FLÜCHTLINGSKRISE SENTIMENT ANALYSIS

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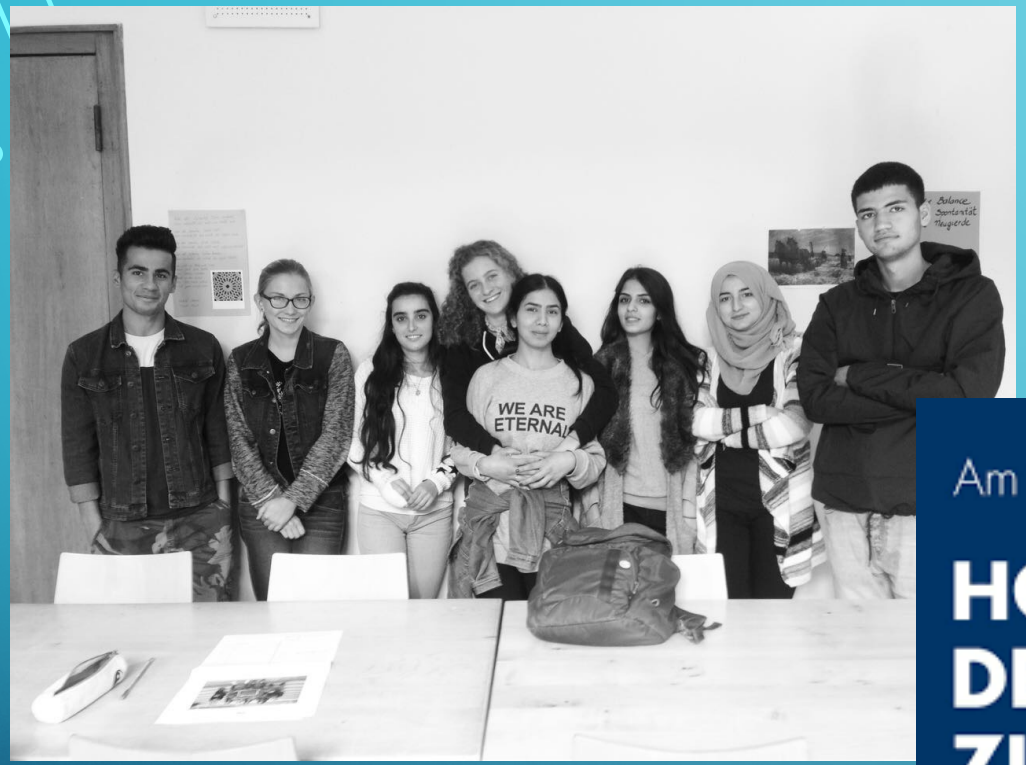
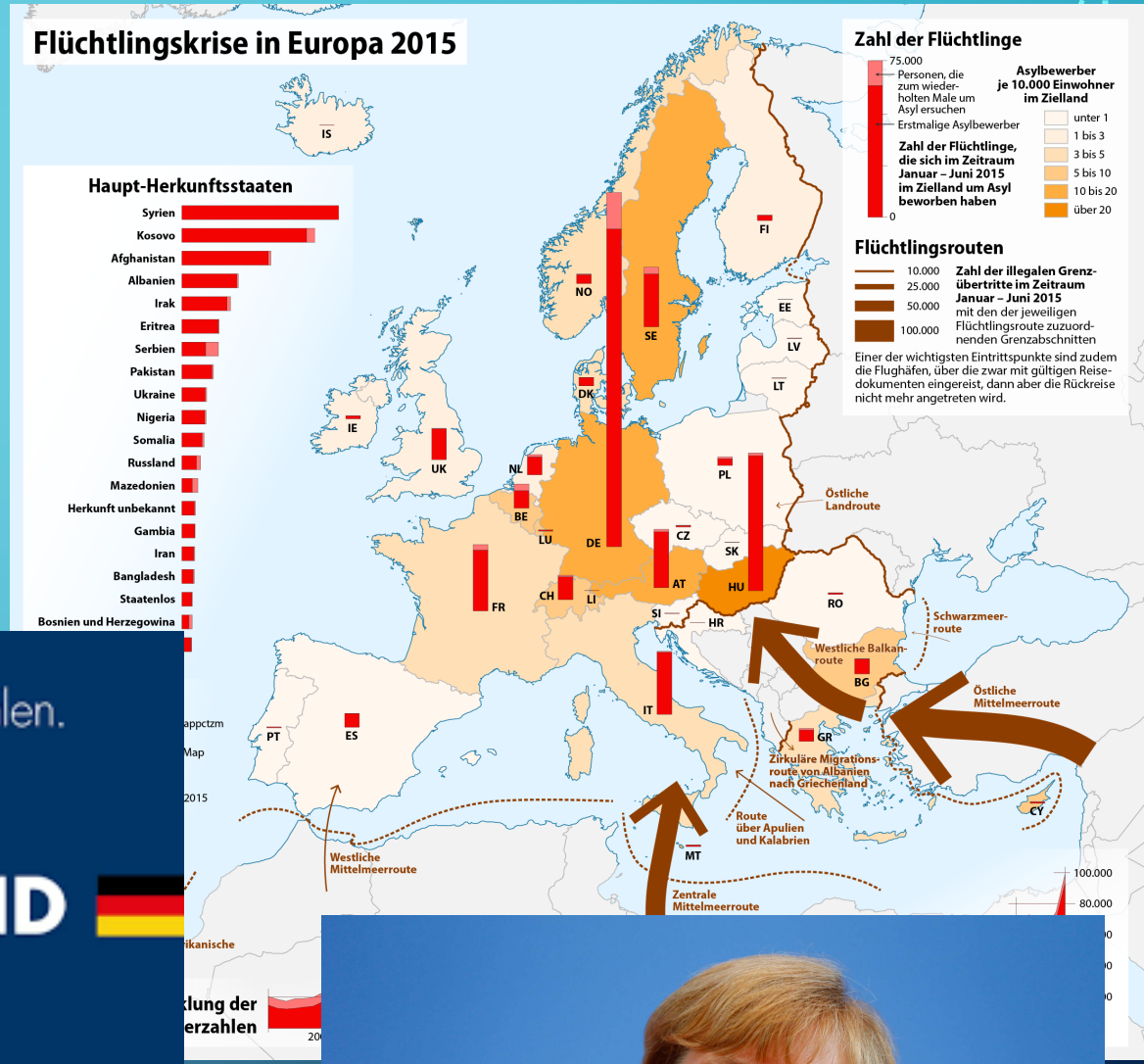
WHY THIS PROJECT?





PATRIOTISCHE EUROPÄER GEGEN ISLAMISIERUNG DES ABENDLANDES

PEGIDA

WHAT WAS MY GOAL?

- Scrape newspapers across the political spectrum and do sentiments analysis to see if they differ in sentiments towards refugees.
- Possibilities beyond sentiment analysis:
  - Do different words for “refugee” carry different weights?
  - Does tense play any role?
    - German has so many “fun” tenses…

My Hypothesis

- More left leaning newspapers will report more positively about refugees than more right leaning newspapers.

- My sources:
  - Die TAZ (Die Tageszeitung): left-wing/green; daily German newspaper with a modest circulation.
  - Der Süddeustche Zeitung: left-liberal, daily newspaper with a very wide circulation.
  - Der Zeit: centrist/liberal; one of the largest weekly newspapers in Germany
  - Junge Freiheit: strong right-wing leanings, small weekly newspaper.

DATA ACQUISITION….

This won't take long at all!

Web scraping is easy!!

What are Na-Rae and Joey so worried about anyway?

TURNS OUT IT IS NOT SO EASY…

- COPYRIGHT
- Every website is different!
  - So so different…
- “An API? Why have that?”
- Many different tools
  - How much data do you want?
  - How messy can it be?

THE SOLUTION!

Beautiful Soup

- **Der Zeit**: Has an API! I collected links and dates, etc, through that, then used Urllib and Beautiful Soup to get the actual article text.
- **Die TAZ**: Pitt has access to their archive (can't scrape that), so I manually collected 100 links and then used Urllib and Beautiful Soup.
- **Der SZ**: I created 20 URLs of search result pages, then found each relevant link on the page and opened and scraped each one for date and text.
- **Junge Freiheit:** I opened every results page for the search term and filtered by date before collecting URLs to open and scrape.

[48]:

```
# Create a dictionary for dates and article texts with the link as the key.
# Use urllib and Beautiful Soup to open and get the text and dates from each link
date_dict = {}
art_dict_taz = {}
x = ' '
for link in links:
    page = urllib.request.urlopen(link)
    soup = BeautifulSoup(page)
    t = soup.find("div", {"class":"main rack first_rack"})
    paras = t.findAll('p')
    a = [p.text for p in paras]
    d = soup.find("li", {"class":"date"})
    text = x.join(a)
    date_dict[link] = d
    art_dict_taz[link] = text

#art_dict_taz
#date_dict
```

A QUICK LOOK AT THE DATA

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 1731 entries, 0 to 572
Data columns (total 9 columns):
 #   Column      Non-Null Count  Dtype  
---  ------      --------------  -----  
 0   href        1731 non-null   object 
 1   text        1731 non-null   object 
 2   date        1731 non-null   object 
 3   word_count  1731 non-null   int64  
 4   sent_count  1731 non-null   int64  
 5   toks        1731 non-null   int64  
 6   types       1731 non-null   int64  
 7   TTR         1731 non-null   float64
 8   source      1731 non-null   object 
dtypes: float64(1), int64(4), object(4)
memory usage: 135.2+ KB
```

Out[22]:

```
SZ      982
Zeit    573
TAZ     100
JF       76
Name: source, dtype: int64
```

	href	text	date	word_count	sent_count	toks	types	TTR	source
245	http://www.zeit.de/kultur/2015-09/fluechtlinge...	ZEIT ONLINE: Frau Benhabib, die Flüchtlingskri...	2015-09-18T08:46:18Z	1092	77	1282	565	0.440718	Zeit
3	https://jungefreiheit.de/politik/deutschland/2...	ERFURT. Asylbewerber, die mit der Deutschen Ba...	04. November 2015	191	12	227	157	0.691630	JF
38	https://jungefreiheit.de/sonderthema/2014/jf-t...	Fast alle Medien sind sich einig: Die Dresdene...	12. Dezember 2014	446	46	537	275	0.512104	JF
290	https://www.sueddeutsche.de/muenchen/wolfratsh...	Bald leben 1500 Flüchtlinge im Landkreis. Wie ...	27. November 2015, 19:01 Uhr	450	42	569	283	0.497364	SZ
484	https://www.sueddeutsche.de/panorama/friedrich...	Die Narren im Südwesten sorgen sich wegen der ...	11. November 2015, 18:52 Uhr	121	10	149	101	0.677852	SZ
676	https://www.sueddeutsche.de/muenchen/muenchen-...	Der Landrat wählt, womöglich bewusst, andere W...	26. Oktober 2015, 18:54 Uhr	477	23	567	318	0.560847	SZ
903	https://www.sueddeutsche.de/politik/migration-...	Erfurt (dpa) - Begleitet von einem Großaufgebo...	8. Oktober 2015, 6:31 Uhr	93	6	103	80	0.776699	SZ
450	https://www.sueddeutsche.de/bayern/moosburg-cs...	Nach dem fremdenfeindlichen Eklat im Ortsverba...	11. November 2015, 18:56 Uhr	287	20	334	211	0.631737	SZ

AT LAST... ANALYSIS!

- Why SpaCy?
  - Language processing pipelines, easy to build and customize.
  - SpaCy speaks German!
  - Someone built a package for sentiment analysis on German
    - Sentiws (https://spacy.io/universe/project/spacy-sentiws)

```
# An example of how sentiws works and a look at the pipeline
for token in doc:
    print('{}, {}, {}'.format(token.text, token._.sentiws, token.pos_))

print(nlp.pipeline)
```

```
Die, None, DET
Dummheit, -0.4877, NOUN
der, None, DET
Unterwerfung, -0.3279, NOUN
blüht, 0.2028, VERB
in, None, ADP
hübschen, 0.4629, ADJ
Farben, None, NOUN
., None, PUNCT
[('tok2vec', <spacy.pipeline.tok2vec.Tok2Vec object at 0x7fb1b32e5710>), ('tagger', <spacy.pipeline.tagger.Tagger o
bject at 0x7fb1b32f5ef0>), ('morphologizer', <spacy.pipeline.morphologizer.Morphologizer object at 0x7fb1b3305d70>)
, ('parser', <spacy.pipeline.dep_parser.DependencyParser object at 0x7fb1b316ac20>), ('attribute_ruler', <spacy.pip
eline.attributeruler.AttributeRuler object at 0x7fb1b331ec30>), ('lemmatizer', <spacy.pipeline.lemmatizer.Lemmatize
r object at 0x7fb1b33a6f00>), ('sentiws', <function my_component at 0x7fb1b31af680>)]
```

GETTING THE SENTIMENT SCORES

The process:

- Passed each text through the pipeline
- Removed stop words
- If the word had a sentiws sentiment score I collected it
- Took the mean of the scores for each article (why not the median?)
- If it was <0 -> 'neg', if it was >0 -> 'pos'

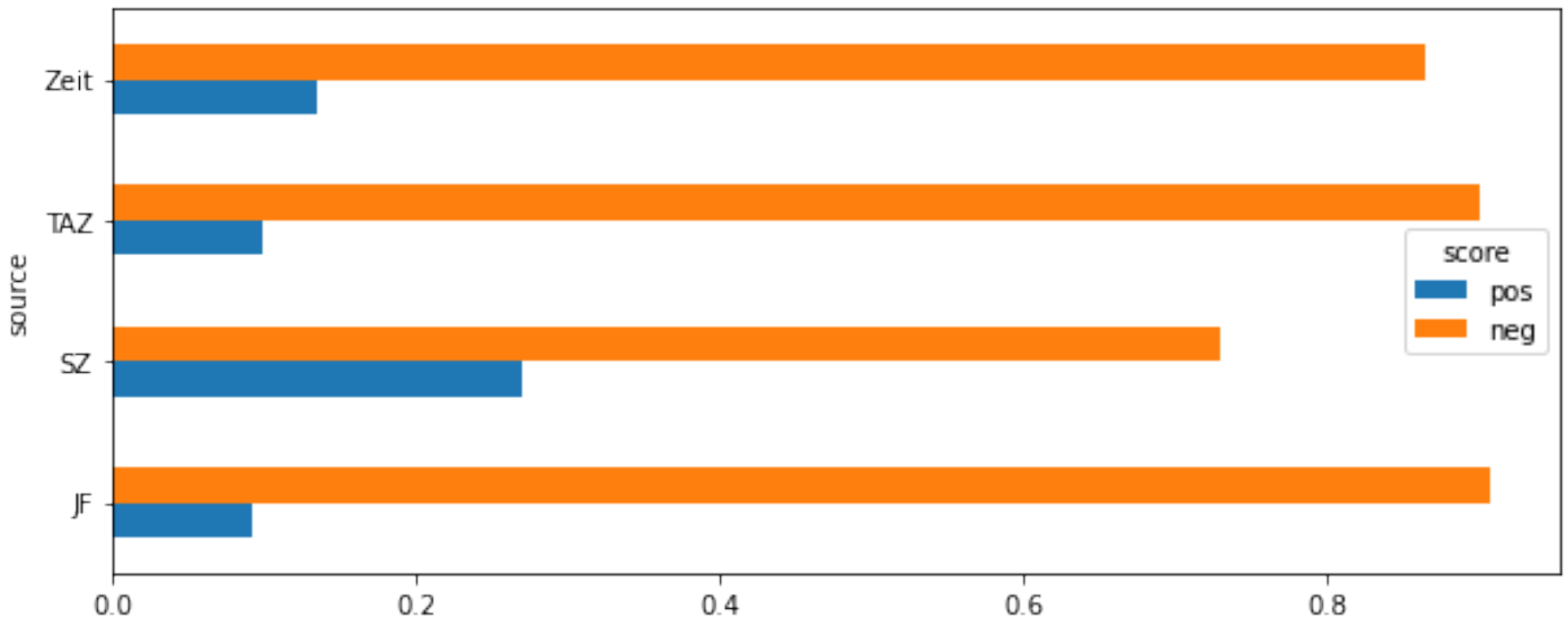
Some very important notes:

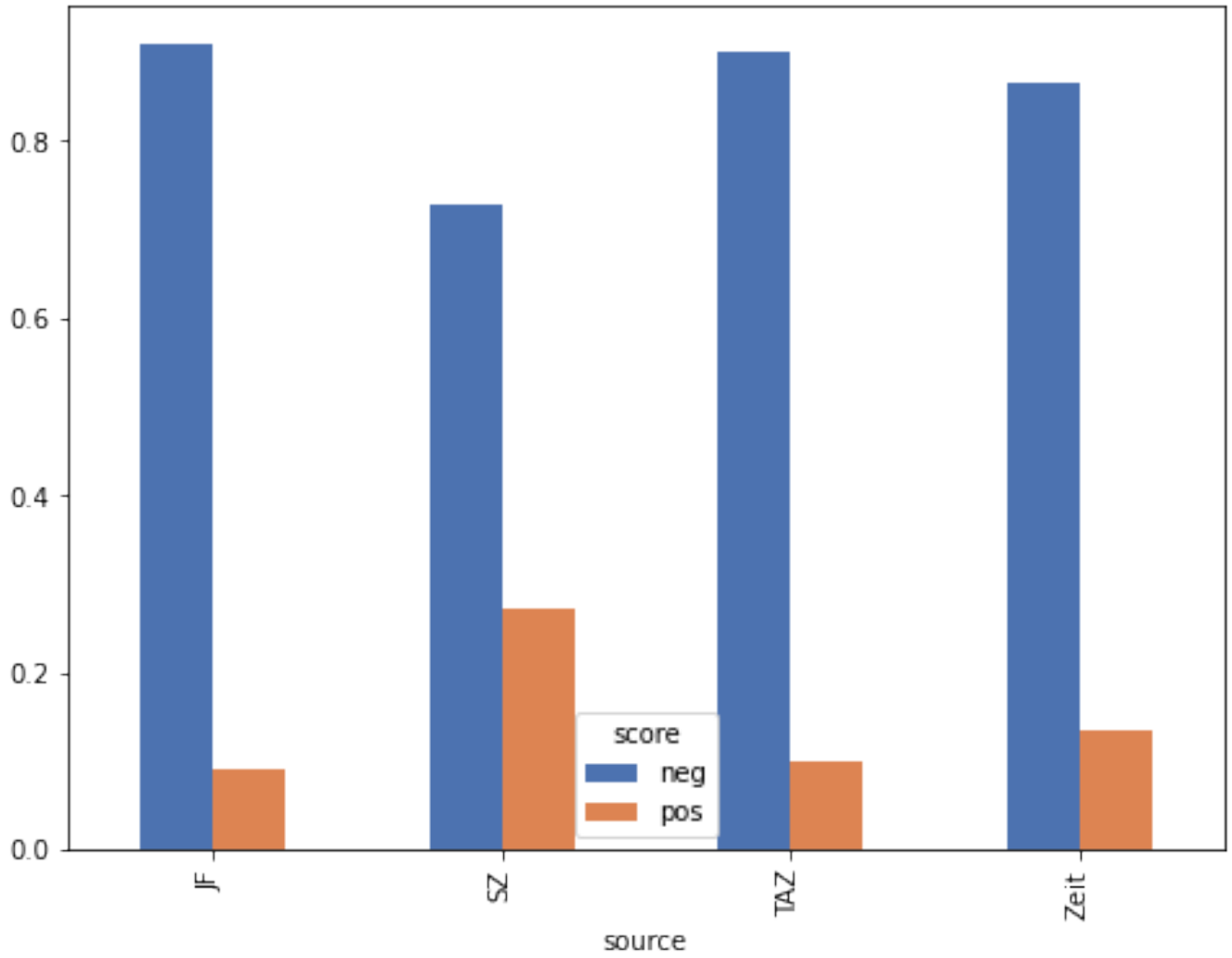
- Flüchtling (refugee) has a negative weight (-0.0048) and it is in all my articles
  - Interesting in its own right
- Most words have a score of 'None'
- 'Migrant' (migrant/another term often used) does not have a weight from sentiws

BUT WHAT DID I FIND??

YEAH, GET TO SOME PLOTS ALREADY…

Sentiment by Source

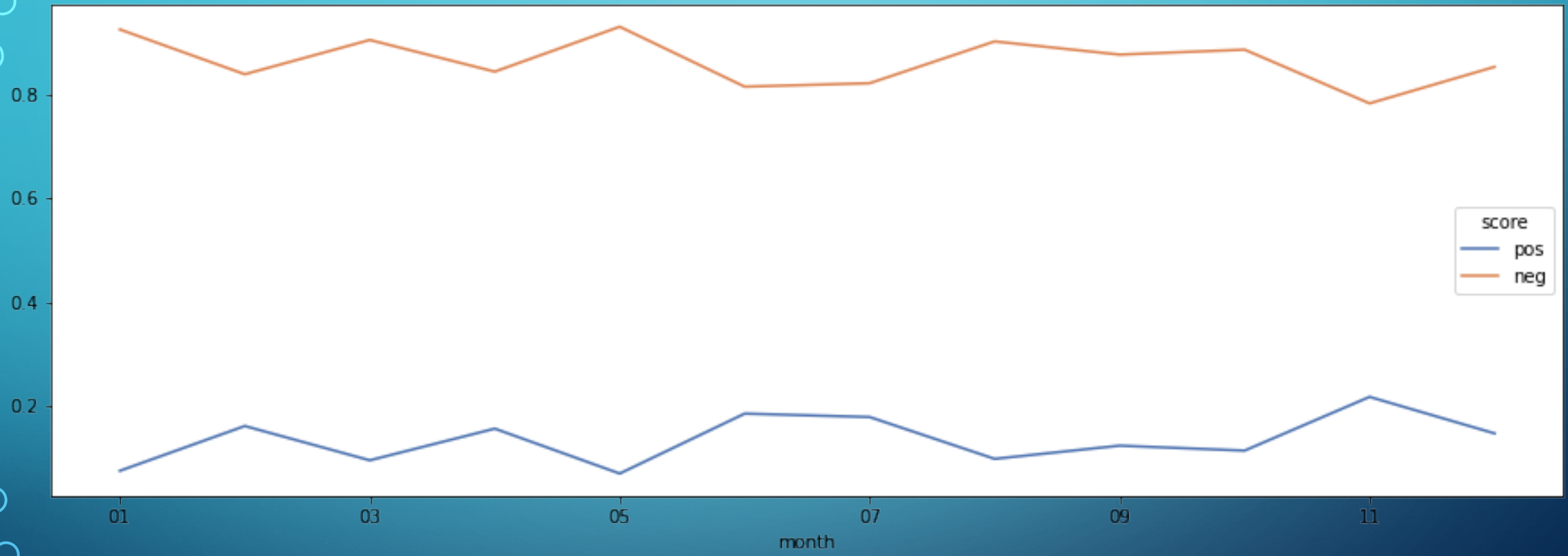





```
source  score
JF      neg      69
        pos       7
SZ      neg     711
        pos     264
TAZ     neg      90
        pos      10
Zeit    neg     493
        pos      77
Name: score, dtype: int64
```

```
source  score
JF      neg     0.907895
        pos     0.092105
SZ      neg     0.729231
        pos     0.270769
TAZ     neg     0.900000
        pos     0.100000
Zeit    neg     0.864912
        pos     0.135088
Name: score, dtype: float64
```

Change in sentiment by month for der Zeit



NOTES/FURTHER GOALS

I willingly acknowledge there are flaws and room for improvement in this project

- Sentiws may not have been the best tool
- The scraping scripts are temperamental
- Uneven distribution of data and dates of publication
- Data cleaning…

Future goals/possibilities

- Sentence based analysis
- Tenses?
- Over-time analysis for more sources
- Try another sentiment analysis tool?

ANY QUESTIONS?

THANK YOU ALL ☺

A BIG thank you to everyone who helped me: @Ruth Martin, @Na-Rae, @Joey