

EDA_topics_outside_US

March 24, 2022

```
[128]: import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
[94]: topic = pd.read_csv('features/partner_data/GDI/
↳GDI_Domain_Topics_Traffic_December2021.csv')
domain_original = pd.read_csv('misinfo_domains_hosted_outside_US.csv')
newsguard = pd.read_csv('features/partner_data/newsguard/NewsGuard_Domains_2021.
↳csv')
```

```
[95]: len(domain.domain.unique())
```

```
[95]: 348
```

```
[96]: dm_list = domain.domain.unique()
```

```
[97]: #topic
narrative_density = []
topics = []
monthly_pageviews = []
topic_error = []

for d in dm_list:
    #print(domain)

    curr_topic = topic.loc[topic.domain_name == d,:]
    if curr_topic.shape[0] != 1:
        if curr_topic.shape[0] > 1:
            topic_error.append(domain)
            narrative_density.append(np.nan)
            topics.append(np.nan)
            monthly_pageviews.append(np.nan)
        else:
            narrative_density.append(curr_topic.narrative_density.values[0])
            topics.append(curr_topic.topics.values[0])
```

```
monthly_pageviews.append(curr_topic.monthly_pageviews.values[0])
```

```
[98]: domain_topic_df = pd.DataFrame(data = {'domain':dm_list, 'topics':topics})
      topics_d = pd.unique(domain_topic_df[domain_topic_df.topics.notna()].topics)
      domain_topic_df.head()
```

```
[98]:
```

	domain	topics
0	8satire.com	NaN
1	8shit.net	NaN
2	abcnews5.com	NaN
3	ac24.cz	[None]
4	active-democracy.com	['antiasian', 'antimuslim', 'coronavirus', 'bi...

```
[99]: topic_list = set()
      for t in topics_d:
          t = t.replace('[', '')
          t = t.replace(']', '')
          t = t.replace('"', '')
          t = t.replace(" ", '')
          t_list = t.split(',')
          topic_list.update(set(t_list))
      topic_list = list(topic_list)
      topic_list_final = []
      for t in topic_list:
          if t != 'None':
              topic_list_final.append(t)
      topic_list_final
```

```
[99]: ['voterfraud',
      'antilgbt',
      'antiblack',
      'misogyny',
      'qanon',
      'antilatinx',
      'aliens',
      'antisemitic',
      'whitesupremacy',
      'bigtech',
      'pseudoscience',
      'antivaxx',
      'antiimmigrant',
      '5g',
      'votinglaws',
      'coronavirus',
      'climatedenial',
      'antiasian',
      'antimuslim',
```

```
'biden']
```

```
[100]: topicDf = pd.DataFrame(columns=['domain'] + topic_list_final, )
m,n = domain_topic_df.shape
topicDf
```

```
[100]: Empty DataFrame
Columns: [domain, voterfraud, antilgbt, antiblack, misogyny, qanon, antilatinx,
aliens, antisemitic, whitesupremacy, bigtech, pseudoscience, antivaxx,
antiimmigrant, 5g, votinglaws, coronavirus, climatedenial, antiasian,
antimuslim, biden]
Index: []

[0 rows x 21 columns]
```

```
[101]: topicDf = pd.DataFrame(columns=['domain'] + topic_list_final, )
m,n = domain_topic_df.shape
NA_row = [float("nan") for i in range(len(topic_list_final))]
for i in range(m):
    curr_topic_list = domain_topic_df.topics[i]
    if pd.notna(curr_topic_list):
        curr_row = [0 for i in range(len(topic_list_final))]
        curr_topic_list = curr_topic_list.replace('[', '')
        curr_topic_list = curr_topic_list.replace(']', '')
        curr_topic_list = curr_topic_list.replace('"', '')
        curr_topic_list = curr_topic_list.replace(" ", '')
        t_list = curr_topic_list.split(',')
        #print(t_list)
        for j in range(len(topic_list_final)):
            if topic_list_final[j] in t_list:
                curr_row[j] = 1
        #print([domainDf.domain[i]] + curr_row)
        topicDf.loc[len(topicDf.index)] = [domain_topic_df.domain[i]] + curr_row
```

```
[102]: topicDf
```

```
[102]:
```

	domain	voterfraud	antilgbt	antiblack	misogyny	\
0	ac24.cz	0	0	0	0	
1	active-democracy.com	1	0	0	0	
2	actualidad.rt.com	1	1	0	1	
3	andrewcarringtonhitchcock.com	0	0	1	0	
4	arab.southfront.org	1	1	0	0	
..	
142	westmonster.com	0	0	0	0	
143	whale.to	1	1	0	1	
144	wn.com	1	1	1	1	
145	zelfzorgcovid19.nl	0	0	0	0	

146		zvedavec.org	0	0	0	0
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	qanon	antilatinx	aliens	antisemitic	whitesupremacy	...	pseudoscience	\
0	0	0	0	0	0	...	0	
1	0	0	0	1	1	...	0	
2	0	0	0	1	1	...	0	
3	0	0	0	1	1	...	0	
4	0	0	0	1	1	...	0	
..	
142	0	0	0	0	0	...	0	
143	0	0	1	1	1	...	1	
144	1	0	0	1	1	...	1	
145	0	0	0	0	0	...	0	
146	0	0	0	0	0	...	0	

	antivaxx	antiimmigrant	5g	votinglaws	coronavirus	climatedenial	antiasian	\
0	0	0	0	0	0	0	0	
1	0	0	0	0	1	0	1	
2	0	0	0	0	1	0	0	
3	1	0	0	0	1	0	0	
4	0	0	0	0	1	0	0	
..	
142	0	0	0	0	0	0	0	
143	1	0	0	0	0	0	1	
144	1	0	1	0	1	0	1	
145	0	0	0	0	0	0	0	
146	0	0	0	0	0	0	0	

	antimuslim	biden
0	0	0
1	1	1
2	1	1
3	0	1
4	1	1
..
142	0	0
143	1	0
144	1	1
145	0	0
146	0	0

[147 rows x 21 columns]

```
[103]: data_rating = data[['domain','rating']]
```

```
[109]: topicDf_merged = topicDf.merge(domain_original,how='left',on='domain')
```

```
[110]: topicDf_merged
```

```
[110]:
```

	domain	voterfraud	antilgbt	antiblack	misogyny	\
0	ac24.cz	0	0	0	0	
1	active-democracy.com	1	0	0	0	
2	actualidad.rt.com	1	1	0	1	
3	andrewcarringtonhitchcock.com	0	0	1	0	
4	arab.southfront.org	1	1	0	0	
..	
166	westmonster.com	0	0	0	0	
167	whale.to	1	1	0	1	
168	wn.com	1	1	1	1	
169	zelfzorgcovid19.nl	0	0	0	0	
170	zvedavec.org	0	0	0	0	

	qanon	antilatinx	aliens	antisemitic	whitesupremacy	...	votinglaws	\
0	0	0	0	0	0	...	0	
1	0	0	0	1	1	...	0	
2	0	0	0	1	1	...	0	
3	0	0	0	1	1	...	0	
4	0	0	0	1	1	...	0	
..	
166	0	0	0	0	0	...	0	
167	0	0	1	1	1	...	0	
168	1	0	0	1	1	...	0	
169	0	0	0	0	0	...	0	
170	0	0	0	0	0	...	0	

	coronavirus	climatedenial	antiasian	antimuslim	biden	country	\
0	0	0	0	0	0	France	
1	1	0	1	1	1	Russia	
2	1	0	0	1	1	Netherlands (the)	
3	1	0	0	0	1	Canada	
4	1	0	0	1	1	Germany	
..	
166	0	0	0	0	0	UK	
167	0	0	1	1	0	Switzerland	
168	1	0	1	1	1	UK	
169	0	0	0	0	0	Netherlands (the)	
170	0	0	0	0	0	Czechia	

	org	elections	source
0	AS16276 OVH SAS	other	GDI
1	AS48287 JSC RU-CENTER	not_trusted	GDI
2	AS60781 LeaseWeb Netherlands B.V.	not_trusted	GDI
3	AS16276 OVH SAS	not_trusted	GDI
4	AS24940 Hetzner Online GmbH	not_trusted	GDI

```

..
166          AS20738 Host Europe GmbH          other      GDI
167          AS207143 hosttech GmbH  not_trusted      GDI
168          AS43081 World News PTE. LTD  not_trusted      GDI
169          AS20559 Fundaments B.V.          other      GDI
170          AS197019 WEDOS Internet, a.s.      other      GDI

```

[171 rows x 25 columns]

```
[148]: Czechia = topicDf_merged.loc[topicDf_merged.country=='Czechia',:].domain.values
```

```
[150]: topic.loc[topic.domain_name.isin(Czechia),:]
```

```
[150]:
```

	domain_name	narrative_density	topics	monthly_pageviews
770	novarepublika.cz	[None]	[None]	1,370,000
781	nwoo.org	[None]	[None]	660,000
813	outsidermedia.cz	[None]	[None]	90,000
867	pravdive.eu	[None]	[None]	200,000
868	pravyprostor.cz	[None]	[None]	2,150,000
882	protiproud.cz	[None]	[None]	1,110,000
883	prvnizpravy.cz	[None]	[None]	1,510,000
950	rukojmi.cz	[None]	[None]	110,000
1097	svobodnenoviny.eu	[None]	[None]	420,000
1396	zvedavec.org	[None]	[None]	700,000

```
[146]: topic
```

```
[146]:
```

	domain_name	narrative_density \
0	100777.com	[Decimal('0.183'), Decimal('0.765'), Decimal('...
1	100percentfedup.com	[Decimal('0.354'), Decimal('0.686'), Decimal('...
2	12minutos.com	[None]
3	2020conservative.com	[Decimal('0.946'), Decimal('0.474')]
4	2020dirtsheet.com	[Decimal('0.705'), Decimal('0.687'), Decimal('...
...
1392	zelfzorgcovid19.nl	[None]
1393	zerohedge.com	[Decimal('0.133'), Decimal('0.658'), Decimal('...
1394	zigforums.com	[Decimal('0.639'), Decimal('0.812'), Decimal('...
1395	zionica.com	[Decimal('0.929'), Decimal('0.648'), Decimal('...
1396	zvedavec.org	[None]

	topics	monthly_pageviews
0	['antivaxx', 'voterfraud', 'antilgbt', 'pseudo...	10,000
1	['votinglaws', 'voterfraud', 'antiimmigrant', ...	4,110,000
2	[None]	610,000
3	['voterfraud', 'biden']	310,000
4	['voterfraud', 'biden', 'coronavirus']	0
...

```

1392                                     [None]          410,000
1393  ['antilatinx', 'whitesupremacy', 'coronavirus'... 108,050,000
1394  ['whitesupremacy', 'voterfraud', 'antiasian', ... 20,000
1395  ['bigtech', 'whitesupremacy', 'biden', 'corona... 0
1396                                     [None]          700,000

```

[1397 rows x 4 columns]

```
[111]: topicDf_merged.to_csv('topicDF_domains_hosted_outside_US.csv')
```

```
[112]: topicDf_merged.elections.unique()
```

```
[112]: array(['other', 'not_trusted', 'not_trusted_election'], dtype=object)
```

```
[113]: topicDf_merged
```

```
[113]:
```

	domain	voterfraud	antilgbt	antiblack	misogyny	\
0	ac24.cz	0	0	0	0	
1	active-democracy.com	1	0	0	0	
2	actualidad.rt.com	1	1	0	1	
3	andrewcarringtonhitchcock.com	0	0	1	0	
4	arab.southfront.org	1	1	0	0	
..	
166	westmonster.com	0	0	0	0	
167	whale.to	1	1	0	1	
168	wn.com	1	1	1	1	
169	zelfzorgcovid19.nl	0	0	0	0	
170	zvedavec.org	0	0	0	0	

	qanon	antilatinx	aliens	antisemitic	whitesupremacy	... votinglaws	\
0	0	0	0	0	0	...	0
1	0	0	0	1	1	...	0
2	0	0	0	1	1	...	0
3	0	0	0	1	1	...	0
4	0	0	0	1	1	...	0
..	
166	0	0	0	0	0	...	0
167	0	0	1	1	1	...	0
168	1	0	0	1	1	...	0
169	0	0	0	0	0	...	0
170	0	0	0	0	0	...	0

	coronavirus	climatedenial	antiasian	antimuslim	biden	country	\
0	0	0	0	0	0	France	
1	1	0	1	1	1	Russia	
2	1	0	0	1	1	Netherlands (the)	
3	1	0	0	0	1	Canada	

4	1	0	0	1	1	Germany
..	
166	0	0	0	0	0	UK
167	0	0	1	1	0	Switzerland
168	1	0	1	1	1	UK
169	0	0	0	0	0	Netherlands (the)
170	0	0	0	0	0	Czechia

	org	elections	source
0	AS16276 OVH SAS	other	GDI
1	AS48287 JSC RU-CENTER	not_trusted	GDI
2	AS60781 LeaseWeb Netherlands B.V.	not_trusted	GDI
3	AS16276 OVH SAS	not_trusted	GDI
4	AS24940 Hetzner Online GmbH	not_trusted	GDI
..
166	AS20738 Host Europe GmbH	other	GDI
167	AS207143 hosttech GmbH	not_trusted	GDI
168	AS43081 World News PTE. LTD	not_trusted	GDI
169	AS20559 Fundaments B.V.	other	GDI
170	AS197019 WEDOS Internet, a.s.	other	GDI

[171 rows x 25 columns]

```
[118]: country_topic = topicDf_merged.iloc[:,1:22]
country_topic
```

```
[118]: voterfraud antilgbt antiblack misogyny qanon antilatinx aliens \
0          0          0          0          0          0          0          0
1          1          0          0          0          0          0          0
2          1          1          0          1          0          0          0
3          0          0          1          0          0          0          0
4          1          1          0          0          0          0          0
..         ...         ...         ...         ...         ...         ...         ...
166         0          0          0          0          0          0          0
167         1          1          0          1          0          0          1
168         1          1          1          1          1          0          0
169         0          0          0          0          0          0          0
170         0          0          0          0          0          0          0
```

	antisemitic	whitesupremacy	bigtech	...	antivaxx	antiimmigrant	5g	\
0	0	0	0	...	0	0	0	0
1	1	1	0	...	0	0	0	0
2	1	1	1	...	0	0	0	0
3	1	1	1	...	1	0	0	0
4	1	1	0	...	0	0	0	0
..
166	0	0	0	...	0	0	0	0

167	1	1	1	...	1	0	0
168	1	1	1	...	1	0	1
169	0	0	0	...	0	0	0
170	0	0	0	...	0	0	0

	votinglaws	coronavirus	climatedenial	antiasian	antimuslim	biden	\
0	0	0	0	0	0	0	0
1	0	1	0	1	1	1	1
2	0	1	0	0	1	1	1
3	0	1	0	0	0	1	1
4	0	1	0	0	1	1	1
..
166	0	0	0	0	0	0	0
167	0	0	0	1	1	1	0
168	0	1	0	1	1	1	1
169	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0

	country
0	France
1	Russia
2	Netherlands (the)
3	Canada
4	Germany
..	...
166	UK
167	Switzerland
168	UK
169	Netherlands (the)
170	Czechia

[171 rows x 21 columns]

```
[122]: country_topic_summary = country_topic.groupby('country').sum()
country_topic_count = country_topic.groupby('country').count()
```

```
[120]: country_topic_summary
```

	voterfraud	antilgbt	antiblack	misogyny	qanon	\
country						
Australia	2	3	0	2	0	
Belgium	1	1	0	0	1	
Brazil	3	1	1	1	0	
Bulgaria	1	0	0	0	0	
Canada	10	11	4	6	0	
Czechia	0	0	0	0	0	
Estonia	0	0	0	0	0	

Finland	2	2	2	2	2
France	1	1	1	2	0
Georgia	0	0	0	0	0
Germany	12	12	4	9	2
Iceland	0	0	0	0	0
India	1	1	1	1	0
Ireland	0	0	0	1	0
Latvia	0	0	0	0	0
Netherlands (the)	10	9	3	6	0
Romania	1	1	0	1	0
Russia	22	17	11	15	8
Singapore	1	0	0	0	0
Switzerland	1	1	0	1	0
Taiwan (Province of China)	0	0	0	1	0
Turkey	0	0	0	0	1
UK	5	7	3	5	3

	antilatinx	aliens	antisemitic	whitesupremacy	\
country					
Australia	0	0	4		3
Belgium	0	0	1		1
Brazil	3	0	3		3
Bulgaria	0	0	0		0
Canada	5	0	14		16
Czechia	0	0	0		0
Estonia	0	0	0		0
Finland	2	0	2		2
France	0	0	2		2
Georgia	0	0	1		0
Germany	7	0	18		15
Iceland	0	0	1		1
India	1	0	3		2
Ireland	2	0	1		0
Latvia	0	0	0		0
Netherlands (the)	3	0	10		12
Romania	0	0	1		1
Russia	15	0	21		24
Singapore	0	0	1		2
Switzerland	0	1	1		1
Taiwan (Province of China)	0	0	2		1
Turkey	0	0	2		1
UK	2	1	7		7

	bigtech	pseudoscience	antivaxx	antiimmigrant	\
country					
Australia	2		1	0	0
Belgium	1		1	1	0

Brazil	1	0	1	3
Bulgaria	0	0	0	0
Canada	10	5	3	3
Czechia	0	0	0	0
Estonia	0	0	0	0
Finland	2	2	2	2
France	1	0	0	0
Georgia	0	0	0	0
Germany	10	5	2	4
Iceland	0	0	0	0
India	2	1	0	1
Ireland	0	0	1	1
Latvia	0	0	0	0
Netherlands (the)	9	2	2	0
Romania	1	1	1	0
Russia	20	7	4	14
Singapore	1	1	1	0
Switzerland	1	1	1	0
Taiwan (Province of China)	0	0	0	0
Turkey	1	1	1	0
UK	7	7	3	2

	5g	votinglaws	coronavirus	climatedenial	\
country					
Australia	1	0	3	0	
Belgium	1	0	1	0	
Brazil	0	0	3	0	
Bulgaria	0	0	0	0	
Canada	0	0	14	0	
Czechia	0	0	0	0	
Estonia	0	0	0	0	
Finland	2	2	2	2	
France	1	0	1	0	
Georgia	0	0	1	0	
Germany	5	1	16	1	
Iceland	1	0	1	0	
India	0	1	3	0	
Ireland	0	0	0	0	
Latvia	0	0	0	0	
Netherlands (the)	4	0	13	0	
Romania	0	0	1	0	
Russia	9	8	27	5	
Singapore	1	0	2	0	
Switzerland	0	0	0	0	
Taiwan (Province of China)	0	0	2	0	
Turkey	1	0	2	0	
UK	5	1	7	4	

	antiasian	antimuslim	biden
country			
Australia	2	2	2
Belgium	1	1	1
Brazil	1	1	3
Bulgaria	0	0	1
Canada	7	10	12
Czechia	0	0	0
Estonia	0	0	0
Finland	2	2	2
France	1	2	1
Georgia	0	0	0
Germany	9	17	14
Iceland	1	0	1
India	1	3	2
Ireland	0	1	0
Latvia	0	0	0
Netherlands (the)	6	10	11
Romania	0	1	1
Russia	22	25	24
Singapore	0	1	1
Switzerland	1	1	0
Taiwan (Province of China)	0	1	2
Turkey	0	1	1
UK	7	7	7

```
[131]: country_topic_summary.to_csv('country_topic_count.csv')
```

```
[125]: country_topic_ratio = country_topic_summary/country_topic_count
country_topic_ratio
```

```
[125]:
```

	voterfraud	antilgbt	antiblack	misogyny	\
country					
Australia	0.400000	0.600000	0.000000	0.400000	
Belgium	1.000000	1.000000	0.000000	0.000000	
Brazil	1.000000	0.333333	0.333333	0.333333	
Bulgaria	1.000000	0.000000	0.000000	0.000000	
Canada	0.526316	0.578947	0.210526	0.315789	
Czechia	0.000000	0.000000	0.000000	0.000000	
Estonia	0.000000	0.000000	0.000000	0.000000	
Finland	1.000000	1.000000	1.000000	1.000000	
France	0.142857	0.142857	0.142857	0.285714	
Georgia	0.000000	0.000000	0.000000	0.000000	
Germany	0.375000	0.375000	0.125000	0.281250	
Iceland	0.000000	0.000000	0.000000	0.000000	
India	0.200000	0.200000	0.200000	0.200000	

Ireland	0.000000	0.000000	0.000000	0.250000
Latvia	0.000000	0.000000	0.000000	0.000000
Netherlands (the)	0.500000	0.450000	0.150000	0.300000
Romania	1.000000	1.000000	0.000000	1.000000
Russia	0.709677	0.548387	0.354839	0.483871
Singapore	0.500000	0.000000	0.000000	0.000000
Switzerland	0.500000	0.500000	0.000000	0.500000
Taiwan (Province of China)	0.000000	0.000000	0.000000	0.500000
Turkey	0.000000	0.000000	0.000000	0.000000
UK	0.312500	0.437500	0.187500	0.312500

	qanon	antilatinx	aliens	antisemitic	\
country					
Australia	0.000000	0.000000	0.0000	0.800000	
Belgium	1.000000	0.000000	0.0000	1.000000	
Brazil	0.000000	1.000000	0.0000	1.000000	
Bulgaria	0.000000	0.000000	0.0000	0.000000	
Canada	0.000000	0.263158	0.0000	0.736842	
Czechia	0.000000	0.000000	0.0000	0.000000	
Estonia	0.000000	0.000000	0.0000	0.000000	
Finland	1.000000	1.000000	0.0000	1.000000	
France	0.000000	0.000000	0.0000	0.285714	
Georgia	0.000000	0.000000	0.0000	0.333333	
Germany	0.062500	0.218750	0.0000	0.562500	
Iceland	0.000000	0.000000	0.0000	1.000000	
India	0.000000	0.200000	0.0000	0.600000	
Ireland	0.000000	0.500000	0.0000	0.250000	
Latvia	0.000000	0.000000	0.0000	0.000000	
Netherlands (the)	0.000000	0.150000	0.0000	0.500000	
Romania	0.000000	0.000000	0.0000	1.000000	
Russia	0.258065	0.483871	0.0000	0.677419	
Singapore	0.000000	0.000000	0.0000	0.500000	
Switzerland	0.000000	0.000000	0.5000	0.500000	
Taiwan (Province of China)	0.000000	0.000000	0.0000	1.000000	
Turkey	0.500000	0.000000	0.0000	1.000000	
UK	0.187500	0.125000	0.0625	0.437500	

	whitesupremacy	bigtech	pseudoscience	antivaxx	\
country					
Australia	0.600000	0.400000	0.200000	0.000000	
Belgium	1.000000	1.000000	1.000000	1.000000	
Brazil	1.000000	0.333333	0.000000	0.333333	
Bulgaria	0.000000	0.000000	0.000000	0.000000	
Canada	0.842105	0.526316	0.263158	0.157895	
Czechia	0.000000	0.000000	0.000000	0.000000	
Estonia	0.000000	0.000000	0.000000	0.000000	
Finland	1.000000	1.000000	1.000000	1.000000	

France	0.285714	0.142857	0.000000	0.000000
Georgia	0.000000	0.000000	0.000000	0.000000
Germany	0.468750	0.312500	0.156250	0.062500
Iceland	1.000000	0.000000	0.000000	0.000000
India	0.400000	0.400000	0.200000	0.000000
Ireland	0.000000	0.000000	0.000000	0.250000
Latvia	0.000000	0.000000	0.000000	0.000000
Netherlands (the)	0.600000	0.450000	0.100000	0.100000
Romania	1.000000	1.000000	1.000000	1.000000
Russia	0.774194	0.645161	0.225806	0.129032
Singapore	1.000000	0.500000	0.500000	0.500000
Switzerland	0.500000	0.500000	0.500000	0.500000
Taiwan (Province of China)	0.500000	0.000000	0.000000	0.000000
Turkey	0.500000	0.500000	0.500000	0.500000
UK	0.437500	0.437500	0.437500	0.187500

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country				
Australia	0.000000	0.200000	0.000000	0.600000
Belgium	0.000000	1.000000	0.000000	1.000000
Brazil	1.000000	0.000000	0.000000	1.000000
Bulgaria	0.000000	0.000000	0.000000	0.000000
Canada	0.157895	0.000000	0.000000	0.736842
Czechia	0.000000	0.000000	0.000000	0.000000
Estonia	0.000000	0.000000	0.000000	0.000000
Finland	1.000000	1.000000	1.000000	1.000000
France	0.000000	0.142857	0.000000	0.142857
Georgia	0.000000	0.000000	0.000000	0.333333
Germany	0.125000	0.156250	0.031250	0.500000
Iceland	0.000000	1.000000	0.000000	1.000000
India	0.200000	0.000000	0.200000	0.600000
Ireland	0.250000	0.000000	0.000000	0.000000
Latvia	0.000000	0.000000	0.000000	0.000000
Netherlands (the)	0.000000	0.200000	0.000000	0.650000
Romania	0.000000	0.000000	0.000000	1.000000
Russia	0.451613	0.290323	0.258065	0.870968
Singapore	0.000000	0.500000	0.000000	1.000000
Switzerland	0.000000	0.000000	0.000000	0.000000
Taiwan (Province of China)	0.000000	0.000000	0.000000	1.000000
Turkey	0.000000	0.500000	0.000000	1.000000
UK	0.125000	0.312500	0.062500	0.437500

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country				
Australia	0.000000	0.400000	0.400000	0.400000
Belgium	0.000000	1.000000	1.000000	1.000000
Brazil	0.000000	0.333333	0.333333	1.000000

Bulgaria	0.00000	0.000000	0.000000	1.000000
Canada	0.00000	0.368421	0.526316	0.631579
Czechia	0.00000	0.000000	0.000000	0.000000
Estonia	0.00000	0.000000	0.000000	0.000000
Finland	1.00000	1.000000	1.000000	1.000000
France	0.00000	0.142857	0.285714	0.142857
Georgia	0.00000	0.000000	0.000000	0.000000
Germany	0.03125	0.281250	0.531250	0.437500
Iceland	0.00000	1.000000	0.000000	1.000000
India	0.00000	0.200000	0.600000	0.400000
Ireland	0.00000	0.000000	0.250000	0.000000
Latvia	0.00000	0.000000	0.000000	0.000000
Netherlands (the)	0.00000	0.300000	0.500000	0.550000
Romania	0.00000	0.000000	1.000000	1.000000
Russia	0.16129	0.709677	0.806452	0.774194
Singapore	0.00000	0.000000	0.500000	0.500000
Switzerland	0.00000	0.500000	0.500000	0.000000
Taiwan (Province of China)	0.00000	0.000000	0.500000	1.000000
Turkey	0.00000	0.000000	0.500000	0.500000
UK	0.25000	0.437500	0.437500	0.437500

```
[183]: country_list = country_topic_ratio.index
       topic_list = country_topic_ratio.columns
```

```
[191]: country_topic_summary_t = country_topic_summary.transpose()
       country_topic_summary_t = country_topic_summary_t.reset_index()
       country_topic_summary_new = country_topic_summary.reset_index()
```

1 Save plots to files

```
[182]: sns.set(rc = {'figure.figsize':(12,8)}, font_scale = 1.3)
       plt.subplots_adjust(bottom = 0.3, top = 0.9)
       for c in country_list:
           grp_order = country_topic_summary_t.sort_values([c], ascending=False).
           ↪reset_index(drop=True)['index']
           ax = sns.barplot(x='index', y=c,data=country_topic_summary_t,
                           order=grp_order, color = 'tan')
           ax.set_xticklabels(ax.get_xticklabels(),rotation = 60)
           ax.set_xlabel('Topics', fontsize = 25)
           ax.set_ylabel('Counts', fontsize = 25)
           ax.set_title(c, fontsize = 30)
           ax.figure.savefig('country_topic_image/country/'+c+'.png')
           ax.figure.clf()
```

<Figure size 864x576 with 0 Axes>

```
[203]: sns.set(rc = {'figure.figsize':(12,8)}, font_scale = 1.3)
plt.subplots_adjust(bottom = 0.4, top = 0.9)
for t in topic_list:
    grp_order = country_topic_summary_new.sort_values([t], ascending=False).
    ↪reset_index(drop=True)['country']
    ax = sns.barplot(x='country', y=t,data=country_topic_summary_new,
                    order=grp_order, color = 'tan')
    ax.set_xticklabels(ax.get_xticklabels(),rotation = 80)
    ax.set_xlabel('Country', fontsize = 25)
    ax.set_ylabel('Counts', fontsize = 25)
    ax.set_title(t, fontsize = 30)
    ax.figure.savefig('country_topic_image/topic/'+t+'.png')
    ax.figure.clf()
```

<Figure size 864x576 with 0 Axes>

```
[ ]:
```