Assignment_python

February 5, 2020

```
[2]: #import statements
     import pandas as pd
     import numpy as np
     import html5lib
     %matplotlib inline
     import matplotlib.pyplot as plt
```

```
[3]: foodFacts = pd.read_csv('FoodFacts.csv')
```

```
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/IPython/core/interactiveshell.py:3058: DtypeWarning: Columns
(0,3,5,27,36) have mixed types. Specify dtype option on import or set
low_memory=False.
  interactivity=interactivity, compiler=compiler, result=result)
```

```
[4]: foodFacts.dtypes
```

```
[4]: code                          object
     url                           object
     creator                       object
     created_t                     object
     created_datetime              object
                                    ...
     cocoa_100g                   float64
     chlorophyl_100g              float64
     carbon_footprint_100g        float64
     nutrition_score_fr_100g      float64
     nutrition_score_uk_100g      float64
     Length: 159, dtype: object
```

```
[5]: foodFacts.head(10)
```

```
[5]:                  code                                               url  \
     0  000000000000012866  http://world-en.openfoodfacts.org/product/0000...
     1       0000000024600  http://world-en.openfoodfacts.org/product/0000...
     2       0000000036252  http://world-en.openfoodfacts.org/product/0000...
     3       0000000039259  http://world-en.openfoodfacts.org/product/0000...
```

```
4       0000000039529  http://world-en.openfoodfacts.org/product/0000...
5       0000001071894  http://world-en.openfoodfacts.org/product/0000...
6       0000005200016  http://world-en.openfoodfacts.org/product/0000...
7       0000007020254  http://world-en.openfoodfacts.org/product/0000...
8       0000010090206  http://world-en.openfoodfacts.org/product/0000...
9       0000020364373  http://world-en.openfoodfacts.org/product/0000...

                      creator   created_t      created_datetime  \
0             date-limite-app  1447004364  2015-11-08T17:39:24Z
1             date-limite-app  1434530704  2015-06-17T08:45:04Z
2                     tacinte  1422221701  2015-01-25T21:35:01Z
3                     tacinte  1422221773  2015-01-25T21:36:13Z
4                    teolemon  1420147051  2015-01-01T21:17:31Z
5                    bcatelin  1409411252  2014-08-30T15:07:32Z
6                     sigoise  1441186657  2015-09-02T09:37:37Z
7                    teolemon  1420150193  2015-01-01T22:09:53Z
8                    sebleouf  1370977431  2013-06-11T19:03:51Z
9  openfoodfacts-contributors  1393970573  2014-03-04T22:02:53Z

  last_modified_t last_modified_datetime  \
0      1447004364   2015-11-08T17:39:24Z
1      1434535914   2015-06-17T10:11:54Z
2      1422221855   2015-01-25T21:37:35Z
3      1422221926   2015-01-25T21:38:46Z
4      1439141740   2015-08-09T17:35:40Z
5      1439141739   2015-08-09T17:35:39Z
6      1442570752   2015-09-18T10:05:52Z
7      1420210373   2015-01-02T14:52:53Z
8      1445083431   2015-10-17T12:03:51Z
9      1393970733   2014-03-04T22:05:33Z

                            product_name generic_name quantity  ...  \
0                 Poêlée à la sarladaise          NaN      NaN  ...
1                          Filet de bœuf          NaN  2.46 kg  ...
2                         Lion Peanut x2          NaN      NaN  ...
3                                Twix x2          NaN      NaN  ...
4                         Pack de 2 Twix          NaN      NaN  ...
5                                  Flute        Flute      NaN  ...
6                      lentilles vertes           NaN    1 kg   ...
7                                    NaN          NaN      NaN  ...
8  Thé de Noël aromatisé orange-cannelle          NaN     75 g  ...
9                           Zumo de Piña          NaN      NaN  ...

  caffeine_100g taurine_100g ph_100g fruits_vegetables_nuts_100g  \
0           NaN          NaN     NaN                         NaN
1           NaN          NaN     NaN                         NaN
2           NaN          NaN     NaN                         NaN
```

```
3           NaN          NaN     NaN                            NaN
4           NaN          NaN     NaN                            NaN
5           NaN          NaN     NaN                            NaN
6           NaN          NaN     NaN                            NaN
7           NaN          NaN     NaN                            NaN
8           NaN          NaN     NaN                            NaN
9           NaN          NaN     NaN                            NaN

  collagen_meat_protein_ratio_100g cocoa_100g chlorophyl_100g  \
0                              NaN        NaN             NaN
1                              NaN        NaN             NaN
2                              NaN        NaN             NaN
3                              NaN        NaN             NaN
4                              NaN        NaN             NaN
5                              NaN        NaN             NaN
6                              NaN        NaN             NaN
7                              NaN        NaN             NaN
8                              NaN        NaN             NaN
9                              NaN        NaN             NaN

  carbon_footprint_100g nutrition_score_fr_100g nutrition_score_uk_100g
0                   NaN                     NaN                     NaN
1                   NaN                     NaN                     NaN
2                   NaN                     NaN                     NaN
3                   NaN                     NaN                     NaN
4                   NaN                     NaN                     NaN
5                   NaN                     NaN                     NaN
6                   NaN                     NaN                     NaN
7                   NaN                     NaN                     NaN
8                   NaN                     NaN                     NaN
9                   NaN                     NaN                     NaN

[10 rows x 159 columns]
```

[6]:

```
foodFacts.columns
```

[6]:

```
Index(['code', 'url', 'creator', 'created_t', 'created_datetime',
       'last_modified_t', 'last_modified_datetime', 'product_name',
       'generic_name', 'quantity',
       ...
       'caffeine_100g', 'taurine_100g', 'ph_100g',
       'fruits_vegetables_nuts_100g', 'collagen_meat_protein_ratio_100g',
       'cocoa_100g', 'chlorophyl_100g', 'carbon_footprint_100g',
       'nutrition_score_fr_100g', 'nutrition_score_uk_100g'],
      dtype='object', length=159)
```

[7]:

```
foodFacts.columns[[0,3,5,27,36]]
```

[7]:
```
Index(['code', 'created_t', 'last_modified_t', 'cities', 'allergens_en'],
dtype='object')
```

[8]:
```
foodFacts[:20][['code', 'created_t', 'last_modified_t', 'cities',␣
 ↪'allergens_en']]
```

[8]:
```
                   code   created_t last_modified_t cities allergens_en
0    0000000000012866  1447004364      1447004364    NaN          NaN
1        0000000024600  1434530704      1434535914    NaN          NaN
2        0000000036252  1422221701      1422221855    NaN          NaN
3        0000000039259  1422221773      1422221926    NaN          NaN
4        0000000039529  1420147051      1439141740    NaN          NaN
5        0000001071894  1409411252      1439141739    NaN          NaN
6        0000005200016  1441186657      1442570752    NaN          NaN
7        0000007020254  1420150193      1420210373    NaN          NaN
8        0000010090206  1370977431      1445083431    NaN          NaN
9        0000020364373  1393970573      1393970733    NaN          NaN
10       0000027533024  1418732959      1442914346    NaN          NaN
11       0000027533048  1418732915      1439141741    NaN          NaN
12       0000030053014  1430153513      1430153514    NaN          NaN
13       0000040608754  1345024108      1439141731    NaN          NaN
14            00000758  1409582884      1424687936    NaN          NaN
15       0000084154071  1351359717      1440779523    NaN          NaN
16       0000087177756  1433586486      1433589206    NaN          NaN
17            00001373  1412788478      1441556289    NaN          NaN
18            00002929  1424460617      1424829673    NaN          NaN
19            00003100  1415119256      1428327438    NaN          NaN
```

[9]:
```
foodFacts_3and5Removed = foodFacts.drop(foodFacts.columns[[3,5]], axis=1)
```

[10]:
```
foodFacts_3and5Removed.columns[[0,3,5,27,36]]
```

[10]:
```
Index(['code', 'created_datetime', 'product_name', 'purchase_places',
       'traces_tags'],
      dtype='object')
```

[11]:
```
foodFacts_3and5Removed.columns
```

[11]:
```
Index(['code', 'url', 'creator', 'created_datetime', 'last_modified_datetime',
       'product_name', 'generic_name', 'quantity', 'packaging',
       'packaging_tags',
       ...
       'caffeine_100g', 'taurine_100g', 'ph_100g',
       'fruits_vegetables_nuts_100g', 'collagen_meat_protein_ratio_100g',
       'cocoa_100g', 'chlorophyl_100g', 'carbon_footprint_100g',
       'nutrition_score_fr_100g', 'nutrition_score_uk_100g'],
      dtype='object', length=157)
```

```
[12]: percentage_UK = (foodFacts_3and5Removed[foodFacts_3and5Removed.
       ↪nutrition_score_uk_100g.notnull()].size/ \
            foodFacts_3and5Removed.size)*100
      a = percentage_UK.round()
```

```
[13]: str(a) + '%'
```

```
[13]: '48.0%'
```

```
[14]: foodFacts_3and5Removed.caffeine_100g.max()
```

```
[14]: 32.0
```

```
[15]: str(foodFacts_3and5Removed[foodFacts_3and5Removed.caffeine_100g == 32].
       ↪product_name)
```

```
[15]: '8861    Red Bull energy drink\nName: product_name, dtype: object'
```

```
[16]: food_facts_arch_acid = foodFacts_3and5Removed.arachidonic_acid_100g.
       ↪sort_values(ascending = False).dropna()
      food_facts_arch_acid
```

```
[16]: 12756    0.090
      32423    0.082
      55289    0.064
      54897    0.044
      12835    0.007
      Name: arachidonic_acid_100g, dtype: float64
```

```
[17]: foodFacts_3and5Removed.
       ↪nlargest(5,'arachidonic_acid_100g')[['product_name','arachidonic_acid_100g']].
       ↪dropna()
```

```
[17]:              product_name  arachidonic_acid_100g
      12756  Lait Gallia Calisma                  0.090
      32423     Dès la naissance                  0.082
      55289     Dès la naissance                  0.064
      54897        Nidal Natéa 2                  0.044
      12835    Gallia croissance                  0.007
```

```
[18]: foodFacts_3and5Removed.nlargest(5,'arachidonic_acid_100g')
```

```
[18]:                 code                                                url  \
      12756  3041090001864  http://world-en.openfoodfacts.org/product/3041...
      32423  3379365001449  http://world-en.openfoodfacts.org/product/3379...
      55289  7613034726087  http://world-en.openfoodfacts.org/product/7613...
      54897  7613032506636  http://world-en.openfoodfacts.org/product/7613...
```

```
12835  3041090086342  http://world-en.openfoodfacts.org/product/3041...

                          creator      created_datetime  \
12756                    minouche  2012-06-30T11:29:50Z   
32423                  dnicolas80  2014-05-03T09:16:30Z   
55289  openfoodfacts-contributors  2014-11-23T09:05:39Z   
54897                    dalisson  2012-09-22T19:36:34Z   
12835  openfoodfacts-contributors  2014-11-04T00:19:24Z   

      last_modified_datetime         product_name  \
12756   2014-02-02T22:59:40Z  Lait Gallia Calisma   
32423   2015-05-14T10:13:14Z     Dès la naissance   
55289   2015-10-31T16:50:32Z     Dès la naissance   
54897   2013-12-20T21:13:58Z        Nidal Natéa 2   
12835   2014-11-04T05:29:48Z    Gallia croissance   

                                            generic_name quantity  \
12756                         Lait en poudre premier âge    900 g   
32423                               Lait pour nourissons    900 g   
55289  Lait pour nourrissons en poudre de la naissanc...    820 g   
54897                         Lait infantile reconstitué    800 g   
12835                                                NaN    900 g   

              packaging    packaging_tags  ... caffeine_100g taurine_100g  \
12756  Carton,Plastique  carton,plastique  ...           NaN        0.035   
32423             boite             boite  ...           NaN        0.039   
55289       Boîte,Métal       boite,metal  ...           NaN        0.035   
54897             Boîte             boite  ...           NaN          NaN   
12835         Bocal,Fer         bocal,fer  ...           NaN        0.037   

      ph_100g fruits_vegetables_nuts_100g collagen_meat_protein_ratio_100g  \
12756     NaN                         NaN                              NaN   
32423     NaN                         NaN                              NaN   
55289     NaN                         NaN                              NaN   
54897     NaN                         NaN                              NaN   
12835     NaN                         NaN                              NaN   

      cocoa_100g chlorophyl_100g carbon_footprint_100g  \
12756        NaN             NaN                   NaN   
32423        NaN             NaN                   NaN   
55289        NaN             NaN                   NaN   
54897        NaN             NaN                   NaN   
12835        NaN             NaN                   NaN   

      nutrition_score_fr_100g nutrition_score_uk_100g  
12756                    26.0                    26.0  
32423                    22.0                    22.0  
```

```
55289                        27.0                         27.0
54897                        25.0                         25.0
12835                        16.0                         16.0

[5 rows x 157 columns]
```

Based on this data, it seems like this data is depicting different products sold in the UK and France, their manufacturers, typical quantities they are sold in, their packaging information and most importantly, their nutritional value disected by multiple different compounds. All this data is used to aggregate a total nutrition score in France and UK.

[19]:
```
for col in foodFacts_3and5Removed.columns:
    print(col)
```

```
code
url
creator
created_datetime
last_modified_datetime
product_name
generic_name
quantity
packaging
packaging_tags
brands
brands_tags
categories
categories_tags
categories_en
origins
origins_tags
manufacturing_places
manufacturing_places_tags
labels
labels_tags
labels_en
emb_codes
emb_codes_tags
first_packaging_code_geo
cities
cities_tags
purchase_places
stores
countries
countries_tags
countries_en
ingredients_text
allergens
```

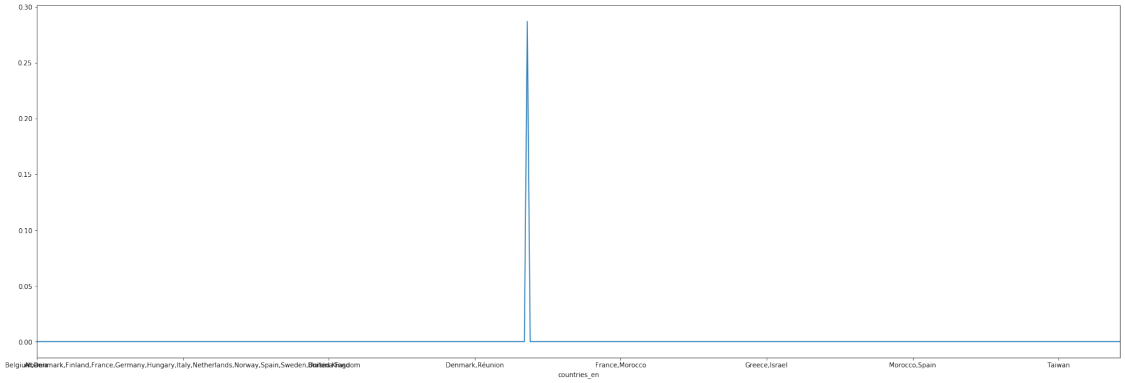
```
allergens_en
traces
traces_tags
traces_en
serving_size
no_nutriments
additives_n
additives
additives_tags
additives_en
ingredients_from_palm_oil_n
ingredients_from_palm_oil
ingredients_from_palm_oil_tags
ingredients_that_may_be_from_palm_oil_n
ingredients_that_may_be_from_palm_oil
ingredients_that_may_be_from_palm_oil_tags
nutrition_grade_uk
nutrition_grade_fr
pnns_groups_1
pnns_groups_2
states
states_tags
states_en
main_category
main_category_en
image_url
image_small_url
energy_100g
energy_from_fat_100g
fat_100g
saturated_fat_100g
butyric_acid_100g
caproic_acid_100g
caprylic_acid_100g
capric_acid_100g
lauric_acid_100g
myristic_acid_100g
palmitic_acid_100g
stearic_acid_100g
arachidic_acid_100g
behenic_acid_100g
lignoceric_acid_100g
cerotic_acid_100g
montanic_acid_100g
melissic_acid_100g
monounsaturated_fat_100g
polyunsaturated_fat_100g
omega_3_fat_100g
```

```
alpha_linolenic_acid_100g
eicosapentaenoic_acid_100g
docosahexaenoic_acid_100g
omega_6_fat_100g
linoleic_acid_100g
arachidonic_acid_100g
gamma_linolenic_acid_100g
dihomo_gamma_linolenic_acid_100g
omega_9_fat_100g
oleic_acid_100g
elaidic_acid_100g
gondoic_acid_100g
mead_acid_100g
erucic_acid_100g
nervonic_acid_100g
trans_fat_100g
cholesterol_100g
carbohydrates_100g
sugars_100g
sucrose_100g
glucose_100g
fructose_100g
lactose_100g
maltose_100g
maltodextrins_100g
starch_100g
polyols_100g
fiber_100g
proteins_100g
casein_100g
serum_proteins_100g
nucleotides_100g
salt_100g
sodium_100g
alcohol_100g
vitamin_a_100g
beta_carotene_100g
vitamin_d_100g
vitamin_e_100g
vitamin_k_100g
vitamin_c_100g
vitamin_b1_100g
vitamin_b2_100g
vitamin_pp_100g
vitamin_b6_100g
vitamin_b9_100g
vitamin_b12_100g
biotin_100g
```

```
pantothenic_acid_100g
silica_100g
bicarbonate_100g
potassium_100g
chloride_100g
calcium_100g
phosphorus_100g
iron_100g
magnesium_100g
zinc_100g
copper_100g
manganese_100g
fluoride_100g
selenium_100g
chromium_100g
molybdenum_100g
iodine_100g
caffeine_100g
taurine_100g
ph_100g
fruits_vegetables_nuts_100g
collagen_meat_protein_ratio_100g
cocoa_100g
chlorophyl_100g
carbon_footprint_100g
nutrition_score_fr_100g
nutrition_score_uk_100g
```

[20]:
```
foodFacts_3and5Removed.groupby('countries_en').arachidonic_acid_100g.sum().
 ↪plot(figsize=(30,10))
```

[20]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x1195cc650>
```



```
[21]: foodFacts_3and5Removed[:50][['categories',␣
       ↪'arachidonic_acid_100g','countries','countries_tags','main_category_en']]
```

```
[21]:                                            categories  arachidonic_acid_100g  \
      0                                                 NaN                    NaN
      1                                       Filet de bœuf                    NaN
      2                                                 NaN                    NaN
      3                                                 NaN                    NaN
      4                                                 NaN                    NaN
      5   Plant-based foods and beverages,Plant-based fo...                    NaN
      6   Aliments et boissons à base de végétaux,Alimen...                    NaN
      7                                           Root bier                    NaN
      8   Aliments et boissons à base de végétaux,Boisso...                    NaN
      9                                                 NaN                    NaN
      10  Snacks sucrés,Desserts,Biscuits et gâteaux,Gât...                    NaN
      11  Desserts,Sugary snacks,Biscuits and cakes,Cake...                    NaN
      12                                                NaN                    NaN
      13                                      Sodas au cola                    NaN
      14  Plant-based foods and beverages,Plant-based fo...                    NaN
      15   Comestibles,Condimentos,Salsas,Salsas de mostaza                    NaN
      16                   Sodas au citron,Boissons sucrées                    NaN
      17  Plant-based foods and beverages,Plant-based fo...                    NaN
      18                         Flat Parsley,Parsley,Herbs                    NaN
      19                                    Viandes de porc                    NaN
      20                              Chips,Chips and fries                    NaN
      21                                                NaN                    NaN
      22              Sugary snacks,Confectioneries,Candies                    NaN
      23              Sugary snacks,Confectioneries,Candies                    NaN
      24                                            Bonbons                    NaN
      25                                                NaN                    NaN
      26                                             onions                    NaN
      27                                               Soda                    NaN
      28                                                NaN                    NaN
      29                        Gâteaux,Goûters individuels                    NaN
      30                                Foie gras de canard                    NaN
      31                                                NaN                    NaN
      32                                                NaN                    NaN
      33                                                NaN                    NaN
      34                                                NaN                    NaN
      35                                                NaN                    NaN
      36                                                NaN                    NaN
      37                                Foie gras de canard                    NaN
      38                          fr:Pâté au foie de canard                    NaN
      39                                                NaN                    NaN
      40              Bloc de foie gras,Foie gras de canard                    NaN
      41                                                NaN                    NaN
      42  foie gras de canard aux cèpes,tartinable au fo...                    NaN
```

```
43                               Foies gras de d'oies                    NaN
44                                 Foie gras de d'oie                    NaN
45                                                NaN                    NaN
46                    fr:Bonbons à la menthe,en:mints                    NaN
47                                                NaN                    NaN
48                                            Cookies                    NaN
49                                                NaN                    NaN

                countries               countries_tags  \
0                   en:FR                    en:france
1                  France                    en:france
2                  France                    en:france
3                  France                    en:france
4                  France                    en:france
5          United Kingdom            en:united-kingdom
6                  France                    en:france
7                  France                    en:france
8                  France                    en:france
9                   en:ES                     en:spain
10            Royaume-Uni            en:united-kingdom
11         United Kingdom            en:united-kingdom
12                  en:FR                    en:france
13                 France                    en:france
14         United Kingdom            en:united-kingdom
15                 España                     en:spain
16                 France                    en:france
17         United Kingdom            en:united-kingdom
18         United Kingdom            en:united-kingdom
19                 France                    en:france
20          United States             en:united-states
21                  en:GB            en:united-kingdom
22                Germany                   en:germany
23                Germany                   en:germany
24                    Usa             en:united-states
25                  en:GB            en:united-kingdom
26         United Kingdom            en:united-kingdom
27                 France                    en:france
28                  en:FR                    en:france
29                 France                    en:france
30                 France                    en:france
31                  en:FR                    en:france
32                  en:FR                    en:france
33                  en:FR                    en:france
34                  en:FR                    en:france
35                  en:FR                    en:france
36                  en:FR                    en:france
37                 France                    en:france
```

```
38                 France                    en:france
39                  en:FR                    en:france
40                 France                    en:france
41                  en:FR                    en:france
42                 France                    en:france
43                 France                    en:france
44                 France                    en:france
45                  en:FR                    en:france
46  France,United Kingdom  en:france,en:united-kingdom
47                  en:FR                    en:france
48                 France                    en:france
49                 France                    en:france

                   main_category_en
0                               NaN
1                 fr:Filet-de-boeuf
2                               NaN
3                               NaN
4                               NaN
5   Plant-based foods and beverages
6   Plant-based foods and beverages
7                      fr:Root-bier
8                         Beverages
9                               NaN
10                         Desserts
11                    Sugary snacks
12                              NaN
13                        Beverages
14  Plant-based foods and beverages
15                        Groceries
16                        Beverages
17  Plant-based foods and beverages
18                        Groceries
19                            Meats
20                  Chips and fries
21                              NaN
22                    Sugary snacks
23                    Sugary snacks
24                    Sugary snacks
25                              NaN
26                        Groceries
27                        Beverages
28                              NaN
29                    Sugary snacks
30           Fish and meat and eggs
31                              NaN
32                              NaN
```

```
33                              NaN
34                              NaN
35                              NaN
36                              NaN
37           Fish and meat and eggs
38        fr:Pate-au-foie-de-canard
39                              NaN
40           Fish and meat and eggs
41                              NaN
42           Fish and meat and eggs
43           Fish and meat and eggs
44           Fish and meat and eggs
45                              NaN
46                        Groceries
47                              NaN
48                    Sugary snacks
49                              NaN
```

[22]:

```
foodFacts_3and5Removed[foodFacts_3and5Removed.arachidonic_acid_100g ==\
foodFacts_3and5Removed.arachidonic_acid_100g.max()]\
[['product_name','arachidonic_acid_100g','countries','countries_tags','main_category_en']]
```

[22]:

```
              product_name  arachidonic_acid_100g countries countries_tags  \
12756  Lait Gallia Calisma                   0.09    France      en:france

      main_category_en
12756       Baby foods
```

What this tells us is that Baby foods in France have the highest amount of arachidonic acid per 100 grams of product. Since arachidonic acid is promotes the growth and repair of skeletal muscle and bone growth, its presence in high quantities in baby food makes sense. Now looking at the top 5 product main categories that have the highest arachidonic acid per 100 grams of product, below.

[23]:

```
foodFacts_3and5Removed.nlargest(5,'arachidonic_acid_100g')\
[['product_name','arachidonic_acid_100g','countries','countries_tags','main_category_en']].
 ↪dropna()
```

[23]:

```
              product_name  arachidonic_acid_100g countries countries_tags  \
12756  Lait Gallia Calisma                  0.090    France      en:france
32423     Dès la naissance                  0.082    France      en:france
55289     Dès la naissance                  0.064    France      en:france
54897        Nidal Natéa 2                  0.044    France      en:france
12835    Gallia croissance                  0.007    France      en:france

      main_category_en
12756       Baby foods
```

```
32423       Baby foods
55289       Baby foods
54897       Baby foods
12835       Baby foods
```

The data frame instance sliced above confirms that high presence of arachidonic acid per 100 grams of product is found in Baby foods. Additionally, we can also infer the top 5 products in that category along with their country of origin: France.

[24]:
```
foodFacts_3and5Removed.groupby('main_category_en').nutrition_score_uk_100g.sum().
 ↪plot(kind='bar')
```

[24]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x11a9291d0>
```

```
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12473
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12490
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12483
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12463
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 33747
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 23376
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 29006
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 33590
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 37284
```

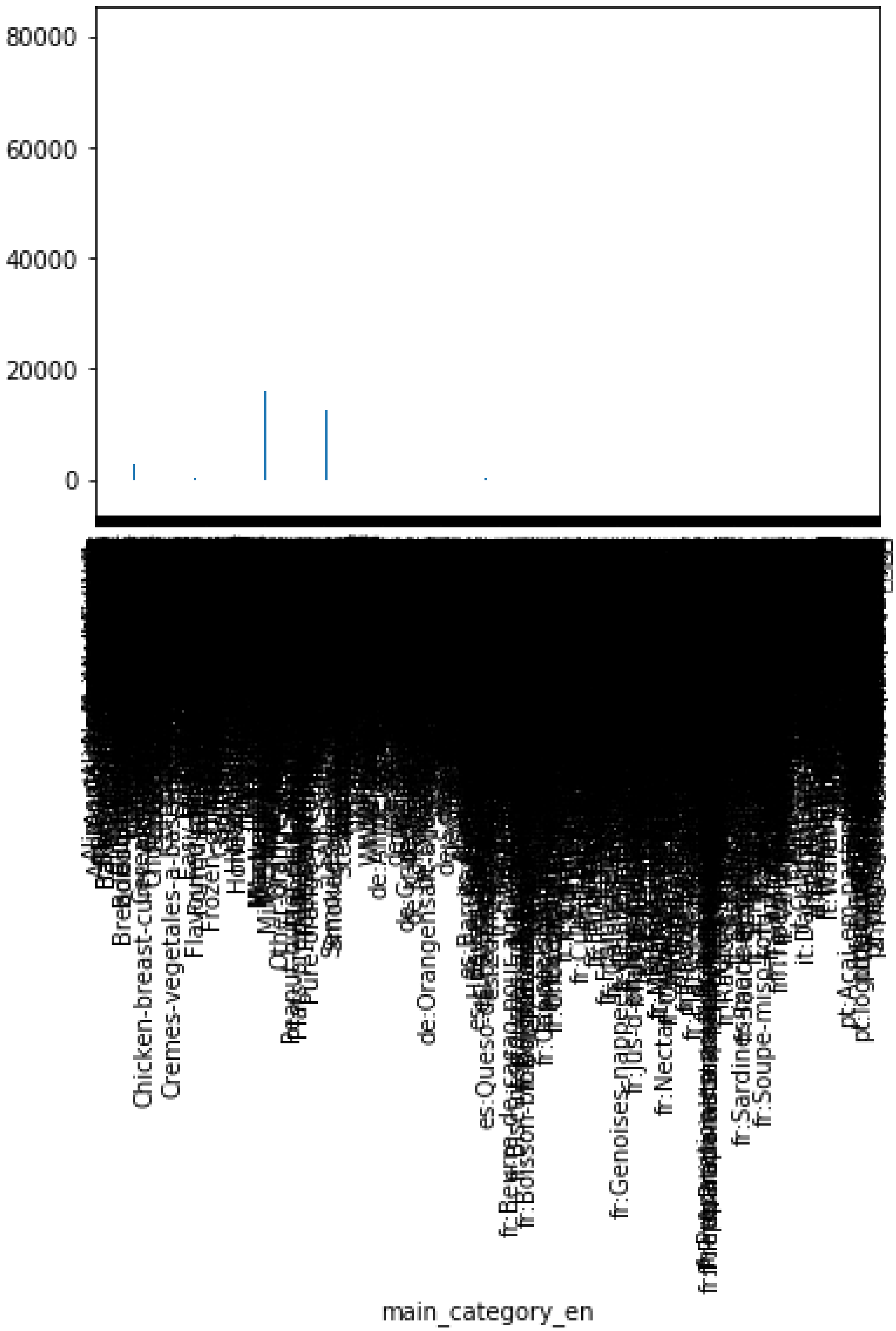
```
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 27833
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12402
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12394
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12354
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12425
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12428
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12459
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12501
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12521
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12540
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12513
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12531
```

```
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12461
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12515
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12486
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12451
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12488
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12522
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12520
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12523
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12358
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12414
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 12356
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:211: RuntimeWarning: Glyph 26834
```

```
missing from current font.
  font.set_text(s, 0.0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12473
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12490
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12483
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12463
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 33747
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 23376
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 29006
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 33590
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 37284
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 27833
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12402
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12394
```

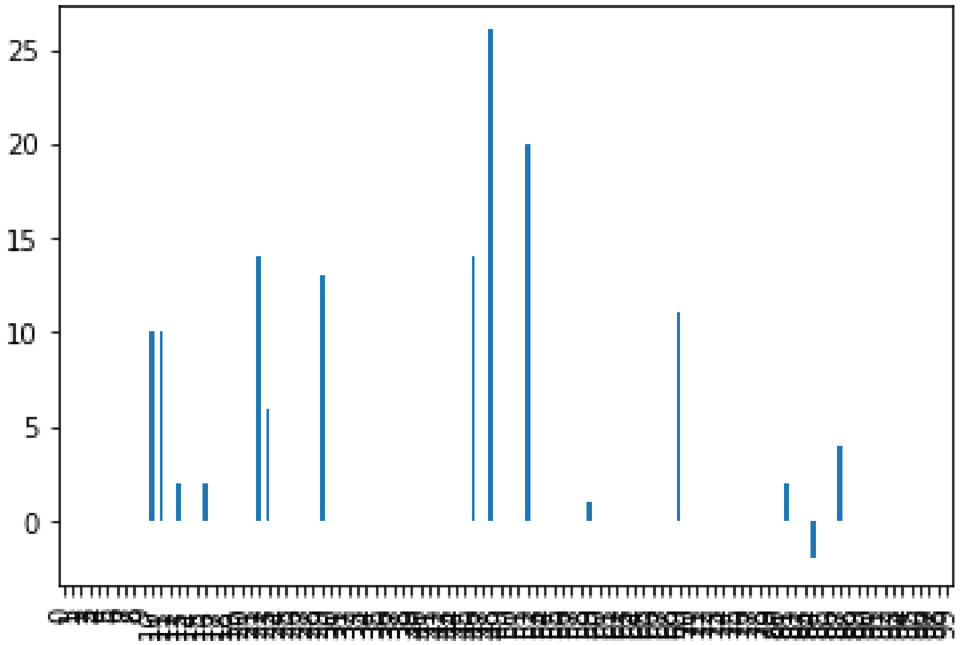
```
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12354
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12425
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12428
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12459
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12501
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12521
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12540
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12513
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12531
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12461
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12515
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12486
```

```
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12451
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12488
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12522
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12520
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12523
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12358
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12414
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 12356
missing from current font.
  font.set_text(s, 0, flags=flags)
/Users/a1394620/opt/anaconda3/lib/python3.7/site-
packages/matplotlib/backends/backend_agg.py:180: RuntimeWarning: Glyph 26834
missing from current font.
  font.set_text(s, 0, flags=flags)
```



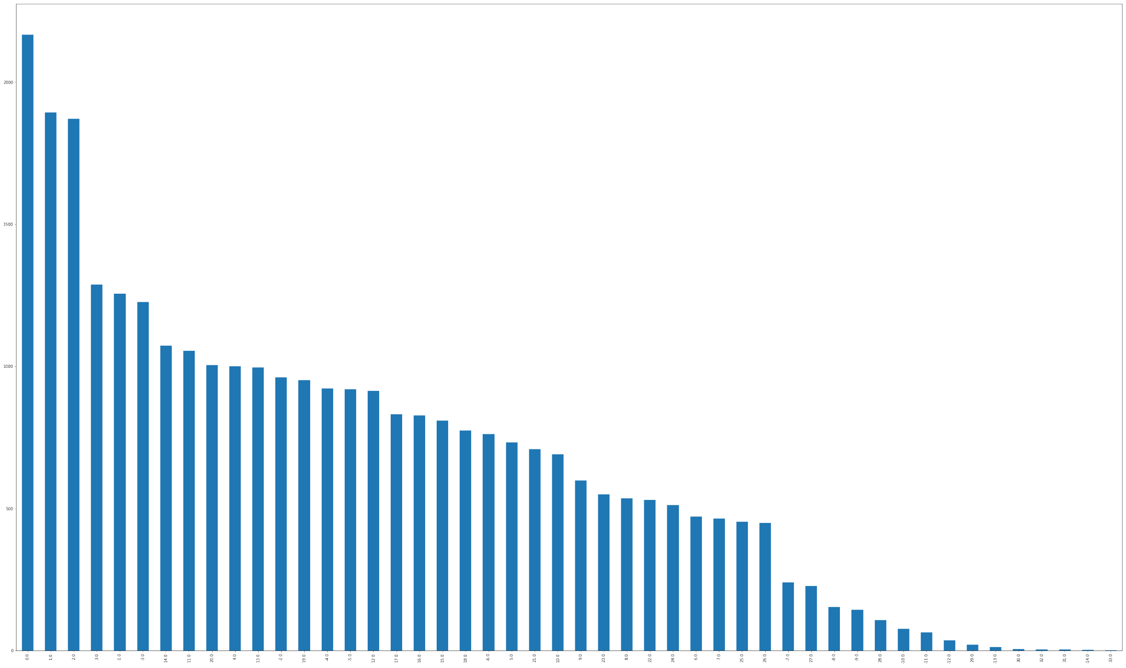
```
[26]: foodFacts_3and5Removed[:100].nutrition_score_uk_100g.plot(kind='bar')
```

```
[26]: <matplotlib.axes._subplots.AxesSubplot at 0x13631dad0>
```



```
[33]: foodFacts_3and5Removed['nutrition_score_uk_100g'].dropna().value_counts().
       ↪plot(kind='bar',figsize=(50,30))
```

```
[33]: <matplotlib.axes._subplots.AxesSubplot at 0x12f700590>
```



[48]:

```
total_fr_nutritional_count = foodFacts_3and5Removed.nutrition_score_fr_100g.
 ↪dropna().count()
total_fr_nutritional_sum = foodFacts_3and5Removed.nutrition_score_fr_100g.
 ↪dropna().sum()
```

[49]:

```
total_uk_nutritional_count = foodFacts_3and5Removed.nutrition_score_uk_100g.
 ↪dropna().count()
total_uk_nutritional_sum = foodFacts_3and5Removed.nutrition_score_fr_100g.
 ↪dropna().sum()
```

[50]:

```
total_mean = (total_fr_nutritional_sum + total_uk_nutritional_sum)/␣
 ↪(total_fr_nutritional_count + total_uk_nutritional_count)
total_mean
```

[50]:

```
7.948168978078865
```

[52]:

```
mean_fr_nutrition = foodFacts_3and5Removed.nutrition_score_fr_100g.dropna().
 ↪mean()
mean_uk_nutrition = foodFacts_3and5Removed.nutrition_score_uk_100g.dropna().
 ↪mean()
print(mean_fr_nutrition)
print(mean_uk_nutrition)
```

```
7.948168978078865
7.68719243305426
```

[60]:

```
fr_min = (foodFacts_3and5Removed.nutrition_score_fr_100g.dropna().min())
fr_max = (foodFacts_3and5Removed.nutrition_score_fr_100g.dropna().max())
uk_min = (foodFacts_3and5Removed.nutrition_score_uk_100g.dropna().min())
uk_max = (foodFacts_3and5Removed.nutrition_score_uk_100g.dropna().max())
```

[62]:

```
print(fr_min)
print(fr_max)
print(uk_min)
print(uk_max)
```

```
-14.0
35.0
-14.0
33.0
```

[65]:

```
fr_mean = mean_fr_nutrition/(fr_min + fr_max) * 100
fr_mean
```

[65]:

```
37.84842370513745
```

```
[66]: uk_mean = mean_uk_nutrition/(uk_min + uk_max) * 100
      uk_mean
```

```
[66]: 40.45890754239084
```

```
[67]: total_mean_percentage = (fr_mean + uk_mean)/2
      total_mean_percentage
```

```
[67]: 39.15366562376414
```

With a total average nutritional score percentage of 39.15%, majority of food types in this dataset are unhealthy. They need to be an average of 50% or above to be certified as a majorly healthy dataset of food types and categories. That being said, the average nutritional score percentage of the same food types is higher in the UK (37.84%) versus France. (40.45%).

This data set is skewed since there is no explanation of why a nutritional score would max out at 35/33 and go into negative values. The formula of calculating the nutritional score is unknown which makes this data set flawed.

The other reason of why this data set is not a 100 percent accurate is that the contributors of this data are not certified government bodies who have proofs of the reliability of this data.

```
[68]: foodFacts_3and5Removed.creator.dropna()[:50]
```

```
[68]: 0                date-limite-app
      1                date-limite-app
      2                        tacinte
      3                        tacinte
      4                       teolemon
      5                       bcatelin
      6                        sigoise
      7                       teolemon
      8                       sebleouf
      9     openfoodfacts-contributors
      10                       tacinte
      11                       tacinte
      12               date-limite-app
      13                         andre
      14                       tacinte
      15                       javichu
      16                        tacite
      17                       tacinte
      18                       tacinte
      19    openfoodfacts-contributors
      20    openfoodfacts-contributors
      21                          kyzh
      22                      malikele
      23                      malikele
```

```
24                  malikele
25                      kyzh
26                      kyzh
27    openfoodfacts-contributors
28             date-limite-app
29                    beniben
30             date-limite-app
31             date-limite-app
32             date-limite-app
33             date-limite-app
34             date-limite-app
35             date-limite-app
36             date-limite-app
37             date-limite-app
38             date-limite-app
39             date-limite-app
40             date-limite-app
41             date-limite-app
42             date-limite-app
43             date-limite-app
44             date-limite-app
45    openfoodfacts-contributors
46    openfoodfacts-contributors
47                   teolemon
48    openfoodfacts-contributors
49                   teolemon
Name: creator, dtype: object
```

[77]:

```
total_unique_creators = foodFacts_3and5Removed.creator.dropna().count()
total_unique_creators
```

[77]:

```
65435
```

[76]:

```
total_openfoodfacts_contributors = foodFacts_3and5Removed.
 ↪creator[foodFacts_3and5Removed.creator == "openfoodfacts-contributors"].index.
 ↪size
total_openfoodfacts_contributors
```

[76]:

```
15814
```

[78]:

```
total_openfoodfacts_contributor_percentage = ((total_openfoodfacts_contributors/
 ↪total_unique_creators)*100).round()
total_openfoodfacts_contributor_percentage
```

[78]:

```
24.0
```

[81]:

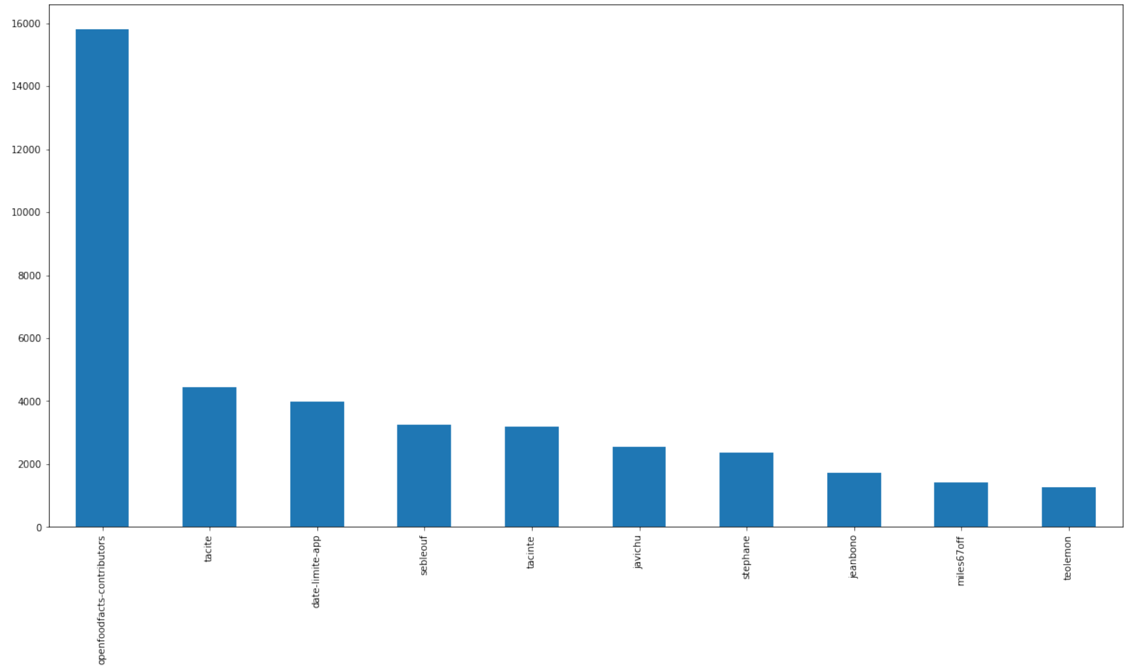
```
top10Creators = foodFacts_3and5Removed.creator.dropna().value_counts().head(10)
top10Creators
```

[81]:

```
openfoodfacts-contributors    15814
tacite                         4452
date-limite-app                3980
sebleouf                       3260
tacinte                        3189
javichu                        2544
stephane                       2367
jeanbono                       1721
miles67off                     1406
teolemon                       1277
Name: creator, dtype: int64
```

[86]:

```
bar_graph = top10Creators.plot(kind='bar',figsize=(20,10))
```



[88]:

```
modelling_df = foodFacts_3and5Removed[['fat_100g','nutrition_score_uk_100g']].
 ↪dropna()
modelling_df[:5]
```

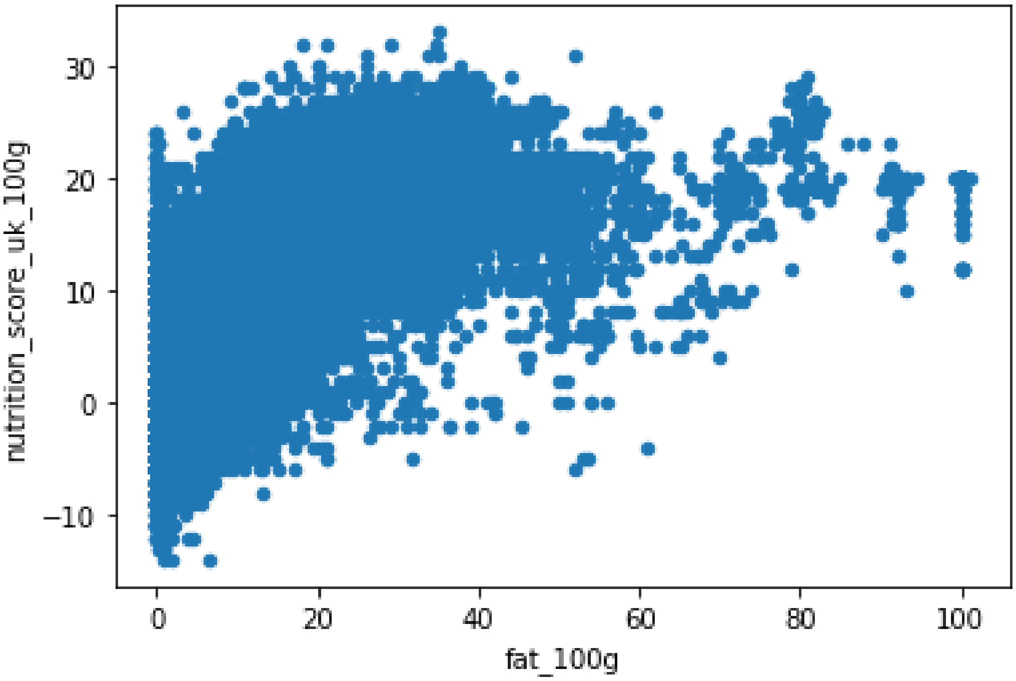
[88]:

```
    fat_100g  nutrition_score_uk_100g
10       7.0                     10.0
11       7.0                     10.0
13       0.0                      2.0
```

```
16        0.0                          2.0
22        0.0                         14.0
```

[89]:
```
modelling_df.plot.scatter(x='fat_100g', y='nutrition_score_uk_100g')
```

[89]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x12f0d33d0>
```



[90]:
```
mask = np.random.rand(len(modelling_df)) < 0.7
train = modelling_df[mask]
test = modelling_df[~mask]
```

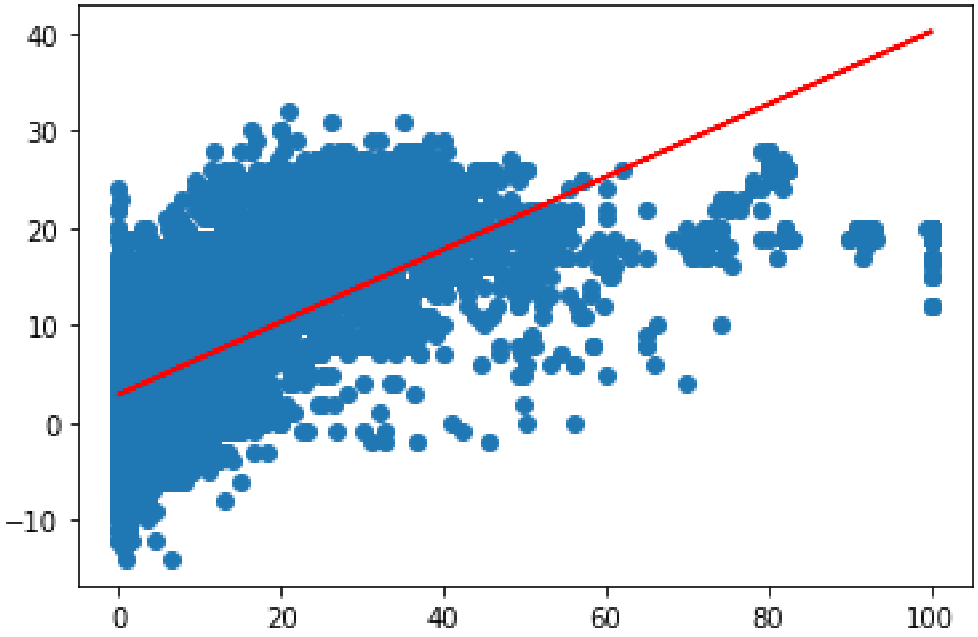
[91]:
```
from sklearn.linear_model import LinearRegression
x_train = train[['fat_100g']]
y_train = train['nutrition_score_uk_100g']
model = LinearRegression().fit(x_train,y_train)
```

[95]:
```
x_test = test[['fat_100g']]
y_test = test['nutrition_score_uk_100g']
predicted = model.predict(x_test)
model.score(x_test, y_test)
```

[95]:
```
0.4412427566489327
```

[98]:
```
from matplotlib import pyplot as plt
plt.scatter(test[['fat_100g']], test['nutrition_score_uk_100g'])
plt.plot(test[['fat_100g']], predicted, color='red')
```

[98]:
```
[<matplotlib.lines.Line2D at 0x12f83a350>]
```



These results do not surprise me since it is clear that items that are high in nutrition majorly have low to medium fat per 100 grams of item.

[101]:
```
interesting_df_1 =␣
 ↪foodFacts_3and5Removed[['main_category_en','nutrition_score_uk_100g','fat_100g']]
```

[122]:
```
interesting_df_2 = interesting_df_1[interesting_df_1['nutrition_score_uk_100g'].
 ↪isin([15, 28])]
final_interesting_df = interesting_df_2.
 ↪sort_values('fat_100g','nutrition_score_uk_100g',ascending=False)
```

```
        ---------------------------------------------------------------------------

        ValueError                                Traceback (most recent call last)

        <ipython-input-122-c649f322cbae> in <module>
          1 interesting_df_2 =␣
↪interesting_df_1[interesting_df_1['nutrition_score_uk_100g'].isin([15, 28])]
```

```
  ----> 2 final_interesting_df = interesting_df_2.
↪sort_values('fat_100g','nutrition_score_uk_100g',ascending=False)


      ~/opt/anaconda3/lib/python3.7/site-packages/pandas/core/frame.py in␣
↪sort_values(self, by, axis, ascending, inplace, kind, na_position)
     4972     ):
     4973         inplace = validate_bool_kwarg(inplace, "inplace")
  -> 4974         axis = self._get_axis_number(axis)
     4975
     4976         if not isinstance(by, list):


      ~/opt/anaconda3/lib/python3.7/site-packages/pandas/core/generic.py in␣
↪_get_axis_number(cls, axis)
      409             except KeyError:
      410                 pass
  --> 411         raise ValueError("No axis named {0} for object type {1}".
↪format(axis, cls))
      412
      413     @classmethod


      ValueError: No axis named nutrition_score_uk_100g for object type <class␣
↪'pandas.core.frame.DataFrame'>
```

```
[121]: final_interesting_df.head(60).
```

```
[121]:
                      main_category_en  nutrition_score_uk_100g  fat_100g
       19775  Plant-based foods and beverages                     15.0     100.0
       29594  Plant-based foods and beverages                     15.0     100.0
       4247   Plant-based foods and beverages                     15.0     100.0
       50271  Plant-based foods and beverages                     15.0     100.0
       33909  Plant-based foods and beverages                     15.0      90.0
       48353                          Spreads                     28.0      80.5
       22298                          Spreads                     28.0      80.0
       28355                      Fresh foods                     28.0      80.0
       46935                          Spreads                     28.0      80.0
       26339                          Spreads                     28.0      80.0
       29028                          Spreads                     28.0      80.0
       28356                          Spreads                     28.0      80.0
       41862                          Spreads                     28.0      80.0
       22294                      Fresh foods                     28.0      80.0
       34282                          Spreads                     28.0      80.0
       22297                          Spreads                     28.0      80.0
       20443                          Spreads                     28.0      80.0
```

```
15481                          Spreads                     28.0      80.0
35340                      Fresh foods                     28.0      80.0
35337                          Spreads                     28.0      80.0
14855                          Spreads                     28.0      80.0
62301                          Spreads                     28.0      80.0
63308          fr:Cuisson-des-aliments                     28.0      79.0
54893                        Groceries                     15.0      76.1
3143                         Groceries                     15.0      74.5
51086                              NaN                     15.0      74.0
63246  Plant-based foods and beverages                     15.0      70.0
2952                         Groceries                     15.0      60.7
7849   Plant-based foods and beverages                     15.0      60.3
53328  Plant-based foods and beverages                     15.0      59.4
50580                        Groceries                     15.0      57.0
64991  Plant-based foods and beverages                     15.0      54.0
23195                          Seafood                     15.0      53.2
41745                    Sugary snacks                     15.0      53.2
13280  Plant-based foods and beverages                     15.0      52.7
55107                    Sugary snacks                     15.0      51.9
34757                    Sugary snacks                     15.0      51.2
25947                    Sugary snacks                     15.0      51.0
49608                    Sugary snacks                     15.0      51.0
28018  Plant-based foods and beverages                     15.0      51.0
16141  Plant-based foods and beverages                     15.0      51.0
18203                    Sugary snacks                     15.0      51.0
38558                        Groceries                     15.0      51.0
40065  Plant-based foods and beverages                     15.0      50.8
23374  Plant-based foods and beverages                     15.0      50.4
30250  Plant-based foods and beverages                     15.0      50.4
16079  Plant-based foods and beverages                     15.0      50.0
62580                    Sugary snacks                     15.0      50.0
56881  Plant-based foods and beverages                     15.0      50.0
26346  Plant-based foods and beverages                     15.0      50.0
32009  Plant-based foods and beverages                     15.0      50.0
1619   Plant-based foods and beverages                     15.0      50.0
1632   Plant-based foods and beverages                     15.0      50.0
55753                              NaN                     15.0      50.0
3068                     Sugary snacks                     15.0      50.0
18834                    Sugary snacks                     15.0      50.0
60241  Plant-based foods and beverages                     15.0      49.7
48350                    Sugary snacks                     15.0      49.0
17791  Plant-based foods and beverages                     15.0      49.0
1620   Plant-based foods and beverages                     15.0      48.5
```

From the above mentioned dataframe, it seems like plant based foods & beverages, and spreads are a few product categories that have high nutrition as well as high fat.

Majority of the items with that have a high overall nutrition score from the dataset, also have fat content between 0 to 50 grams of fat per 100 grams of item(s), with maximum spread at 0 and least spread at 50.

[ ]:

```
```