

Impact of the Pandemic and its Containment Measures in Europe upon Aspects of Affective Impairments: A Google Trends Informetrics Study

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#
# google trends data acquisition
#
# version 0.1 - nov. 2022
5 #

import pandas
import time
import sys
10 from pytrends.request import TrendReq
from datetime import date

#
15 # the query time frames
#
timeframe = [
    '2016-07-01 2019-06-30', # 1/2 time frame
    '2019-07-01 2022-06-30', # 2/2 time frame
20 '2016-07-01 2017-06-30', # 1. time frame Q3-16, Q4-16, Q1-17, Q2-17,
    '2017-07-01 2018-06-30', # 2. time frame Q3-17, Q4-17, Q1-18, Q2-18,
    '2018-07-01 2019-06-30', # 3. time frame Q3-18, Q4-18, Q1-19, Q2-19,
    '2019-07-01 2020-06-30', # 4. time frame Q3-19, Q4-19, Q1-20, Q2-20,
    '2020-07-01 2021-06-30', # 5. time frame Q3-20, Q4-20, Q1-21, Q2-21,
25 '2021-07-01 2022-06-30' # 6. time frame Q3-21, Q4-21, Q1-22, Q2-22,
]

#
# the query terms (english version)
30 #
keywords = [
    'anxiety', 'anxious', 'dejection',
    'depressed', 'depression', 'depressed',
    'exhaustion', 'exhausted', 'guilt',
35 'insomnia', 'listlessness', 'listlessness (alternative)',
    'listless', 'loss of appetite', 'loss of appetite (alternative 1)',
    'loss of appetite (alternative 2)', 'loss of libido', 'depressed mood',
    'sad mood', 'bad mood', 'panic attack',
    'sadness', 'sad', 'sleep disorder',
40 'sleep problem', 'sleepless', 'weariness',
    'tired', 'worthlessness', 'worthless',
    'psychiatry', 'psychology', 'psychotherapy',
    'psychological treatment', 'psychologist (male)', 'psychologist (female)',
    'psychotherapist (male)', 'psychotherapist (female)'
45 ]

#
# the query terms (the non-English translations are stored in a CSV file):
#
50 # file content:
# "Country", "Country-Code", "Language", "Usage", "anxiety", "anxious", "dejection", ...
# "Austria", "AT", "DE", 1.00, "Angst", "ängstlich", "Niedergeschlagenheit", ...
# "Belgium", "BE", "NL", 0.59, "Angst", "bang", "Neerslachtigheid", ...
# "Belgium", "BE", "FR", 0.40, "anxiété", "anxieux", "abattement", ...
55 # "Belgium", "BE", "DE", 0.01, "Angst", "ängstlich", "Niedergeschlagenheit", ...
# ...
#
# see Appendix B for details on query terms and translations
60 #
queryTerms = pandas.read_csv('./Search_Terms.csv')
print(queryTerms)

#
65 # script execution date and time
#
startTime = time.time()
execDay = date.today().strftime("%Y-%m-%d")
print(execDay)
```

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#
# the main functionality is implemented in the 'googleTrends' routine:
# parameter 'output'      : a filename; the corresponding file will be created
#                          and the query results will be written into this file.
75 # parameter 'querytime' : the time range to query
#
# parameter 'querydetails' : one row of the queryTerms (CSV file)
#
def googleTrends(output, querytime, querydetails):
80     print('    generating ' + output)
#
# create query request
#
85     pytrend = TrendReq(hl=querydetails['Language'], tz=360, timeout=(10,25))
#
# the resulting dataset
#
dataset = []
gotData = False
90 # iterate over all query terms (stored in keywords)
#
for key in keywords:
95     # get query term translation (stored in querydetails)
#
print("    {} - {}".format(key, querydetails[key]))
querykeywords = [ querydetails[key] ]
googlerequest = 0
googlesuccess = False
#
# try several time to perform query request
#
105     while not(googlesuccess):
try:
pytrend.build_payload(kw_list = querykeywords, timeframe = querytime,
                        geo = querydetails['Country-Code'])
data = pytrend.interest_over_time()
googlesuccess = True
110     except:
googlerequest = googlerequest + 1
if googlerequest > 5:
raise Exception("Blocked by Google :-(")
print("    /// retry ///")
115     time.sleep(10)
#
# add results to dataset or warn about empty answer
#
if not data.empty:
120     dataset.append(data)
gotData = True
else:
print('ERROR - no data for "{}" in {}'.format(key, querydetails['Country-Code']))
#
125 # store results
#
if gotData:
result = pandas.concat(dataset, axis=1)
result.to_csv(output)
130 print('    finished ' + output)
return

#
# main function:
135 #
processingStep = 0;
#
# iterate over all time ranges and query terms:
#
140 for timeindex, querytime in enumerate(timeframe):
for index, contents in queryTerms.iterrows():

print("processing step {}".format(processingStep))
print("    {} - {}".format(contents['Country-Code'], contents['Language']))
145
processingStep = processingStep + 1;
outputfile = ('result_' + contents['Country-Code'] + '_' + contents['Language'] + '_'
             + str(timeindex) + '_' + str(processingStep - 1) + '_' + execDay + '.csv')
150
googleTrends(outputfile, querytime, contents)
```