Madrid_Pain_Graphs

June 8, 2020

[1]:
```
! cd ../data/; FILELIST=" 200509 200508 200507 200506 200505 200504 200503␣
↪200502 200501 200430 200429 200428 200427 200426 200425 200424 200423 200422␣
↪200510 200511 200512 200513 200514 200515 200516 200517 200518 200519 200520␣
↪200521 200522 200523 200524 200525 200526 200527 200528 200529 200530 200609␣
↪200608 200607 200606 200605 200604 200603 200602 200601 200610 200611 200612␣
↪200613 200614 200615 200616 200617 200618 200619 200620 200621 200622 200623␣
↪200624 200625 200626 200627 200628 200629 200630 " ; for fecha in `echo␣
↪$FILELIST`  ; do  FILE=${fecha}_cam_covid19.pdf ;  [ ! -f ../data/${FILE} ]␣
↪&& echo $FILE::::: && wget https://www.comunidad.madrid/sites/default/
↪files/doc/sanidad/$FILE 1>/dev/null  2>/dev/null && ls -altr $FILE ; done

! pwd
```

[19]:
```
from tabula import read_pdf
import os
import pandas as pd
import glob
import re
from tqdm.notebook import tqdm

os.environ["JAVA_HOME"] = "/usr/lib/jvm/java-1.8.0-openjdk-1.8.0.141-1.b16.
↪el7_3.x86_64/jre"

# Auxiliary functions
from datetime import datetime, date, time, timedelta

""" Rellenar dias vacios con interpolacion"""
def interpolate_dataframe(df,freq):
    if freq == 'H':
        rng = pd.date_range(df.index.min(), df.index.max() + pd.Timedelta(23,␣
↪'H'), freq='H')
    elif freq == 'D' :
        rng = pd.date_range(
                        datetime.strptime(str(df.index.min())[:10]+' 00:00:00',␣
↪"%Y-%m-%d %H:%M:%S") ,
                        datetime.strptime(str(df.index.max())[:10]+' 00:00:00',␣
↪"%Y-%m-%d %H:%M:%S"),
```

```
                        freq='D')
        df.index = pd.to_datetime(df.index)
    df2 = df.reindex(rng)
    df = df2
    for column in df.columns :
        s = pd.Series(df[column])
        s.interpolate(method="quadratic", inplace =True)
        df[column] = pd.DataFrame([s]).T
    return df

def fet_daily_date_new_format(fecha):
    df_pdf =  read_pdf('../data/'+fecha+'_cam_covid19.pdf',area=(000, 600, 400,␣
 ↪800) , pages='1')
    df = df_pdf[0]
    df = df['Unnamed: 0'].astype(str).str.replace(r".", '').replace("(", ' ')
    df = df.T
    df.columns = df.iloc[0]
    df = df.iloc[1:]


    df = pd.DataFrame(data=df)
    df

    dict = {}
    dict['HOSPITALES'] = df[df['Unnamed: 0'].str.contains('Hospitales')].
 ↪iloc[0]['Unnamed: 0'].split(' ')[0]
    dict['DOMICILIOS'] = df[df['Unnamed: 0'].str.contains('Domicilios')].
 ↪iloc[0]['Unnamed: 0'].split(' ')[0]
    dict['CENTROS SOCIOSANITARIOS'] = df[df['Unnamed: 0'].str.
 ↪contains('Centros')].iloc[0]['Unnamed: 0'].split(' ')[0]
    dict['OTROS LUGARES'] = df[df['Unnamed: 0'].str.contains('otros')].
 ↪iloc[0]['Unnamed: 0'].split(' ')[0]

    cadena_a_parsear = df[df['Unnamed: 0'].str.contains('otal')].
 ↪iloc[0]['Unnamed: 0']

    dict['FALLECIDOS TOTALES'] = re.search(r'(\d+)', cadena_a_parsear)[0]

    df = pd.DataFrame.from_dict(dict, orient='index').T
    df['Fecha'] =  pd.to_datetime(fecha, format='%y%m%d')
    df.set_index('Fecha', inplace=True, drop=True)
    return df


def get_daily_data(fecha):
    if fecha > '200512' :
```

```
        return fet_daily_date_new_format(fecha)

    col2str = {'dtype': str}
    kwargs = {'output_format': 'dataframe',
              'pandas_options': col2str,
              'stream': True}
    df_pdf =  read_pdf('../data/'+fecha+'_cam_covid19.
↪pdf',pages='1',multiple_tables = True,**kwargs)


    df = df_pdf[0]

    df = df[df['Unnamed: 0'].notna()]
    df = df[(df['Unnamed: 0']=='HOSPITALES') | (df['Unnamed: 0'] ==␣
↪'DOMICILIOS') | (df['Unnamed: 0'] == 'CENTROS SOCIOSANITARIOS') |␣
↪(df['Unnamed: 0'] == 'OTROS LUGARES') | (df['Unnamed: 0'] == 'FALLECIDOS␣
↪TOTALES')]
    df = df[['Unnamed: 0','Unnamed: 2']]
    df['Unnamed: 2'] = df['Unnamed: 2'].astype(str).str.replace(r".", '')
    df = df.T
    df.columns = df.iloc[0]
    df = df.iloc[1:]

    df['Fecha'] =  pd.to_datetime(fecha, format='%y%m%d')
    df = df.rename_axis(None)

    df.set_index('Fecha', inplace=True, drop=True)
    df.index
    df.dropna()
    #df = df.T
    return df

def get_all_data( ):
    #BLACKLIST = ["200429","200422"]
    #BLACKLIST = ["200514",]
    BLACKLIST = []
    df = pd.DataFrame()
    list_df = []

    pdf_list= sorted(glob.glob('../data/*_cam_covid19.pdf'),
                     key=os.path.getmtime,
                     reverse=True )

    #for pdf_file in pdf_list:

    for pdf_file in tqdm(pdf_list,
                         desc="Procesando pdfs"):
```

```
        # extract fecha from username , eg : ../data/2200422_cam_covid19.pdf
        fecha = pdf_file.split('/')[2].split('_')[0]
        if fecha not in BLACKLIST:
            #print("processing", fecha)
            df = get_daily_data(fecha)
        list_df.append(df)

    df = pd.concat(list_df)
    df = df.astype(int)
    df = df.drop_duplicates()

    df = df.sort_values(by=['Fecha'], ascending=True)
    ###jaime
    #df = interpolate_dataframe(df,'D')
    #df.index.name = 'Fecha'

    df['HOSPITALES hoy'] = df['HOSPITALES'] - df['HOSPITALES'].shift(1)
    df['CENTROS SOCIOSANITARIOS hoy'] = df['CENTROS SOCIOSANITARIOS'] -␣
↪df['CENTROS SOCIOSANITARIOS'].shift(1)
    df['FALLECIDOS TOTALES hoy'] = df['FALLECIDOS TOTALES'] - df['FALLECIDOS␣
↪TOTALES'].shift(1)

    df = df.sort_values(by=['Fecha'], ascending=False)

    return df

total =  get_all_data()
```

```
HBox(children=(FloatProgress(value=0.0, description='Processing records', max=48.0, style=Prog
```

```
processing 200608
processing 200607
processing 200606
processing 200605
processing 200604
processing 200603
processing 200602
processing 200601
processing 200531
processing 200530
processing 200529
processing 200528
processing 200527
processing 200526
processing 200525
processing 200524
processing 200523
```

```
processing 200522
processing 200521
processing 200520
processing 200519
processing 200518
processing 200517
processing 200516
processing 200515
processing 200514
processing 200513
processing 200512
processing 200511
processing 200510
processing 200509
processing 200508
processing 200507
processing 200506
processing 200505
processing 200504
processing 200503
processing 200502
processing 200501
processing 200430
processing 200429
processing 200428
processing 200427
processing 200426
processing 200424
processing 200425
processing 200423
processing 200422
```

```
Got stderr: Jun 08, 2020 7:55:25 PM
org.apache.pdfbox.pdmodel.font.PDCIDFontType2 <init>
INFO: OpenType Layout tables used in font CIDFont+F1 are not implemented in
PDFBox and will be ignored
Jun 08, 2020 7:55:25 PM org.apache.pdfbox.pdmodel.font.PDCIDFontType2 <init>
INFO: OpenType Layout tables used in font CIDFont+F2 are not implemented in
PDFBox and will be ignored
Jun 08, 2020 7:55:25 PM org.apache.pdfbox.pdmodel.font.PDCIDFontType2 <init>
INFO: OpenType Layout tables used in font CIDFont+F3 are not implemented in
PDFBox and will be ignored
Jun 08, 2020 7:55:25 PM org.apache.pdfbox.pdmodel.font.PDCIDFontType2 <init>
INFO: OpenType Layout tables used in font CIDFont+F1 are not implemented in
PDFBox and will be ignored
Jun 08, 2020 7:55:25 PM org.apache.pdfbox.pdmodel.font.PDCIDFontType2 <init>
INFO: OpenType Layout tables used in font CIDFont+F2 are not implemented in
PDFBox and will be ignored
```

```
Jun 08, 2020 7:55:25 PM org.apache.pdfbox.pdmodel.font.PDCIDFontType2 <init>
INFO: OpenType Layout tables used in font CIDFont+F3 are not implemented in
PDFBox and will be ignored
Jun 08, 2020 7:55:26 PM org.apache.pdfbox.pdmodel.font.PDCIDFontType2 <init>
INFO: OpenType Layout tables used in font CIDFont+F1 are not implemented in
PDFBox and will be ignored
Jun 08, 2020 7:55:26 PM org.apache.pdfbox.pdmodel.font.PDCIDFontType2 <init>
INFO: OpenType Layout tables used in font CIDFont+F2 are not implemented in
PDFBox and will be ignored
Jun 08, 2020 7:55:26 PM org.apache.pdfbox.pdmodel.font.PDCIDFontType2 <init>
INFO: OpenType Layout tables used in font CIDFont+F3 are not implemented in
PDFBox and will be ignored
```

[20]:
```
total
VENTANA_MEDIA_MOVIL=7
df = interpolate_dataframe(total,'D')
df.index.name = 'Fecha'
df = df.sort_values(by=['Fecha'], ascending=True)
df['HOSPITALES hoy'] = df['HOSPITALES'] - df['HOSPITALES'].shift(1)
df['CENTROS SOCIOSANITARIOS hoy'] = df['CENTROS SOCIOSANITARIOS'] - df['CENTROS␣
↪SOCIOSANITARIOS'].shift(1)
df['FALLECIDOS TOTALES hoy'] = df['FALLECIDOS TOTALES'] - df['FALLECIDOS␣
↪TOTALES'].shift(1)


df['MA CENTROS SOCIOSANITARIOS hoy'] = df['CENTROS SOCIOSANITARIOS hoy'].
↪rolling(window=VENTANA_MEDIA_MOVIL).mean()
df['MA HOSPITALES hoy'] = df['HOSPITALES hoy'].
↪rolling(window=VENTANA_MEDIA_MOVIL).mean()
df['MA FALLECIDOS TOTALES hoy'] = df['FALLECIDOS TOTALES hoy'].
↪rolling(window=VENTANA_MEDIA_MOVIL).mean()

df = df.sort_index(ascending=False)
df_master = df.copy()
```

[21]:
```
from matplotlib import colors

def background_gradient(s, m, M, cmap='PuBu', low=0, high=0):
    rng = M - m
    norm = colors.Normalize(m - (rng * low),
                            M + (rng * high))
    normed = norm(s.values)
    c = [colors.rgb2hex(x) for x in plt.cm.get_cmap(cmap)(normed)]
    return ['background-color: %s' % color for color in c]
```

```
df.style.format ({ c : "{:20,.0f}" for c in df.columns }).
 ↪background_gradient(cmap='Wistia', subset= df.columns[-3:] )
```

[21]:
```
<pandas.io.formats.style.Styler at 0x7f07bf338630>
```

[22]:
```
import pandas as pd
import io
import matplotlib.dates as mdates
from matplotlib import pyplot as plt


df = df_master
chart_df=df[df.columns[-3:]]
chart_df.plot(legend=True,figsize=(13.5,9), marker='o')

plt.gca().xaxis.set_major_formatter(mdates.DateFormatter('%m-%d'))
plt.gca().xaxis.set_major_locator(mdates.DayLocator(interval=1))
plt.xticks(rotation=45)

ax = plt.gca()

ax.set_title("Muertes diarias COVID 19, media movil. Fuente: Comunidad de␣
 ↪Madrid")
ax.set_ylim(ymin=0)

plt.show()
```

```
Exception ignored in: <object repr() failed>
Traceback (most recent call last):
  File "/root/anaconda2/envs/jupyter/lib/python3.6/site-packages/tqdm/std.py",
line 1084, in __del__
    self.close()
  File "/root/anaconda2/envs/jupyter/lib/python3.6/site-
packages/tqdm/notebook.py", line 241, in close
    super(tqdm_notebook, self).close(*args, **kwargs)
  File "/root/anaconda2/envs/jupyter/lib/python3.6/site-packages/tqdm/std.py",
line 1260, in close
    if self.disable:
AttributeError: 'tqdm_notebook' object has no attribute 'disable'
Exception ignored in: <object repr() failed>
Traceback (most recent call last):
  File "/root/anaconda2/envs/jupyter/lib/python3.6/site-packages/tqdm/std.py",
line 1084, in __del__
    self.close()
  File "/root/anaconda2/envs/jupyter/lib/python3.6/site-
packages/tqdm/notebook.py", line 241, in close
```

```
    super(tqdm_notebook, self).close(*args, **kwargs)
  File "/root/anaconda2/envs/jupyter/lib/python3.6/site-packages/tqdm/std.py",
line 1260, in close
    if self.disable:
AttributeError: 'tqdm_notebook' object has no attribute 'disable'
Exception ignored in: <object repr() failed>
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line 1084, in __del__
    self.close()
  File "/root/anaconda2/envs/jupyter/lib/python3.6/site-
packages/tqdm/notebook.py", line 241, in close
    super(tqdm_notebook, self).close(*args, **kwargs)
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AttributeError: 'tqdm_notebook' object has no attribute 'disable'
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line 1084, in __del__
    self.close()
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  File "/root/anaconda2/envs/jupyter/lib/python3.6/site-packages/tqdm/std.py",
line 1260, in close
    if self.disable:
AttributeError: 'tqdm_notebook' object has no attribute 'disable'
```

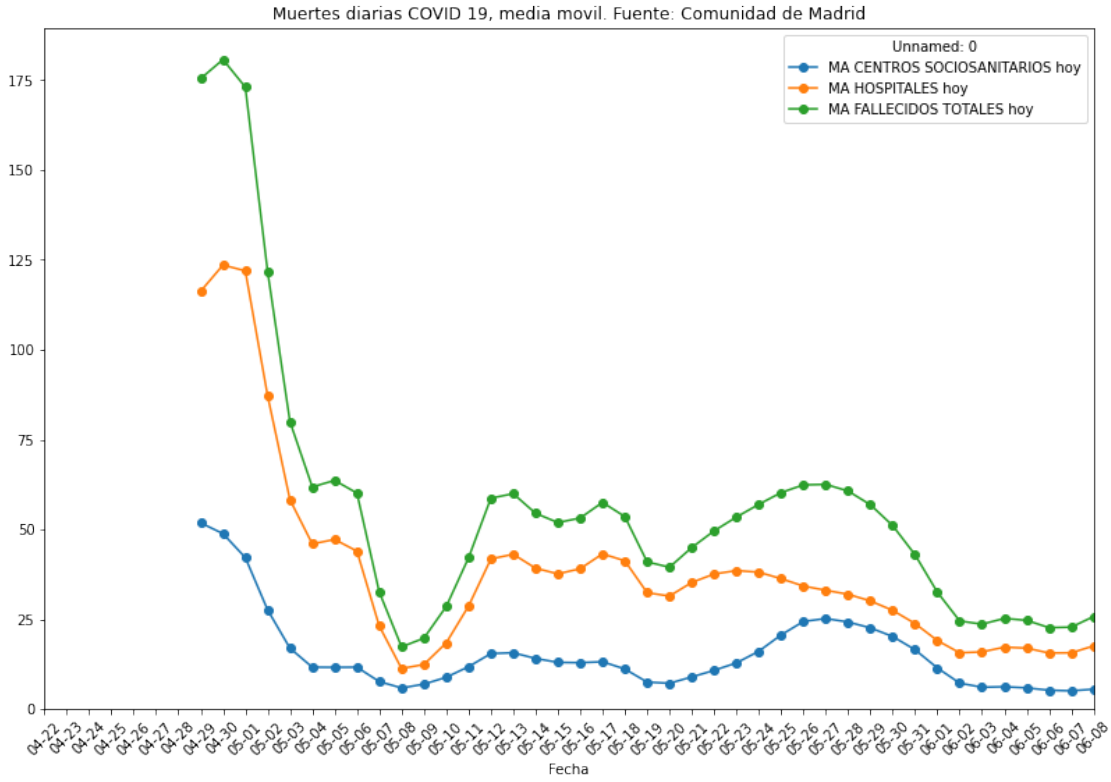

[23]:
```
from IPython.display import display, HTML
HTML("<h2>Comparamos los datos de hoy, de hace una semana y de un mes </h2>")
```

[23]:
```
<IPython.core.display.HTML object>
```

[24]:
```
df = df_master
pd.concat([df.head(1).tail(1) , df.head(7).tail(1) , df.head(30).tail(1)]).
↪astype(int)[['MA HOSPITALES hoy','MA CENTROS SOCIOSANITARIOS hoy','MA␣
↪FALLECIDOS TOTALES hoy']].style.format ({ c : "{:20,.0f}" for c in df.
↪columns }).background_gradient(cmap='Wistia', subset= df.columns[-3:] )
```

[24]:
```
<pandas.io.formats.style.Styler at 0x7f07bc101eb8>
```

[25]:
```
from IPython.display import display, HTML
HTML("<h2>Muertes medias diarias, últimos 7 días, con datos</h2>")
```

[25]:
```
<IPython.core.display.HTML object>
```

[26]:
```
from datetime import date

df = df_master
inicio_crisis = df.head(7).index[6]
```

```
df=df.head(7)
dia_mas_reciente = df.index[0]
dias_transcurridos_inicio_crisis = dia_mas_reciente - inicio_crisis
df = pd.DataFrame((df.head(1).max(axis=0) - df.tail(1).max(axis=0) ) / ␣
 ↪dias_transcurridos_inicio_crisis.days  ).
 ↪T[['HOSPITALES','DOMICILIOS','CENTROS SOCIOSANITARIOS','OTROS␣
 ↪LUGARES','FALLECIDOS TOTALES']]
df.style.format ({ c : "{:20,.0f}" for c in df.columns }).
 ↪background_gradient(cmap='Wistia'  )
```

[26]: <pandas.io.formats.style.Styler at 0x7f07b66a6710>

[27]:
```
HTML("<h2>Muertes medias diarias desde que la comunidad de Madrid publica␣
 ↪datos</h2>")
```

[27]: <IPython.core.display.HTML object>

[28]:
```
# Calculamos los incrementos medios, desde que tenemos fechas
df = df_master
df = pd.DataFrame((df.head(1).max(axis=0) - df.tail(1).max(axis=0) ) / df.
 ↪shape[0] ).T[['HOSPITALES','DOMICILIOS','CENTROS SOCIOSANITARIOS','OTROS␣
 ↪LUGARES','FALLECIDOS TOTALES']]
df.style.format ({ c : "{:20,.0f}" for c in df.columns }).
 ↪background_gradient(cmap='Wistia'  )
```

[28]: <pandas.io.formats.style.Styler at 0x7f07fc534cf8>

[ ]: