasanmi
199
                            Insecurity: Miyetti Allah Unveils Vigilante Outfit In
 →Nasarawa
350
                Drone Attack: Miyetti Allah seeks compensation for all \operatorname{victims}_{\sqcup}
 ⊶in Nigeria
172
                                   Fulani Vigilante: DSS Arrests Miyetti Allah's⊔
 □President
177 DSS Nabs Miyetti Allah's President, Bodejo For Creating Unrecognised
 →Vigilante Group
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                                         Editorial: Kaduna error bombing: Enough
 ⇒is enough
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                         NURTW crises: Labour Minister taking side with ⊔
 →Agbede-led group - Baruwa
                           Akeredolu, Aiyedatiwa and a dicey peace deal, By_
 ⇔Zainab Suleiman Okino
3484
                                  Zamfara SUBEB boss condoles Emir of Bungudu
 →over mother's death
4938
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Gunfire In Guinea-Bissau After Two Ministers Freed $_{\sqcup}$

→By National Guard

5848 APC vs PDP: "Fintiri's mandate is from God", Primate

→Ayodele declares

Find lasting solution to insecurity, hardship, CAN, Anglican Church, →Yoruba leaders tell FG

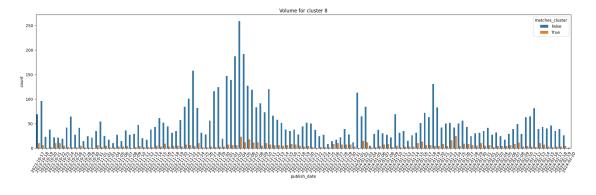
1922 How crises forced us out

⇔of Plateau State

1253 Tension as DSS arrests Miyetti Allah's

⇔President in Nasarawa

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366
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147
                                                              Poor facilities:
 →Arewa youth rejects WAEC CBT exams
                      2023 Keffi Polo Open: Enthusiasts commend Wadada
 →Foundation's education support initiative
                                                     "We stand ready": Arewa_
 ⇒youths reject planned WAEC CBT exams
                                    LEADERSHIP Awards: Awwalu Salisu Is
 →Outstanding Young Person of the Year 2023
                     Arewa youths reject CBT for WAEC exam, fear it'll lead tou
 →failure in Zamfara, Taraba, others
                                      GOCOP Congratulates Soneye, Enugu
 →Commissioner Agbo, Others on Appointments
                                              Kaduna: Sani sponsors 50 Kaduna
 →ICT students to Mewar int'l varsity
                                      Private Sector Sponsorship Will Make
 →Betsy Obaseki Tournament Outlive 2024
                                                              WAEC, firm reward
 ⇒students with best WASSCE results
421
                                                              WAEC, Firm Reward
 →Students With Best WASSCE Results
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449
                              Nasarawa State: Islamic Society of Eggonland⊔
 →Disburses Scholarships to 857 Students
                U20 Women's World Cup qualifier: Falconets coach invites Naijau
 →Ratels, other players for Tanzania
                                       Colombia 2024: Danjuma invites Omilana, u
 →Kalu, Adoo, 27 others for Tanzania
                                                          Nigeria polytechnic⊔
 →alumni associations get new leaders
173 UNICEF's Urgent Plea: $1.89 Billion Needed To Support 24 Million Children
 →In West And Central Africa In 2024
             ABUAD Alumni Congratulates Mrs Folasade Alli On Elevation To SAN, U
 →Lauds Varsity Founder Afe Babalola
                                                                 Degrees not
 →enough to equip youths- Prof Pantami
                                                                       1.1
 →Debutants! Meet Nigeria's AFCON Newcomers
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 →to top three candidates, schools
                                                NGO trains 18 civic education,
 →accountability champions in Ebonyi
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                                     NECO boosts measures to tackle 2023 SSCE_
 ⇔exams malpractices
                          NDLEA intercepts large consignment of "Loud" concealed
 →in loudspeakers
6098
                                     Eight in 10 diabetic know status late as⊔
 →diphtheria spreads
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4485 2023 Keffi Polo Open: Enthusiasts commend Wadada Foundation's education

support initiative

6891 U20 Women's W/Cup Qualifiers: Danjuma invites 30 players

for Tanzania clash

219 NWFL set to resume after

mid-season break

5343 15,570 teachers take professional

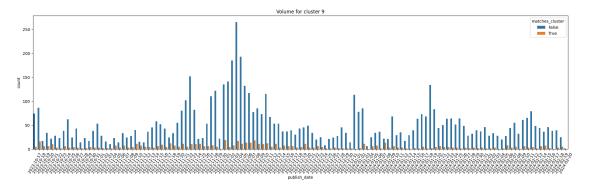
qualifying exams

891 PREMIUM TIMES' Journalist, others selected for SEJ

Diversity Fellowship

Article volume for cluster

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571
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20
 ⇔challenges soon- Ganduje
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21
 →Ganduje Assures Nigerians
                                                    Hardship: Nigeria will⊔
 →overcome its challenges soon
                       Hardship: Nigeria Will Overcome Its Challenges Soon -
 →Ganduje Assures Nigerians
                                                  Nigeria'll overcome its⊔
18
 ⇔challenges soon, says Ganduje
                                                 Unlocking Nigeria's potential
 →through U.S. partnership
302
                                                                 Nigerians As
 →Centrepiece Of Governance
    CAN to FG: High cost of foodstuffs, transportation, others have made life ⊔
 ⇔difficult for Nigerians
                       NAIJAFEED: Military of Nigeria attempting to cover up
 →mass killing of civilians
                                                          Nigeria's⊔
162
 →underemployment is the real concern
                                           Nigerians as centrepiece of
 ⇒governance, by Fredrick Nwabufo
                                           Nigerians as centrepiece of
 ⇒governance, By Fredrick Nwabufo
316
                                           Nigerians as centrepiece of ⊔
 ⇒governance, by Fredrick Nwabufo
                            Nigeria Can Lead In Africa's Efforts To Decarbonise⊔
276
 →World Economy - Tinubu
                                                            Govs promise better

⊔
193
 ⇔deal for Nigerians 2024
397
                    2024 Budget: Tinubu's Govt Wasteful As Nigerians Suffer
 → 'Multidimensional Poverty'
                                                         Nigeria's Profligate⊔
 →Leaders and Dangers Ahead
206
                             Embrace peace, harmony for economic growth, VP
 →Shettima charges Nigerians
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                                                       2024 budget in tune with
 →yearnings of Nigerians
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                                   Nigeria Sliding Into Totalitarianism,
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5709
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6017
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6434
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2632 thenewsnigeria.com.ng
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4660
                                                   2024 budget in tune with
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3865
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                                                Kogi Polls: Nigerians Are Losing⊔
 →Confidence In You
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 →National Land Commission
6434 Agriculture and crowdfunding in focus as the 6th Nigerian Diasporau
 →Investment Summit unfolds
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                 Embrace Peaceful Coexistence to Fastrack Development, VP
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                             2024-01-24
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63
       tribuneonlineng.com
                             2024-02-07
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                             2024-01-24
126
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                             2024-01-23
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103
                             2024-01-27
312
     theeagleonline.com.ng
                             2023-11-27
49
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141
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139
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121
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                             2024-01-23
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146
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                             2024-01-17
43
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                             2024-02-11
24
        newtelegraphng.com
                             2024-02-12
90
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                             2024-01-31
197
       tribuneonlineng.com
                             2024-01-02
             title
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FCT Insecurity: Nasarawa State Police Command Beefs Up Security

Kidnapping: Police, NSCDC to extend safety initiative to⊔

137

390

⇒in Boundary Towns

→tertiary institutions

```
169
                                 Crime: Security agencies on holistic operation⊔
 ⊶in FCT - Official
                                          Insecurity: FCT NSCDC charges⊔
 ⇒personnel on intelligence
                               Reps to summon NSA, security chiefs over
 ⇔insecurity in FCT, others
                                          Kidnapping: FCT NSCDC charges
 ⇒personnel on intelligence
                               Insecurity: NSCDC FCT Commandant charges⊔
 →personnel on intelligence
                         FCT Council boss hails Wike's interventions in checking
 ⇔security threats
                                      Kidnapping: FCTA lists worst hit councils,
 →measure in place
    National Assembly mulls fresh legal framework for state police, local,
 →intelligence gathering
                            10th NASS committed to establishing State police to_
 →tackle insecurity
                   Security: National Assembly committed to establishing state
 ⇒police - Lawmakers
61
                                         Reps summon security chiefs, Wike over⊔
 ⇒insecurity in FCT
                                           Insecurity: FCT plans to work with
 ⇔neighbouring states
                                             Security Agencies Vow to Clamp Down
 →Criminals in FCT
                    Police Secure Borders Between Nasarawa And Abuja As⊔
 →Insecurity Worsens In FCT
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                                                                 Insecurity: We⊔
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                                CISLAC cautions against indiscriminate removal
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2001
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523
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427
      JAMB: Court Convicts CBT Centre Owner, Assures Justice In 15-Yr- Old Data
 →Protection Violation Case
                                             Court Convicts CBT Centre Owner
 ⇔Over Registration Infractions
306
                                                                          Fire_
 ⇔razes police station in Kano
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 →Rising 'One-Chance' Robbery
2000
                                                      Security Agencies Vow tou
 →Clamp Down Criminals in FCT
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2024-02-12

Health warnings: Government agencies still hold meetings with tobacco industries, NTCA laments

NASS mulls fresh legal framework for state police, ⊔ ⇔local intelligence gathering

PSC set January 8 for screening of 416,270 ⊔

107 private varsities⊔

2001 to be investigated by FG 9

 \hookrightarrow police constable applicants

newtelegraphng.com

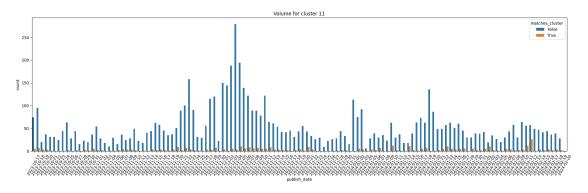
330

2801

523 Operation Safe Haven clarifies detention of youths⊔ ⇔on motorcycles in Plateau

Article volume for cluster

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Cluster 12

Number of docs in cluster: (424,)

Top words: ['nasarawa', 'police', 'gunmen', 'chairman', 'lg', 'arrest', 'abducted', 'students', 'freedom', 'lecturer', 'air', 'state', 'kill',

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248
                             2023-12-30
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                             2023-10-24
95
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                             2024-01-25
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375
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328
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                             2024-01-02
230
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   title
26
                               How police killed suspected kidnappers in \sqcup
 →Nasarawa - FPRO
210
                                                      Gunmen kidnap Nasarawa⊔
 ⇔council boss
          BREAKING: Gunmen invade Nasarawa university community, kill one,
 →kidnap others
247
                                                  Fleeing kidnappers kill two in_
 -Nasarawa
58
                                             police rescue two kidnap victims in_
 →Nasarawa
252
                                                 Nasarawa police rescue abducted⊔
 →lecturer
391
                         BREAKING: Gunmen Release Kidnapped Nasarawa University
 →Lecturer
                           Nasarawa Police Rescue University Lecturer Abducted

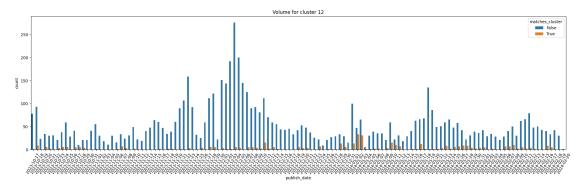
⊔
 →By Gunmen
248
                                        Fleeing Suspected Kidnappers Kill Two In⊔
 →Nasarawa
399
                 Again, Gunmen Invade Nasarawa Community, Abduct Varsity Senior
```

'varsity', 'kidnap', 'attack', 'alleged', 'university', 'victims', 'kidnapped']

95 No.		CT Police Rescue 14 Kidnap Victims, Kill Kidnapper In⊔
→Nasarawa		
315		en attack, kidnap 10 students in Nasarawa university
→community		
Panic As Gunmen Strike Again, Kidnap Nasarawa University		
→Students		
256		Police Rescue Abducted Nasarawa Lecturer, Arrest⊔
	udent	
375		Nasarawa killings: Tiv indigenes blast⊔
→gov's aide		
259 Kidnapping: Police Rescue Lecturer, Arrest 200-Level University Student In_{\sqcup}		
→Nasarawa		
215		Nasarawa police hunt kidnappers of LG_{\sqcup}
⇔chairman		
328	I	Nasarawa police arrest two for starving family member⊔
<pre>→to death</pre>		
224		Gunmen kidnap council chairman in $_{\sqcup}$
⊶Nas	sarawa	
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2616	dailynigerian.com	2023-12-29
2628	pulse.ng	2023-12-29
5142	channelstv.com	2023-11-28
141	von.gov.ng	2024-02-16
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2344		Nasarawa Council Chairman Land In Gunmen Den
5473	Troops re	escue five kids from traffickers at Nasarawa park
632	Hoodlums Kill 3 Soldiers, 2 Vigilantes In Nasarawa Community	
6950	·	
1985		
2412	Police to investigate abduction of LG chairman in Nasarawa	
2616		Police rescue abducted lecturer in Nasarawa
2628	Police res	scues abducted NSUK lecturer, Igbawua in Nasarawa
5142		Army Condemns Attack On Troops In Nasarawa
141	Six (Children Rescued from Syndicate In Nasarawa State
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Article volume for cluster

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88
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386
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                             2023-12-02
            dailytrust.com
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                             2023-12-10
77
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                             2023-12-09
288
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                             2023-12-04
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318
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title

437

424 ⇔priorities for COP28

premiumtimesng.com

Nigeria outlines⊔

2023-11-11

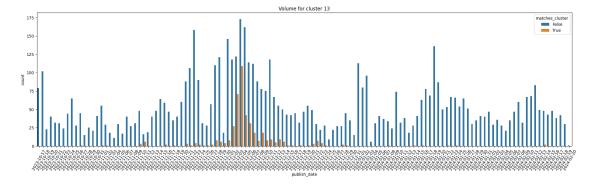
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                                 Dubai: Nigeria defends number of delegates to⊔
 →COP28 Summit
237
                                       JUST IN: Nigerian govt funded 422
 ⇔delegates to COP28
                                                     Nigeria And COP28: Matters⊔
 →Arising (1)
                                                   COP28: Nigeria must think out
 of the box
420
                                   Stakeholders in Nigeria seek common front⊔
 ⇒ahead of COP28
                                                   Reviewing Nigeria
 →Participation at Cop28
                                  REVEALED: Nigeria's COP28 delegation is
 →largest in Africa
                                                 VIDEO: Nigeria's position at
386
 ongoing COP28
                                     Outrage over Nigeria's 1,411 delegates to_
199
 →COP28 summit
                                                        COP28: Nigeria's
 →positive takeaways
                                                        COP28: Nigeria's⊔
 →positive takeaways
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 ⇒positive takeaways
                                                        COP28: Nigeria's
 →positive takeaways
                                                        COP28: Nigeria's⊔
 →positive takeaways
                                                Nigerian govt funded 422⊔
 →delegates to COP28
                              COP28: Many on Nigeria's delegation are idle
 ⊶hands- Peter Obi
222 COP28: FG didn't sponsor the 1,411 Nigerian delegates to Dubai, Presidency
 ⊶replies Obi
              Nigerian Government Clarifies Funding for COP28 Delegates Amidst⊔
 Gontroversy
437
                                                       COP28: Nigeria
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           COP28: REA, NASEINI secure $150m lithium battery manufacturing deal
3638
 ⇔with Chinese investor
4623
                                                3 Plane-Loads Of Delegates □
 →Represent Nigeria At COP28
                         'We must stop waste,' Peter Obi berates Nigeria's 'huge'
 ⇒delegation to COP28
6050
                          NDCs: Insufficient progress made, COP28 must set stage
 →for action - Report
4608 COP28: NMDPRA x-rays Nigeria's decabonisation journey, targets $575bn
 →investment opportunities
5261
                                               Nigeria backs Africa's agenda as⊔
 →COP28 begins in Dubai
3586
                                                                   COP28:
 →Nigeria's positive takeaways
4649
                                                    Obi decries Nigeria's
 →'wasteful' COP28 delegation
                             COP28: Nigeria commits to lower methane emissions
3582

→in oil and gas sector

6296
                                                Shettima consitutes committee to ___
 ⇒set agenda for COP28
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Cluster 14

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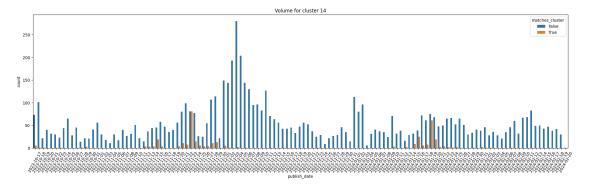
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233
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220
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                             2023-11-23
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265
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326
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                                                                                 Ш
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323
                                Breaking: Appeal Court reserves judgement in_
 →Nasarawa gov's petition
                                                      Supreme Court judgement:
162
 →Tension grips Nasarawa
                                    JUST IN: Appeal court reserves judgment on_
 →Nasarawa governorship
289
                  BREAKING: Appeal Court reverses Tribunal ruling, affirms Sule
 →as Nasarawa governor
233
                                                            Appeal Court affirms<sub>□</sub>
 →Sule as Nasarawa Gov
220
                              Nasarawa: Appeal Court voids tribunal decision,
 ⇒affirms APC's Gov Sule
246
                    BREAKING NEWS: Appeal Court reverses sack of Nasarawa State⊔
 →Gov Sule by tribunal
71
                                                  BREAKING: Judgment underway in_
 →Nasarawa gov appeal
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284
                         Breaking: Appeal Court reverses sack of Nasarawa State⊔
 Gov Sule by tribunal
250
                                            Breaking: Appeal Court upturns
 →Nasarawa gov, Sule's sack
                                    Appeal court reserves judgment on Nasarawa
 ⇒governorship election
                               Appeal Court Judgement: Nasarawa PDP To Take
 →Dispute To Supreme Court
                                                    Nasarawa guber: APC lauds⊔
 →Appeal Court judgement
                       Appeal Court verdict: Nasarawa PDP rejects judgement,
 →heads for Supreme Court
                                           BREAKING: Appeal Court reverses sack
 ⊶of Nasarawa Gov Sule
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 →appeal close to midnight
286
                                     A'Court judgement in Nasarawa guber: PDP
 →heads to Supreme Court
265 Breaking: Appeal Court upturns tribunal's verdict, upholds Sule's election
 ⇒as Nasarawa governor
337
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            blueprint.ng
                            2024-01-16
                                                                                1.1
           title
1855
                 Guber Election: Nasarawa PDP Youths Urge Impartial Judgment⊔
 →From Supreme Court
5479
                                            A'Court Reverses Sack of Gov Sule of
 →Nasarawa State
5143
                                                            Appeal court sacks
 →Nasarawa speaker
```

```
2023
                  Nasarawa Guber: Supreme Court To Hear Case Between Ombugadu,
 Gov Sule Jan 16
5179
                                        Breaking: Appeal court sacks Nasarawau
 ⇔Speaker, Abdulahi
1921
                              Nasarawa Guber: Clerics Pray For Gov Sule's⊔
 →Supreme Court Victory
1585
                        Supreme Court Verdict: 38 Nasarawa Women For Justice
 →Arrested By Police
1444
                                       Nasarawa Guber: Aisha Yesufu Reacts To⊔
 →S'Court Judgement
5607
                  Appeal Court dismisses tribunal verdict, affirms Nasarawa
 ⇒governor's election
1799 Nasarawa governorship tussle: PDP youth demand fair judgement, justice
 →from Supreme Court
```

Article volume for cluster

<Figure size 640x480 with 0 Axes>



<Figure size 640x480 with 0 Axes>

We were able to identify cluster 4 as relevant specifically to climate change initiatives and cluster 13 as relevant to Cop28, both of which are interesting to Oxfam's work.

3 Which headlines mention Oxfam?

Which headlines mention

```
[15]: # Is 'oxfam' in the vocabulary
print("Sanity check that 'oxfam' is in the vocabulary:", "oxfam" in vocabulary)
print(list(vocabulary).index("oxfam"))
```

Sanity check that 'oxfam' is in the vocabulary: True 5957

```
[16]: oxfam_matches = headlines_df[headlines_df["title"].str.contains("oxfam",__
                 →flags=re.IGNORECASE)]
             print(len(oxfam_matches))
             display(oxfam_matches)
            5
                                                                                                                                                                        id
            1240 0bc045e9395646279eee42e6aef129f3c18cab1e04e68c526b98b26c430f5510
            1258 ac928ab5ee16417631d797293d4f3f2c0e5ee319c0b33f795fd67313e97844a8
            1295 cb8ec55e4c68abe680b80f6ca6d9a51028af87add39d0381c73d492dea2098be
            1707 \quad 528 ee 9 a 3 e 4460 a d b 32 b 95523 b 924 b 6294 a 99 d 057869 d 629 d d 37499 ef 33 f d 6 c d d 629 d 6
            5746 db3ede8851f679c5aa1c298005c75eb3670d66c82fa6bf85b03f33fc350ac0dd
                                          indexed_date language
                                                                                                                     media_name
            1240 2024-01-25 02:55:01
                                                                                                 championnews.com.ng
                                                                                     en
            1258 2024-01-25 03:29:29
                                                                                              theabujainquirer.com
                                                                                     en
            1295 2024-01-25 02:44:38
                                                                                                                blueprint.ng
                                                                                     en
            1707 2024-01-19 02:27:52
                                                                                                                 blueprint.ng
                                                                                     en
            5746 2023-11-23 01:00:42
                                                                                                                 blueprint.ng
                                                                                     en
                                                   media_url publish_date
            1240
                            championnews.com.ng
                                                                              2024-01-23
            1258 theabujainquirer.com
                                                                              2024-01-23
                                            blueprint.ng
            1295
                                                                              2024-01-23
            1707
                                            blueprint.ng 2024-01-17
            5746
                                            blueprint.ng
                                                                              2023-11-21
            1240 Community empowerment: OXFAM hails Prosell project impact, as centre lists
               →achievements
                                                                                            40,000 Taraba households benefit from Oxfam
            1258
               →poverty scheme
            1295
                                                                              Oxfam PROSELL project empowers 40,000 households in_
               ⊶6 Taraba LGs
                                                                            Oxfam calls for review of 'dangerous' tax incentive
            1707
               →to corporates
            5746
                                                                                              Poverty: Oxfam calls for global
               ⇔redistribution of incomes
                                                                                                                                                                                                   Ш
                                                                                                    url
            1240 https://championnews.com.ng/
               -community-empowerment-oxfam-hails-prosell-project-impact-as-centre-lists-achievements/
            1258
                                                              https://theabujainquirer.com/2024/01/23/
               →40000-taraba-households-benefit-from-oxfam-poverty-scheme/
```

```
1295
                                   https://blueprint.ng/
 →oxfam-prosell-project-empowers-40000-households-in-6-taraba-lgs/
1707
                                   https://blueprint.ng/
 →oxfam-calls-for-review-of-dangerous-tax-incentive-to-corporates/
5746
                                          https://blueprint.ng/
 poverty-oxfam-calls-for-global-redistribution-of-incomes/
      cluster_label
1240
1258
                  4
                  4
1295
                  4
1707
```

5746

4

[17]: sns.countplot(x = oxfam_matches["cluster_label"]).set_title("How many headlines⊔

in different clusters mention 'oxfam'?")

[17]: Text(0.5, 1.0, "How many headlines in different clusters mention 'oxfam'?")



