SPRAWOZDANIE

Zajęcia: Nauka o danych I

Prowadzący: prof. dr hab. Vasyl Martsenyuk

Laboratorium Nr 1 Data 28.09.2024

Temat: "Wprowadzenie do narzędzi i środowiska pracy w analizie danych"

Wariant 6

Imię Nawisko Informatyka II stopień, stacjonarne, ?semestr, gr.???

1. Polecenie: wariant 1 zadania

Celem jest nabycie podstawowej znajomo'sci je zyka Python rozwia zuja c zadanie tworzenia i wy'swietlenia ramki danych odpowiednio do okre'slonego wariantu

2. Opis programu opracowanego (kody źródłowe, rzuty ekranu)

```
[128]: #Ladowanie biblioteki Pandas
          import pandas as pd
#zaimportuj modul pyplot z biblioteki matplotlib
          import matplotlib.pyplot as plt
[129]: #tworzenie ramki danych ze slownika
          data = {'col_1': [3, 2, 1, 0], 'col_2': ['a', 'b', 'c', 'd']}
          pd.DataFrame.from_dict(data)
[129]: col_1 col_2
         0 3 a
         1 2 b
          2 1 c
         3 0 d
[130]: #zachowanie ramki danych pobranych z pliku w formacie csv (xlsx)
          df = pd.read_csv('IHME_GBD_2019_CHEWING_TOB_1990_2019_DATA_Y2021M05D27.CSV', encoding='latin1')
         print(df.head())
          age_group_id age_group_name rei_id rei_name
8 15 to 19 332 Chewing tobacco
                                                                     rei_name metric_id \
           metric_name year_id val upper lower
0 Rate 1990 0.038740 0.055586 0.027147
1 Rate 1990 0.011356 0.017594 0.007770
2 Rate 1991 0.039253 0.055838 0.027608
3 Rate 1991 0.011516 0.017807 0.007906
4 Rate 1992 0.039863 0.056448 0.027800
```

```
[131]: #tworzenie ramki danych z Listy List
        lists_income = [["Adam", "Kuba", "Robert"],
        [4500, 5500, 6500]]
       pd.DataFrame(lists_income)
              0 1
       0 Adam Kuba Robert
       1 4500 5500 6500
[132]: #transponowanie (wymieniamy kalumny a wierszy)
        df1 = pd.DataFrame.transpose(pd.DataFrame(lists_income))
       0 1
0 Adam 4500
            Kuba 5500
        2 Robert 6500
[133]: #wy'swietli'c pierwsze 10 wierszy ramki danych
       measure_id measure_name location_id location_name sex_id sex_name age_group_id age_group_name rei_id rei_name metric_id metric_name year_id
                                                                                                                       Chewing
       0
                                                                                                                 332
                   5
                                              1
                                                        Global
                                                                    1
                                                                          Male
                                                                                            8
                                                                                                       15 to 19
                                                                                                                                       3
                                                                                                                                                          1990 0
                          Prevalence
                                                                                                                                                  Rate
                                                                                                       15 to 19
                                                                                                                  332
                                                                                                                                                          1990 0.
                          Prevalence
                                                                                                                       Chewing
       2
                   5
                          Prevalence
                                                        Global
                                                                    1
                                                                          Male
                                                                                            8
                                                                                                       15 to 19
                                                                                                                 332
                                                                                                                                       3
                                                                                                                                                  Rate
                                                                                                                                                          1991 0
                   5
                          Prevalence
                                                        Global
                                                                   2
                                                                         Female
                                                                                                       15 to 19
                                                                                                                                                  Rate
                                                                                                                                                          1991 0.
                                                                                                                       Chewing
       4
                   5
                          Prevalence
                                              1
                                                        Global
                                                                   1
                                                                          Male
                                                                                            8
                                                                                                       15 to 19
                                                                                                                 332
                                                                                                                                       3
                                                                                                                                                  Rate
                                                                                                                                                          1992 0.
                                                                                                                       Chewing
                                                                                                       15 to 19
                                                                                                                                                          1992 0.
                          Prevalence
                                                        Global
                                                                         Female
                                                                                                                                                  Rate
                                                                                                                       Chewing
       6
                   5
                          Prevalence
                                              1
                                                        Global
                                                                   1
                                                                          Male
                                                                                            8
                                                                                                       15 to 19
                                                                                                                 332
                                                                                                                                       3
                                                                                                                                                  Rate
                                                                                                                                                          1993 0.
                                                                                                                       Chewing
       7
                   5
                                                                   2
                                                                                                                 332
                          Prevalence
                                                        Global
                                                                         Female
                                                                                            8
                                                                                                       15 to 19
                                                                                                                                       3
                                                                                                                                                  Rate
                                                                                                                                                          1993 0.
                                                                                                                       Chewing
       8
                   5
                          Prevalence
                                                                           Male
                                                                                            8
                                                                                                       15 to 19
                                                                                                                  332
                                                                                                                                       3
                                                                                                                                                  Rate
                                                                                                                                                          1994 0.
                                                                                                                       Chewing
                   5
                          Prevalence
                                                        Global
                                                                                                       15 to 19
                                                                                                                  332
                                                                                                                                                          1994 0.
                                                                   2
                                                                         Female
                                                                                                                                                  Rate
[134]: #wy'swietli'c ostatnie 10 wierszy ramki danych
       df.tail(10)
[134]:
               measure_id measure_name location_id location_name sex_id sex_name age_group_id age_group_name rei_id rei_name metric_id metric_name year_
                                                                                                                             Chewing
       350540
                        5
                               Prevalence
                                                 522
                                                             Sudan
                                                                        3
                                                                                Both
                                                                                                27 Age standardized
                                                                                                                      332
                                                                                                                                             3
                                                                                                                                                       Rate
                                                                                                                                                               20
       350541
                                                 522
                                                                                                                      332
                               Prevalence
                                                             Sudan
                                                                                                    Age standardized
                                                                                                                                                       Rate
                                                                                                                             tobacco
                                                                                                                             Chewing
                        5
                                                                        3
       350542
                               Prevalence
                                                 522
                                                             Sudan
                                                                                Both
                                                                                                27 Age standardized
                                                                                                                      332
                                                                                                                                            3
                                                                                                                                                       Rate
                                                                                                                                                               20
       350543
                               Prevalence
                                                 522
                                                             Sudan
                                                                        3
                                                                                Both
                                                                                                    Age standardized
                                                                                                                      332
                                                                                                                                                       Rate
                                                                                                                                                               20
                                                                                                                             tobacco
                                                                                                                             Chewing
       350544
                        5
                               Prevalence
                                                 522
                                                             Sudan
                                                                        3
                                                                                Both
                                                                                                27
                                                                                                     Age standardized
                                                                                                                      332
                                                                                                                                            3
                                                                                                                                                       Rate
                                                                                                                                                               20
                                                                                                                             Chewing
       350545
                                                 522
                                                                        3
                                                                                Both
                                                                                                                      332
                                                                                                                                                               20
                               Prevalence
                                                             Sudan
                                                                                                27
                                                                                                     Age standardized
                                                                                                                                                       Rate
                                                                                                                             tobacco
       350546
                        5
                               Prevalence
                                                 522
                                                             Sudan
                                                                        3
                                                                                Both
                                                                                                     Age standardized
                                                                                                                      332
                                                                                                                                             3
                                                                                                                                                       Rate
                                                                                                                                                               20
                                                                                                                             tobacco
       350547
                        5
                                                 522
                                                                        3
                                                                                                                      332
                                                                                                                                            3
                                                                                                                                                              20
                               Prevalence
                                                             Sudan
                                                                                Both
                                                                                                27
                                                                                                    Age standardized
                                                                                                                                                       Rate
       350548
                        5
                               Prevalence
                                                 522
                                                                        3
                                                                                Both
                                                                                                     Age standardized
                                                                                                                      332
                                                                                                                                             3
                                                                                                                                                               20
                                                                                                                             tobacco
                                                                                                                            Chewing
       350549
                                                 522
                                                                                                                      332
                               Prevalence
                                                             Sudan
                                                                        3
                                                                                Both
                                                                                                27 Age standardized
                                                                                                                                            3
                                                                                                                                                       Rate
                                                                                                                                                               20
                                                                                                                             tobacco
       <
                                                                                                                                                               >
```

```
[135]: #wy'swietli'c informacje, o ramce danych
        df.info()
        <class 'pandas.core.frame.DataFrame';</pre>
        RangeIndex: 350550 entries, 0 to 350549
Data columns (total 16 columns):
        # Column
                            Non-Null Count
                                             Dtype
                             350550 non-null int64
            measure_id
            measure_name
location_id
                            350550 non-null object
                            350550 non-null int64
                            350550 non-null
350550 non-null
             location_name
                                             object
int64
             sex_id
             sex name
                            350550 non-null
                                             object
                            350550 non-null int64
350550 non-null object
             age_group_id
             age_group_name
                                            object
            rei_id
rei_name
metric_id
                            350550 non-null int64
                            350550 non-null
                                             object
                            350550 non-null
         11
            metric name
                            350550 non-null
                                            object
            year_id
val
         12
                            350550 non-null int64
                            350550 non-null float64
350550 non-null float64
            upper
         14
        15 lower 350550 non-null f. dtypes: float64(3), int64(7), object(6) memory usage: 42.8+ MB
                            350550 non-null float64
[136]: #wy'swietli'c, ile wierszy i kolumn znajduje sie w ramce danych
       df.shape
[136]: (350550, 16)
[137]: #wy'swietli'c informacje, statystyczna, o kolumnach Liczbowych (warto'sci
#niepowtarzalne, 'srednia, odchylenie standardowe, minimum, kwartyle,
        #maksimum)
       df.describe()
        measure_id location_id
                                            sex id age group id rei id metric id
                                                                                          year id
                                                                                                           val
                                                                                                                                       lower
                                                                                                                         upper
        count 350550.0 350550.000000 350550.000000 350550.000000 350550.000000 350550.000000 350550.000000 350550.000000 350550.000000 350550.000000
                     5.0 135.639024
                                           2.000000 29.421053 332.0
                                                                              3.0 2004.500000 0.020179
                                                                                                                                 0.011704
        mean
                                                                                                                      0.032878
                     0.0
                             98.136414
                                            0.816498
                                                         48.993427
                                                                       0.0
                                                                                  0.0
                                                                                           8.655454
                                                                                                         0.049594
                                                                                                                       0.070631
                                                                                                                                     0.034127
                                                                     332.0
                                                                                        1990.000000
                     5.0
                             1.000000
                                            1.000000
                                                        8.000000
                                                                                 3.0
                                                                                                        0.001051
                                                                                                                      0.001597
                                                                                                                                    0.000370
         min
                     5.0
                             62.000000
                                            1.000000
                                                         12.000000
                                                                                  3.0
                                                                                                         0.002300
                                                                                                                                     0.001063
         25%
                                                                     332.0
                                                                                        1997.000000
                                                                                                                       0.004438
                                                                                        2004.500000
        50%
                     5.0
                            122.000000
                                            2.000000
                                                        17.000000
                                                                     332.0
                                                                                 3.0
                                                                                                        0.004869
                                                                                                                      0.009064
                                                                                                                                    0.002401
         75%
                     5.0
                            182.000000
                                            3.000000
                                                         27.000000
                                                                     332.0
                                                                                 3.0
                                                                                        2012.000000
                                                                                                         0.014729
                                                                                                                       0.027427
                                                                                                                                     0.007094
                5.0 522.000000 3.000000 235.000000 332.0 3.0 2019.000000 0.610180
                                                                                                                      0.773804
                                                                                                                                    0.501187
        max
[138]: #my'swietli'c informacje, statystyczna, o kolumnach kategoryzowanych (ile
#unikalnych warto'sci, top - jaka jest najpopularniejsza warto's'c, freq
        #unikalnych warto'sci, top - ja
#jak cze.sto najpopularniejsza
        df.describe(include = 'all')
F1381:
               measure id measure name
                                          location id location name
                                                                           sex_id sex_name age_group_id age_group_name
                                                                                                                            rei id rei name metric id metric
         count
                 350550.0
                                350550 350550.000000
                                                             350550 350550.000000
                                                                                     350550 350550.000000
                                                                                                                   350550 350550.0
                                                                                                                                     350550 350550.0
                NaN 1 NaN
                                                       205 NaN
                                                                                   3 NaN
                                                                                                                   19 NaN
                     NaN
                           Prevalence
                                                NaN
                                                              Global
                                                                            NaN
                                                                                                     NaN
                                                                                                                   15 to 19
                                                                                                                              NaN
                                                                                                                                                  NaN
          top
                                                                                                                                     tobacco
                                         NaN
                          350550
                                                                    NaN 116850 NaN 18450
                                                               1710
                                                                                                                                     350550
                                                                                                                                                  NaN
         freq
                     NaN
                                                                                                                              NaN
         mean
                      5.0
                                   NaN
                                           135.639024
                                                               NaN
                                                                          2.000000
                                                                                       NaN
                                                                                                29.421053
                                                                                                                     NaN
                                                                                                                              332.0
                                                                                                                                       NaN
                                                                                                                                                   3.0
                                                                                                                             0.0
          std
                      0.0
                                   NaN
                                            98.136414
                                                               NaN
                                                                         0.816498
                                                                                       NaN
                                                                                                48 993427
                                                                                                                    NaN
                                                                                                                                        NaN
                                                                                                                                                   0.0
          min
                      5.0
                                   NaN
                                             1.000000
                                                               NaN
                                                                          1.0000000
                                                                                       NaN
                                                                                                 8,000000
                                                                                                                     NaN
                                                                                                                              332.0
                                                                                                                                        NaN
                                                                                                                                                   3.0
         25%
                      5.0
                                   NaN
                                            62.000000
                                                               NaN
                                                                          1.000000
                                                                                       NaN
                                                                                                 12.000000
                                                                                                                     NaN
                                                                                                                              332.0
                                                                                                                                        NaN
                                                                                                                                                   3.0
          50%
                      5.0
                                   NaN
                                            122.000000
                                                               NaN
                                                                          2.000000
                                                                                       NaN
                                                                                                 17.000000
                                                                                                                      NaN
                                                                                                                              332.0
                                                                                                                                                   3.0
                                                                                                                                       NaN
         75%
                      5.0
                                  NaN
                                           182.000000
                                                               NaN
                                                                         3.000000
                                                                                      NaN
                                                                                                27.000000
                                                                                                                     NaN
                                                                                                                             332.0
                                                                                                                                                   3.0
                      5.0
                                           522.000000
                                                               NaN
                                                                          3.000000
                                                                                                235.000000
                                                                                                                              332.0
                                                                                                                                        NaN
                                                                                                                                                   3.0
          max
                                                                                                                                       >
       <
```

```
[139]: #usuna 'c brakuja ce warto'sci w ramce danych
         df.dropna(inplace=True)
                measure_id measure_name location_id location_name sex_id sex_name 5 Prevalence 1 Global 1 Male
                                                                                  Female
                             Prevalence
                                                               Global
                             Prevalence
                                                                Global
                                                                                    Male
                                                  1
        3
4
                         5 Prevalence
5 Prevalence
                                                                           1
                       Global
                                                                                    Male
                                                               Sudan
         350545
                                                  522
522
         350546
                                                                Sudan
                                                                                    Both
                                                              Sudan
         350547
                                                    522
                                                                                    Both
                                                    522
522
                                                                 Sudan
                         5 Prevalence
5 Prevalence
        350549
                                                               Sudan
                                                                                    Both
                age_group_id age_group_name 8 15 to 19 8 15 to 19
                                                  rei_id rei_name
332 Chewing tobacco
                                                                  rei_name metric_id \
                                                      332 Chewing tobacco
                                                      332 Chewing tobacco
                                        15 to 19
                                                           Chewing tobacco
        4
                           8
                                       15 to 19
                                                      332 Chewing tobacco
                                                                                     3
                          27 Age standardized
                                                      332 Chewing tobacco
         350545
         350546
                                                      332
                                                           Chewing tobacco
                                                      332 Chewing tobacco
332 Chewing tobacco
         350547
        350549
                                                     332 Chewing tobacco
                metric_name year_id
                                                     upper
                                1990 0.038740 0.055586 0.027147
1990 0.011356 0.017594 0.007779
1991 0.039253 0.055838 0.027608
        0
                       Rate
                       Rate
                       Rate
                                 1991 0.011516 0.017807
                                                            0.007906
        4
                       Rate
                               1992 0.039863 0.056448 0.027800
                                2015 0.029518 0.035685 0.024255
         350545
                       Rate
                                2016 0.029855 0.036004 0.024500
2017 0.029768 0.035934 0.024428
2018 0.029760 0.035796 0.024462
         350546
350547
                       Rate
                       Rate
         350548
                       Rate
        350549
                                2019 0.029752 0.035857 0.024318
        [350550 rows x 16 columns]
[140]: #przedstawi'c wyb'or wierszy i kolumny u'zywaja c nazw oraz indeks'ow na
        #r'o'zne sposoby
        df["measure_name"] # zmienic nazwe po swoj zbior
[140]: 0
                   Prevalence
                   Prevalence
                   Prevalence
        4
                  Prevalence
         350545
         350546
                   Prevalence
         350547
                   Prevalence
                   Prevalence
        350549
                  Prevalence
         Name: measure_name, Length: 350550, dtype: object
[141]: df.measure_name # zmienic nozwe pod swoj zbior
[141]: 0
                   Prevalence
                   Prevalence
                   Prevalence
        4
                   Prevalence
        350545
                  Prevalence
        350546
                   Prevalence
         350547
                   Prevalence
        350549
                   Prevalence
        Name: measure_name, Length: 350550, dtype: object
[142]: df[["measure_name","age_group_name","year_id"]] # wybór kilku kolumn jednocześnie zmienic pod swoj zbior
[142]:
                measure_name age_group_name year_id
                    Prevalence
                                        15 to 19
                                                   1990
             0
        1 Prevalence
                                    15 to 19 1990
             2
                    Prevalence
                                      15 to 19 1991
        3 Prevalence 15 to 19 1991
                                         15 to 19
        350545
                    Prevalence Age standardized 2015
        350546 Prevalence Age standardized 2016
                                                   2017
        350547
                    Prevalence Age standardized
                    Prevalence Age standardized 2018
        350548
        350549
                    Prevalence Age standardized 2019
```

[143]: df.loc[:, "location_name":"val"] # wybierz wszystkie wiersze i kolumny od "Location" do "val" zmienic pod swoj zbior

[143]:		location_name	sex_id	sex_name	age_group_id	age_group_name	rei_id	rei_name	metric_id	metric_name	year_id	val
	0	Global	1	Male	8	15 to 19	332	Chewing tobacco	3	Rate	1990	0.038740
	1	Global	2	Female	8	15 to 19	332	Chewing tobacco	3	Rate	1990	0.011356
	2	Global	1	Male	8	15 to 19	332	Chewing tobacco	3	Rate	1991	0.039253
	3	Global	2	Female	8	15 to 19	332	Chewing tobacco	3	Rate	1991	0.011516
	4	Global	1	Male	8	15 to 19	332	Chewing tobacco	3	Rate	1992	0.039863
	_	_	_	_	_	_	_	_	_	_	_	_
	350545	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	2015	0.029518
	350546	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	2016	0.029855
	350547	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	2017	0.029768
	350548	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	2018	0.029760
	350549	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	2019	0.029752

350550 rows × 11 columns

[144]: df.loc[100:110, "location_name":"val"] #wybierz wiersze od 100-110 i kolumny od locationa_name do val

	location_name	sex_id	sex_name	age_group_id	age_group_name	rei_id	rei_name	metric_id	metric_name	year_id	va
100	Global	1	Male	9	20 to 24	332	Chewing tobacco	3	Rate	1995	0.05555
101	Global	2	Female	9	20 to 24	332	Chewing tobacco	3	Rate	1995	0.01208
102	Global	1	Male	9	20 to 24	332	Chewing tobacco	3	Rate	1996	0.05690
103	Global	2	Female	9	20 to 24	332	Chewing tobacco	3	Rate	1996	0.01232
104	Global	1	Male	9	20 to 24	332	Chewing tobacco	3	Rate	1997	0.05838
105	Global	2	Female	9	20 to 24	332	Chewing tobacco	3	Rate	1997	0.01256
106	Global	1	Male	9	20 to 24	332	Chewing tobacco	3	Rate	1998	0.05993
107	Global	2	Female	9	20 to 24	332	Chewing tobacco	3	Rate	1998	0.01280
108	Global	1	Male	9	20 to 24	332	Chewing tobacco	3	Rate	1999	0.06150
109	Global	2	Female	9	20 to 24	332	Chewing tobacco	3	Rate	1999	0.01304
110	Global	1	Male	9	20 to 24	332	Chewing tobacco	3	Rate	2000	0.06299

[145]: df.iloc[100:110, 0:3] #wybierz wiersze od 100-110 i kolumny od 0-2

[145]:		measure_id	measure_name	location_id
	100	5	Prevalence	1
	101	5	Prevalence	1
	102	5	Prevalence	1
	103	5	Prevalence	1
	104	5	Prevalence	1
	105	5	Prevalence	1
	106	5	Prevalence	1
	107	5	Prevalence	1
	108	5	Prevalence	1
	109	5	Prevalence	1

[146]: #przedstawi'c wyb'or wierszy z ramki danych pod warunkiem odno'snie #okre'slonej warto'sci kolumny

df[df["sex_name"] == "Both"]

[146]:		measure_id	measure_name	location_id	location_name	sex_id	sex_name	age_group_id	age_group_name	rei_id	rei_name	metric_id	metric_name	year_i
	60	5	Prevalence	1	Global	3	Both	8	15 to 19	332	Chewing tobacco	3	Rate	199
	61	5	Prevalence	1	Global	3	Both	8	15 to 19	332	Chewing tobacco	3	Rate	199
	62	5	Prevalence	1	Global	3	Both	8	15 to 19	332	Chewing tobacco	3	Rate	199
	63	5	Prevalence	1	Global	3	Both	8	15 to 19	332	Chewing tobacco	3	Rate	199
	64	5	Prevalence	1	Global	3	Both	8	15 to 19	332	Chewing tobacco	3	Rate	199
	_	_	_	_	_	_	_	_	_	_	_	_	_	
	350545	5	Prevalence	522	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	20.
	350546	5	Prevalence	522	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	20

- -

```
cardio = df[(df["sex_name"] == "Both")&(df["year_id"] == 2018) & (df["age_group_id"] <= 29)]
                 measure_id measure_name location_id location_name sex_id sex_name age_group_id age_group_name rei_id rei_name metric_id metric_name year_
                                                                                                                                     Chewing
            88
                                                                                                                               332
                                 Prevalence
                                                                  Global
                                                                              3
                                                                                      Both
                                                                                                        8
                                                                                                                    15 to 19
                                                                                                                                                      3
                                                                                                                                                                          20
                          5
                                                                                                                                                                  Rate
           178
                                                                                                                    20 to 24
                                                                                                                               332
                                  Prevalence
                                                                  Global
                                                                                                                                                                  Rate
                                                                                                                                     Chewing
                          5
                                                                                                       10
           268
                                                                             3
                                                                                      Both
                                                                                                                    25 to 29
                                                                                                                               332
                                                                                                                                                      3
                                                                                                                                                                          20
                                 Prevalence
                                                                  Global
                                                                                                                                                                  Rate
                                                                                                                                      tobacco
           358
                                  Prevalence
                                                                  Global
                                                                              3
                                                                                      Both
                                                                                                       11
                                                                                                                    30 to 34
                                                                                                                               332
                                                                                                                                                                  Rate
                                                                                                                                                                          20
           448
                          5
                                                                              3
                                                                                      Both
                                                                                                       12
                                                                                                                    35 to 39
                                                                                                                               332
                                                                                                                                                      3
                                 Prevalence
                                                       1
                                                                  Global
                                                                                                                                                                  Rate
                                                                                                                                                                          20
                                                                                                                                      tobacco
                                                                                                                                     Chewing
        349828
                          5
                                 Prevalence
                                                    522
                                                                  Sudan
                                                                              3
                                                                                      Both
                                                                                                       18
                                                                                                                    65 to 69
                                                                                                                               332
                                                                                                                                                      3
                                                                                                                                                                  Rate
                                                                                                                                                                          20
        349918
                                  Prevalence
                                                                  Sudan
                                                                                                                    70 to 74
                                                                                                                                                                          20
                                                                                                                                                                  Rate
                                                                                                                                     Chewing
        350008
                          5
                                                                                                       20
                                 Prevalence
                                                    522
                                                                  Sudan
                                                                             3
                                                                                      Both
                                                                                                                    75 to 79
                                                                                                                               332
                                                                                                                                                      3
                                                                                                                                                                  Rate
                                                                                                                                                                          20
                                                                                                                                      tobacco
        350098
                                                    522
                                                                  Sudan
                                                                              3
                                                                                      Both
                                                                                                       22
                                                                                                                    All Ages
                                                                                                                               332
                                                                                                                                                                          20
                                                                                                                               332
        350548
                          5
                                 Prevalence
                                                    522
                                                                  Sudan
                                                                              3
                                                                                      Both
                                                                                                           Age standardized
                                                                                                                                                      3
                                                                                                                                                                  Rate
                                                                                                                                                                          20
                                                                                                                                      tobacco
       3075 rows × 16 columns
        <
[143]: # wybra'c wiersze kt'ore zawieraja, w kolumnie kategoryzowanej okre'slone slowo
        df[df["location_name"].str.contains("States")]
[148]:
                 measure_id measure_name location_id location_name sex_id sex_name age_group_id age_group_name rei_id rei_name metric_id metric_name year_
                                                              Micronesia
                                                                                                                                     Chewing
                                                              (Federated
States of)
         30780
                          5
                                 Prevalence
                                                     25
                                                                                     Male
                                                                                                                    15 to 19
                                                                                                                               332
                                                                                                                                                      3
                                                                                                                                                                  Rate
                                                                                                                                                                          199
                                                              Micronesia
         30781
                                                                                                                               332
                          5
                                 Prevalence
                                                     25
                                                              (Federated
                                                                                   Female
                                                                                                        8
                                                                                                                    15 to 19
                                                                                                                                                      3
                                                                                                                                                                  Rate
                                                                                                                                                                          199
                                                               States of)
                                                             Micronesia
(Federated
         30782
                                                     25
                                                                                                                               332
                                  Prevalence
                                                                                                                    15 to 19
                                                                                                                                                                          199
                                                                                                                                                                  Rate
                                                                                                                                      tobacco
                                                               States of)
                                                              Micronesia
                                                                                                                                     Chewing
         30783
                                  Prevalence
                                                     25
                                                                                                        8
                                                                                                                    15 to 19
                                                                                                                               332
                                                                                                                                                      3
                                                                                                                                                                  Rate
                                                                                                                                                                          199
                                                               States of)
                                                              Micronesia
                                                                                                                                     Chewing
                                                              (Federated
States of)
         30784
                          5
                                 Prevalence
                                                     25
                                                                              1
                                                                                     Male
                                                                                                        8
                                                                                                                    15 to 19
                                                                                                                               332
                                                                                                                                                      3
                                                                                                                                                                  Rate
                                                                                                                                                                          199
                                                            United States
                                                                                                                                     Chewing
        347125
                          5
                                 Prevalence
                                                    422
                                                                              3
                                                                                                            Age standardized
                                                                                                                               332
                                                                                                                                                      3
                                                                                                                                                                          20
                                                                                                                                                                  Rate
                                                            Virgin Islands
                                                                                                                                      tobacco
                                                            United States
        347126
                          5
                                 Prevalence
                                                    422
                                                                              3
                                                                                      Both
                                                                                                           Age standardized
                                                                                                                               332
                                                                                                                                                      3
                                                                                                                                                                  Rate
                                                                                                                                                                          20
                                                            United States
        347127
                                                    422
                                                                                                                               332
                                                                                                                                                                  Rate
                                                            Virgin Islands
                                                                                                                                       tobacco
                                                            United States
                                                                                                                                     Chewing
        347128
                          5
                                 Prevalence
                                                    422
                                                                              3
                                                                                      Both
                                                                                                            Age standardized
                                                                                                                               332
                                                                                                                                                      3
                                                                                                                                                                  Rate
                                                                                                                                                                          20
                                                            Virgin Islands
                                                           United States
Virgin Islands
                                                                                                                                     Chewing tobacco
        347129
                          5
                                 Prevalence
                                                    422
                                                                             3
                                                                                      Both
                                                                                                       27 Age standardized
                                                                                                                               332
                                                                                                                                                      3
                                                                                                                                                                  Rate
                                                                                                                                                                          20
       5130 rows × 16 columns
        <
[149]: # wybra'c wiersze kt'ore nie zawieraja, w kolumnie kategoryzowanej okre'slone
        df[df["location_name"].str.contains("States") == False]
```

[147]: #przedstawi'c wyb'or wierszy z ramki danych pod warunkiem spelnienia

[149]:	measure	id	measure_name	location_id	location_name	sex_id	sex_name	age_group_id	age_group_name	rei_id	rei_name	metric_id	metric_name	year_i
	0	5	Prevalence	1	Global	1	Male	8	15 to 19	332	Chewing	3	Rate	199
	1	5	Prevalence	1	Global	2	Female	8	15 to 19	332	Chewing tobacco	3	Rate	199
	2	5	Prevalence	1	Global	1	Male	8	15 to 19	332	Chewing tobacco	3	Rate	199
	3	5	Prevalence	1	Global	2	Female	8	15 to 19	332	Chewing	3	Rate	199
	4	5	Prevalence	1	Global	1	Male	8	15 to 19	332	Chewing	3	Rate	199
	-	_	_	_	_	_	_	_	_	_	_	_	_	
	350545	5	Prevalence	522	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	20
	350546	5	Prevalence	522	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	20
	350547	5	Prevalence	522	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	20
	350548	5	Prevalence	522	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	20
	350549	5	Prevalence	522	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	20
	345420 rows × 16 c	olu	mns											
	<													>
[150]:	#utw'orz kolumno	e. r	na podstawie is	tnieja cyn										
	df["Tolerance_radf	ange	e"] = df["upper	"] - df["lo	wer"]									
[150]:	measure_	id	measure_name	location_id	location_name	sex_id	sex_name	age_group_id	age_group_name	rei_id	rei_name	metric_id	metric_name	year_i
	0	5	Prevalence	1	Global	1	Male	8	15 to 19	332	Chewing tobacco	3	Rate	199
	1	5	Prevalence	1	Global	2	Female	8	15 to 19	332	Chewing tobacco	3	Rate	199
	2	5	Prevalence	1	Global	1	Male	8	15 to 19	332	Chewing tobacco	3	Rate	199
	3	5	Prevalence	1	Global	2	Female	8	15 to 19	332	Chewing tobacco	3	Rate	199
	4	5	Prevalence	1	Global	1	Male	8	15 to 19	332	Chewing tobacco	3	Rate	199
	-	_	_	_	_	_	_	_	_	_	_	_	_	
	350545	5	Prevalence	522	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	20.
	350546	5	Prevalence	522	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	20
	350547	5	Prevalence	522	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	20
	350548	5	Prevalence	522	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	20
	350549	5	Prevalence	522	Sudan	3	Both	27	Age standardized	332	Chewing tobacco	3	Rate	20.
	350550 rows × 17 c	olu	mns											
	<													>
[151]:	#usu'n koLumne													
	df = df.drop("ag	ge_g	group_id", axis	= 1)										
[151]:									ne rei_id rei_na					val
	0	5	Prevalence	1	Global	1	Male	15 to	19 332 tobac	co	3	Rate	1990 0.038	740 0.
	1	5	Prevalence	1	Global	2	Female	15 to	tobac	co	3	Rate	1990 0.011	356 0.
	2	5	Prevalence	1	Global	1	Male	15 to	tobac	000	3	Rate	1991 0.039	253 0.
	3	5	Prevalence	1	Global	2	Female	15 to	19 332 Chewi		3	Rate	1991 0.011	516 0.
	4	5	Prevalence	1	Global	1	Male	15 to	19 332 Chewi		3	Rate	1992 0.039	863 0.
	-	_	_	_	_	-	_		Cherri	-	_	_	_	-
	350545	5	Prevalence	522	Sudan	3	Both	Age standardiz	tobac	co	3	Rate	2015 0.029	518 0.
									Chewi	no				

2]:		measure_id	measure_name	location_id	location_name	sex_id	sex	age_group_name	rei_id	rei_name	metric_id	metric_name	year_id	val	u
	0	5	Prevalence	1	Global	1	Male	15 to 19	332	Chewing tobacco	3	Rate	1990	0.038740	0.0
	1	5	Prevalence	1	Global	2	Female	15 to 19	332	Chewing tobacco	3	Rate	1990	0.011356	0.0
	2	5	Prevalence	1	Global	1	Male	15 to 19	332	Chewing tobacco	3	Rate	1991	0.039253	0.0
	3	5	Prevalence	1	Global	2	Female	15 to 19	332	Chewing tobacco	3	Rate	1991	0.011516	0.0
	4	5	Prevalence	1	Global	1	Male	15 to 19	332	Chewing tobacco	3	Rate	1992	0.039863	0.0
	_	_	_	_	_	_	_	_	_	_	_	_	_	_	
3	350545	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2015	0.029518	0.0
3	350546	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2016	0.029855	0.0
3	350547	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2017	0.029768	0.0
3	350548	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2018	0.029760	0.0
3	350549	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2019	0.029752	0.0
		5 ws × 16 colu		522	Sudan	3	Both	Age standardized	332		3	Rate	2019	0.029752	0.0
35				522	Sudan	3	Both	Age standardized	332		3	Rate	2019	0.029752	
35	50550 ro			522	Sudan	3	Both	Age standardized	332		3	Rate	2019	0.029752	
35	50550 rov	ws × 16 colu						Age standardized age_group_name		tobacco				0.029752 val	>
35 〈 3]: d	50550 rov	ws × 16 colu	mns							tobacco			year_id		>
35 〈 3]: d	50550 rov	ws × 16 colu	mns measure_name	location_id	location_name	sex_id	sex	age_group_name	rei_id	rei_name Chewing	metric_id	metric_name	year_id	val	0.0
35 〈 3]: d	50550 ro	ws × 16 colu measure_id	measure_name Prevalence	location_id	location_name	sex_id	sex Male	age_group_name	rei_id	rei_name Chewing tobacco Chewing tobacco Chewing tobacco	metric_id	metric_name Rate	year_id 1990	val 0.038740	0.0
35 〈 3]: d	0 1	ws × 16 columeasure_id	measure_name Prevalence Prevalence	location_id 1	location_name Global	sex_id 1 2	sex Male Female	age_group_name 15 to 19 15 to 19	rei_id 332 332	rei_name Chewing tobacco Chewing tobacco Chewing tobacco Chewing tobacco	metric_id 3	metric_name Rate	year_id 1990 1990	val 0.038740 0.011356	0.00
35 〈 3]: d	0 1 2	measure_id 5 5	measure_name Prevalence Prevalence Prevalence	location_id 1 1	location_name Global Global	sex_id 1 2	sex Male Female Male	age_group_name 15 to 19 15 to 19 15 to 19	rei_id 332 332 332	rei_name Chewing tobacco Chewing tobacco Chewing tobacco Chewing tobacco Chewing tobacco	metric_id 3 3	metric_name Rate Rate	year_id 1990 1990 1991	val 0.038740 0.011356 0.039253	0.00
35 〈 3]: d	0 1 2 3	measure_id 5 5 5	measure_name Prevalence Prevalence Prevalence Prevalence	location_id 1 1 1	location_name Global Global Global	sex_id 1 2 1	sex Male Female Male	age_group_name 15 to 19 15 to 19 15 to 19 15 to 19	rei_id 332 332 332	rei_name Chewing tobacco Chewing tobacco Chewing tobacco Chewing tobacco Chewing tobacco Chewing tobacco	metric_id 3 3 3 3	metric_name Rate Rate Rate	year_id 1990 1990 1991	val 0.038740 0.011356 0.039253 0.011516	0.0
35 () () () () () () () () () (0 1 2 3	measure_id 5 5 5	measure_name Prevalence Prevalence Prevalence Prevalence	location_id 1 1 1	location_name Global Global Global	sex_id 1 2 1	sex Male Female Male	age_group_name 15 to 19 15 to 19 15 to 19 15 to 19	rei_id 332 332 332	rei_name Chewing tobacco	metric_id 3 3 3 3	metric_name Rate Rate Rate	year_id 1990 1990 1991 1991 1992	val 0.038740 0.011356 0.039253 0.011516 0.039863	0.00
35 〈 〈 〈 〈 〈 〈 〉 〈 〉 〉 〈 〉 〉 〉 〉 〉 〉 〉 〉 〉 〉	0 1 2 3 4 —	measure_id 5 5 5 -	measure_name Prevalence Prevalence Prevalence Prevalence Prevalence	location_id	location_name Global Global Global Global	sex_id 1 2 1 2 1	sex Male Female Male Male Male	age_group_name 15 to 19	rei_id 332 332 332 332 -	rei_name Chewing tobacco	metric_id	metric_name Rate Rate Rate Rate	year_id 1990 1990 1991 1991 1992 2015	val 0.038740 0.011356 0.039253 0.011516 0.039863	0.0
355 〈 〈 〈 〈 〈 〈 〉 〈 〉 〉 〈 〉 〉 〉 〉 〉 〉 〉 〉 〉 〉	0 1 2 3 4 3350545	measure_id	measure_name Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	location_id 1 1 1 1 - 522	location_name Global Global Global Global Global Sudan	sex_id 1 2 1 2 1 - 3	sex Male Female Male Male Both	age_group_name 15 to 19 Age standardized	rei_id 332 332 332 332 332	rei_name Chewing tobacco	metric_id	metric_name Rate Rate Rate Rate Rate	year_id 1990 1990 1991 1991 1992 2015 2016	val 0.038740 0.011356 0.039253 0.011516 0.039863 - 0.029518	0.0 0.0 0.0 0.0 0.0
353; d 33; d 33;	0 1 2 3 4 — 4 — 53350546	measure_id	measure_name Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	location_id	location_name Global Global Global Global Global Sudan	sex_id	sex Male Female Male Female Male Both	age_group_name 15 to 19 15 to 19 15 to 19 15 to 19	rei_id 332 332 332 332 332 332	rei_name Chewing tobacco	metric_id	metric_name Rate Rate Rate Rate Rate Rate	year_id 1990 1990 1991 1991 1992 2015 2016 2017	val 0.038740 0.011356 0.039253 0.011516 0.039863 0.029518 0.029855	0.0 0.0 0.0 0.0 0.0

```
[154]: #zachowaj ramke, danych jako plik csv na komputerze
        df.to_csv("New_DataFrame.csv")
[155]: df
               measure_id measure_name location_id location_name sex_id sex age_group_name rei_id rei_name metric_id metric_name year_id
                                                                                                                                                     val
                                                                                                         Chewing
                                                  1
                                                                       1 Male
                                                                                          15 to 19 332
                                                                                                                                           1990 0.038740 0.05
                        5
                              Prevalence
                                                            Global
                                                                                                                         3
                                                                                                                                   Rate
                        5
                               Prevalence
                                                            Global
                                                                       2 Female
                                                                                          15 to 19 332
                                                                                                                        3
                                                                                                                                   Rate
                                                                                                                                           1990 0.011356 0.01
             2
                        5
                               Prevalence
                                                                       1 Male
                                                                                          15 to 19 332
                                                                                                                         3
                                                                                                                                           1991 0.039253 0.05
                                                                                          15 to 19
                                                                                                    332
                                                                                                                                           1991 0.011516 0.01
                               Prevalence
                                                                       2 Female
                                                                                                         Chewing
                        5
                               Prevalence
                                                  1
                                                                       1 Male
                                                                                          15 to 19 332
                                                                                                                         3
                                                                                                                                   Rate
                                                                                                                                           1992 0.039863 0.05
                                                            Global
                                                                                                         Chewing
                                                                                                                                          2015 0.029518 0.03
        350545
                        5
                              Prevalence
                                                522
                                                            Sudan
                                                                       3 Both Age standardized 332
                                                                                                                         3
                                                                                                                                   Rate
        350546
                               Prevalence
                                                522
                                                                       3 Both Age standardized
                                                                                                   332
                                                                                                                                   Rate
                                                                                                                                           2016 0.029855 0.03
        350547
                        5
                                                522
                                                                       3 Both
                                                                                  Age standardized 332
                                                                                                                         3
                                                                                                                                          2017 0.029768 0.03
        350548
                                                                                                                                          2018 0.029760 0.03
                               Prevalence
                                                522
                                                            Sudan
                                                                       3 Both Age standardized
                                                                                                   332
                                                                                                                                   Rate
                                                                                                         Chewing
                                                                                                                                          2019 0.029752 0.03
        350549
                        5
                              Prevalence
                                                522
                                                                      3 Both Age standardized 332
                                                                                                                        3
                                                            Sudan
                                                                                                                                   Rate
       350550 rows × 16 columns
       <
                                                                                                                                             >
[156]: #wy'swietli'c 'srednia (maksymalna,, minimalna,) warto's'c z jednej kolumny
       print(df["year_id"].mean())
print(df["year_id"].max())
print(df["year_id"].min())
        2004.5
2019
[157]: #wy'swietli'c liczbe, wierszy
        rows = len(df.axes[0])
[157]: 350550
[158]: #wy'swietli'c warto'sci unikatowe w kolumnie
       df['sex'].unique() # wartości unikatowe
[158]: array(['Male', 'Female', 'Both'], dtype=object)
[159]: #wy'swietli'c Liczby rekord'ow odpowiadaja cych do warto'sci
        df['sex'].value_counts() # Liczba rekordów pasujących do unikalnych wartości
[159]: sex
Male 116850
Female 116850
Both 116850
Name: count, dtype: int64
```

[160]: #sortowanie wierszy ramki danych według warto'sci okre'slonej kolumny #(maleja.co, rosna.co) df.sort_values(['val'], ascending = True) # sortowanie rosnąco [160]: sex age_group_name rei_id rei_name metric_id metric_name year_id measure_id measure_name location_id location_name sex_id Chewing 340439 332 2 Female 20 to 24 2019 0.001051 0.00 5 Prevalence 396 San Marino 3 Rate 340437 5 Prevalence 396 San Marino 2 Female 20 to 24 332 2018 0.001051 0.00 Chewing 340429 5 Prevalence 396 San Marino 2 Female 20 to 24 332 2014 0.001051 0.00 3 Rate Chewina 340431 5 Prevalence 396 San Marino 2 Female 20 to 24 332 Rate 2015 0.001053 0.00 Chewing 340435 5 Prevalence 396 San Marino 2 Female 20 to 24 332 3 2017 0.001054 0.00 Rate tobacco Chewing 8305 5 Prevalence 10 Cambodia 2 Female 90 to 94 332 3 Rate 2002 0.610154 0.71 5 Prevalence 2 Female 85 to 89 332 Rate 2003 0.610180 0.70 Chewing 8397 Prevalence Cambodia 2 Female 95 plus 332 2003 0.610180 0.70 5 10 3 Rate 8127 Prevalence 10 Cambodia 2 Female 80 to 84 332 Rate 2003 0.610180 0.70 Chewing 8307 5 Prevalence 10 Cambodia 2 Female 90 to 94 332 3 2003 0.610180 0.70 Rate 350550 rows × 16 columns < > [161]: df.sort_values(['val'], ascending = False) # sortowanie malejąco measure_id measure_name location_id location_name sex_id sex age_group_name rei_id rei_name metric_id metric_name year_id val uj 8217 Prevalence 10 Cambodia 2 Female 85 to 89 332 Rate 2003 0.610180 0.70 Chewing 5 10 2 Female 332 2003 0.610180 0.70 8397 Prevalence Cambodia 95 plus Rate Chewing 8127 5 Prevalence 10 Cambodia 2 Female 80 to 84 332 3 Rate 2003 0.610180 0.70 Chewing 2 Female 332 2003 0.610180 0.70 8307 Prevalence Cambodia 90 to 94 tobacco Chewing 5 10 2 Female 90 to 94 332 2002 0.610154 0.71 8305 Prevalence Cambodia 3 Rate 340435 5 Prevalence 396 San Marino 2 Female 20 to 24 332 2017 0.001054 0.00 340431 5 2 Female 20 to 24 332 Prevalence 396 San Marino Rate 2015 0.001053 0.00 Chewing tobacco 340429 5 Prevalence 396 San Marino 2 Female 20 to 24 332 3 Rate 2014 0.001051 0.00 Chewing 340437 Prevalence 396 San Marino 2 Female 20 to 24 332 2018 0.001051 0.00 Rate tobacco Chewing 340439 5 Prevalence 396 San Marino 2 Female 20 to 24 332 3 Rate 2019 0.001051 0.00 350550 rows × 16 columns <

				ead(10) # 10 No										
2]: n	neasure_id r	measure_name	location_id	location_name	sex_id	sex	age_group_name		Chaurina	metric_id	metric_name	year_id	d va	al
340439	5	Prevalence	396	San Marino	2	Female	20 to 24	332	Chewing tobacco	3	Rate	2019	9 0.00105	1
340437	5	Prevalence	396	San Marino	2	Female	20 to 24	332	Chewing tobacco	3	Rate	2018	0.00105	1
340429	5	Prevalence	396	San Marino	2	Female	20 to 24	332	Chewing tobacco	3	Rate	2014	4 0.00105	1
340431	5	Prevalence	396	San Marino	2	Female	20 to 24	332	Chewing tobacco	3	Rate	2015	5 0.00105	3
340435	5	Prevalence	396	San Marino	2	Female	20 to 24	332	Chewing tobacco	3	Rate	2017	7 0.00105	4
340433	5	Prevalence	396	San Marino	2	Female	20 to 24	332	Chewing tobacco	3	Rate	2016	5 0.00105	4
340427	5	Prevalence	396	San Marino	2	Female	20 to 24	332	Chauina	3	Rate	2013	3 0.00105	5
340425	5	Prevalence	396	San Marino	2	Female	20 to 24	332	Chewing	3	Rate	2012	2 0.00105	7
340423	5	Prevalence	396	San Marino	2	Female	20 to 24	332	Chewing	3	Rate	2011	1 0.00106	50
340421	5	Prevalence	396	San Marino		Female	20 to 24	332	Chewing	3			0.00106	
				241111111111111111111111111111111111111	_		25.024		tobacco		1,012	2011	0.00100	-
(]: df.sort_v	calume (f. 'val	'l promotion	- Enles) i	head(10) # 10 /	Vojenje	ieruch								
				ocation_name s			ge_group_name r	eiid ı	rei name r	netric id r	metric name v	ear id	val	
8217	5	Prevalence	10	Cambodia		emale	85 to 89	332	Chewing	3	Rate		0.610180	0
8397	5	Prevalence	10	Cambodia		emale		332	Chewing	3	Rate		0.610180	
							95 plus		tobacco Chewing					
8127	5	Prevalence	10	Cambodia		emale	80 to 84	332	tobacco Chewing	3	Rate		0.610180	
8307	5	Prevalence	10	Cambodia	2 F	emale	90 to 94	332	tobacco	3	Rate	2003	0.610180	0
8305	5	Prevalence	10	Cambodia	2 F	emale	90 to 94	332	Chewing tobacco	3	Rate	2002	0.610154	0
8395	5	Prevalence	10	Cambodia	2 F	emale	95 plus	332	Chewing tobacco	3	Rate	2002	0.610154	0
8215	5	Prevalence	10	Cambodia	2 F	emale	85 to 89	332	Chewing tobacco	3	Rate	2002	0.610154	0
8125	5	Prevalence	10	Cambodia	2 F	emale	80 to 84	332	Chewing tobacco	3	Rate	2002	0.610154	0
8129	5	Prevalence	10	Cambodia	2 F	emale	80 to 84	332	Chewing tobacco	3	Rate	2004	0.609981	0
8309	5	Prevalence	10	Cambodia	2 F	emale	90 to 94	332	Chewing tobacco	3	Rate	2004	0.609981	0
<														
				arto'sci okre's	:Lonej	koLumny								
		slonych warto	-	d','Hungary']))	1 -1	(10	(vel)							
							age group name i	rei id	rei name ı	metric id i	metric name	ear id	val	
349432	5	Prevalence	522	Sudan	1	Male	45 to 49	332	Chewing	3	Rate	2016	0.070387	0
349438	5	Prevalence	522	Sudan	1	Male	45 to 49	332	Chewing	3	Rate	2019	0.070178	0
349434	5	Prevalence	522	Sudan		Male	45 to 49	332	tobacco Chewing	3	Rate		0.070171	
									Chewing					
349436	5	Prevalence	522	Sudan		Male	45 to 49	332	tobacco Chewing	3	Rate		0.070170	
349430	5	Prevalence	522	Sudan	1	Male	45 to 49	332	tobacco	3	Rate	2015	0.069704	0
349428	5	Prevalence	522	Sudan	1	Male	45 to 49	332	Chewing	3	Rate	2014	0.069080	0
349342	5	Prevalence	522	Sudan	1	Male	40 to 44	332	Chewing tobacco	3	Rate	2016	0.068875	0
349348	5	Prevalence	522	Sudan	1	Male	40 to 44	332	Chewing tobacco	3	Rate	2019	0.068630	0
	5	Prevalence	522	Sudan	1	Male	40 to 44	332	Chewing tobacco	3	Rate	2017	0.068616	0.
349344														

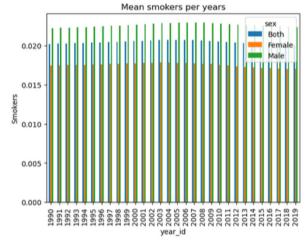
```
[165]: #grupowanie wierszy według warto'sci kolumny kategoryzowanej, potem
#- u'srednienie warto'sci wszystkich kolumn w grupie - MultiIndex
       df_new = df.groupby(['location_name','sex']).agg({'val': 'mean',
                                                    'upper': 'mean',
'lower': 'mean'})
[165]:
                             val upper lower
      location_name sex
        Afghanistan Both 0.036491 0.057880 0.021572
                  Female 0.005077 0.010820 0.002041
                    Male 0.068753 0.111568 0.039311
        Albania Both 0.005864 0.009785 0.003375
                  Female 0.003130 0.006646 0.001277
               _ _ _ _ _
          Zambia Female 0.014409 0.030814 0.005678
                  Male 0.008172 0.015062 0.003965
         Zimbabwe Both 0.008677 0.017079 0.003970
                  Female 0.010854 0.023365 0.004162
                    Male 0.003754 0.006850 0.001870
      615 rows × 3 columns
[166]: #grupowanie wierszy według warto'sci kolumny kategoryzowanej, potem
#- u'srednienie warto'sci dla pewnych kolumn, liczba warto'sci i mediana
       #dla pozostalych kolumn w grupach
       df_new
[166]:
                             val upper sex_id
                             mean median count median count
      location_name sex
        Afghanistan Both 0.036491 0.055316 570 3.0 570
                  Female 0.005077 0.010201 570 2.0 570
                    Male 0.068753 0.108540 570 1.0 570
       Albania Both 0.005864 0.009446 570 3.0 570
                  Female 0.003130 0.005227 570 2.0 570
           Zambia Female 0.014409 0.027697 570 2.0 570
                   Male 0.008172 0.011570 570 1.0 570
         Zimbabwe Both 0.008677 0.007834 570 3.0 570
                  Female 0.010854 0.011297 570 2.0 570
                    Male 0.003754 0.006515 570 1.0 570
      615 rows × 5 columns
[167]: #wy'swietli'c nazwy kolumn indeksu zlo'zonego
      df_new.columns
```

```
[168]: #sortowa'c kolumne, indeksu zlo'zonego
        df_new['upper']['median'].sort_values(ascending = True)
[168]: location_name sex
France Both
                                   0.002428
        France
Spain
                        Both
                                   0.002435
        Netherlands
                        Both
                                   0.002438
         Portugal
        Luxembourg
                      Both
                                  0.002460
                                  0 386419
        India
                       Male
                                   0.419482
                        Male
        Bhutan
        Bangladesh
                       Both
                                   0.425999
                        Male
                                   0.503675
        Bangladesh
                                   0.546821
                        Female
        Name: median, Length: 615, dtype: float64
[169]: #stworzy'c tabele, przystawna, (pivot table) na podstawie ramki danych
        df_pivot = df.pivot_table(values='val', index='location_name', columns='sex', aggfunc='mean',
                                margins=False, dropna=True, fill_value=None) # tabeta podsumowująca
F1691:
                                  sex Both Female Male
                          location_name
                            Afghanistan 0.036491 0.005077 0.068753
                              Albania 0.005864 0.003130 0.008647
                                Algeria 0.043335 0.006325 0.078118
                       American Samoa 0.023841 0.014986 0.032602
                               Andorra 0.001846 0.001504 0.002224
        Venezuela (Bolivarian Republic of) 0.011944 0.004963 0.019783
                    Viet Nam 0.026296 0.034622 0.008547
                                Yemen 0.105273 0.075236 0.132851
                             Zambia 0.011422 0.014409 0.008172
                             Zimbabwe 0.008677 0.010854 0.003754
       205 rows × 3 columns
[170]: #wy'swietli'c indeksy i kolumny tabeli przystawnej
         print(df_pivot.index)
         print(df pivot.columns)
        Index(['Afghanistan', 'Albania', 'Algeria', 'American Samoa', 'Andorra',
    'Angola', 'Antigua and Barbuda', 'Argentina', 'Armenia', 'Australia',
        'United States Virgin Islands', 'United States of America', 'Uruguay',
'Uzbekistan', 'Vanuatu', 'Venezuela (Bolivarian Republic of)',
'Viet Nam', 'Yemen', 'Zambai', 'Zimbabue'],
dtype='object', name='location_name', length=205)
Index(['Both', 'Female', 'Male'], dtype='object', name='sex')
[171]: #utw'orz indeks zlo'zony tabeli przystawnej i wy'swietl go
        df pivot
                                  Both Female
        location_name year_id
          Afghanistan 1990 0.032164 0.005649 0.062808
                       1991 0.032468 0.005646 0.062973
                          1992 0.032946 0.005642 0.063175
                       1993 0.033264 0.005640 0.063388
                          1994 0.033423 0.005639 0.063608
            Zimbabwe 2015 0.009535 0.012373 0.003522
                       2016 0.009718 0.012664 0.003525
```

[172]: Text(0.5, 1.0, 'Smokers over the years.')

Smokers over the years. sex 0.00235 Female 0.00230 0.00225 0.00220 0.00215 0.00210 1990 1995 2000 2005 2010 2015 2020 year_id

[173]: Text(0.5, 1.0, 'Mean smokers per years')



```
[175]:

#przedstawi'c sposoby La czenia ramek danych za pomoca, metod merge i
#concat

df2 = pd.read_csv('IHME_GBO_2019_CHEWING_TOB_1990_2019_CIG_PC_Y2021M05027.CSV')
df2
```

[175]:		measure_na	me locati	on_id	location_nam	e sex_io	l sex	_name	age_group_id	age_grou	p_name	year_id	val	upper	lowe	er
	0	Cigarette-Equivale Per Cas		1	Globa	al :	3	Both	29	19	5+ years	1990	1484.256502	1531.563739	1436.15187	18
	1	Cigarette-Equivale Per Cap		1	Globa	al :	3	Both	29	15	5+ years	2019	1113.754663	1161.263946	1069.76582	28
	2	Cigarette-Equivale Per Cap		4	Southeast Asia, Eas Asia, and Oceani		3	Both	29	19	5+ years	1990	1827.374739	1959.359086	1692.90086	53
	3	Cigarette-Equivale		4	Southeast Asia, Eas Asia, and Oceani		}	Both	29	19	5+ years	2019	1778.846098	1927.560165	1640.64587	75
	4	Cigarette-Equivale	nts	5	East Asi	a :	3	Both	29	19	5+ years	1990	2089.743405	2267.199999	1908.30151	10
	_		_	_				_	_		_	_	_	_		_
	461	Cigarette-Equivale Per Cap		422	United States Virgi		3	Both	29	15	5+ years	2019	648.023999	821.503370	497.64562	12
	462	Cigarette-Equivale		435	South Suda	n :	3	Both	29	19	5+ years	1990	337.087376	431.023296	256.27543	36
	463	Cigarette-Equivale	nts	435	South Suda	n i	3	Both	29	19	5+ years	2019	317.318526	410.888023	241.95792	23
	464	Per Cap Cigarette-Equivale	nts	522	Suda	n i	ı	Both	29	11	5+ years	1990	170.613365	200.058577	142.37114	12
		Per Cap Cigarette-Equivale														
	465	Per Cap		522	Suda	n :	3	Both	29	1:	5+ years	2019	227.024745	279.919615	180.77312	19
	466 ro	ws × 11 columns														
[176]:	df															
[176]:		measure_id r	neasure_na	me locatio	n_id location_n	ame sex	_id	sex	age_group_nam	ne rei_id			ic_id metric_	name year_i	d val	uj
		0 5	Prevaler	nce	1 G	lobal	1	Male	15 to 1	19 332	Chewir		3	Rate 199	0.038740	0.05
		1 5	Prevaler	nce	1 G	lobal	2 1	Female	15 to 1	19 332	Chewir		3	Rate 199	0.011356	0.01
		2 5	Prevaler	ice	1 G	lobal	1	Male	15 to 1	19 332	Chewir tobac		3	Rate 199	0.039253	0.05
		3 5	Prevaler	ıce	1 G	lobal	2 1	Female	15 to 1	19 332	Chewir		3	Rate 199	0.011516	0.01
		4 5	Prevaler	nce	1 G	lobal	1	Male	15 to 1	19 332	Chewir		3	Rate 199	2 0.039863	0.05
					_	_	-	_				_	_			
	35054	45 5	Prevaler	nce	522 S	udan	3	Both	Age standardize	ed 332	Chewir tobacc		3	Rate 201	0.029518	0.03
	35054	46 5	Prevaler	nce	522 S	udan	3	Both	Age standardize	ed 332	Chewir		3	Rate 201	5 0.029855	0.03
	35054	47 5	Prevaler	nce	522 S	udan	3	Both	Age standardize	ed 332	Chewir		3	Rate 201	7 0.029768	0.03
	35054	48 5	Prevaler	ıce	522 Si	udan	3	Both	Age standardize	ed 332	Chewir		3	Rate 201	3 0.029760	0.03
	35054	49 5	Prevaler	nce	522 Si	udan	3	Both	Age standardize	ed 332	Chewir	ıg	3	Rate 201	0.029752	0.03
	350550	0 rows × 16 colum	ins								tobacc	.0				
	<	TO COIGHT														>
[177]:		rename(columns =		val_Cigare	ette-Equivalent	s Per Ca	pita'	, 'uppe	r': 'upper_Cig	arette-Ed	quivalent	s Per C	apita', 'low	er':'deaths_	lower_Cigar	rette
	df.d	rop('sex_id', ax	is = 1)													>

me	easure_id	measure_name	location_id	location_name	sex	age_group_name	rei_id	rei_name	metric_id	metric_name	year_id	val	uppe
0	5	Prevalence	1	Global	Male	15 to 19	332	Chewing tobacco	3	Rate	1990	0.038740	0.05558
1	5	Prevalence	1	Global	Female	15 to 19	332	Chewing tobacco	3	Rate	1990	0.011356	0.01759
2	5	Prevalence	1	Global	Male	15 to 19	332	Chewing tobacco	3	Rate	1991	0.039253	0.05583
3	5	Prevalence	1	Global	Female	15 to 19	332	Chewing tobacco	3	Rate	1991	0.011516	0.01780
4	5	Prevalence	1	Global	Male	15 to 19	332	Chewing tobacco	3	Rate	1992	0.039863	0.0564
_	_	_	_	_	-	_	_	_	_	_	_	_	
350545	5	Prevalence	522	Sudan	Both	Age standardized	332	Chewing tobacco	3	Rate	2015	0.029518	0.0350
350546	5	Prevalence	522	Sudan	Both	Age standardized	332	Chewing tobacco	3	Rate	2016	0.029855	0.0360
350547	5	Prevalence	522	Sudan	Both	Age standardized	332	Chewing tobacco	3	Rate	2017	0.029768	0.035
350548	5	Prevalence	522	Sudan	Both	Age standardized	332	Chewing tobacco	3	Rate	2018	0.029760	0.035
350549	5	Prevalence	522	Sudan	Both	Age standardized	332	Chewing tobacco	3	Rate	2019	0.029752	0.035
350550 rows	× 15 colu	mns											
<													
df_all = p	pd.merge(d	if, df2, on = [['location_id	', 'location_	name', 'a	age_group_name', '	year_id	i'], how =	'inner')				
df_a11													
measure_	_id measu	re_name_x loca	ation_id loca	tion_name sex	_id_x se	x age_group_name	e rei_id	rei_name	metric_id	_ upper	lower To	olerance_rar	nge
	columns												
0 rows × 23													
0 rows × 23													
0 rows × 23		1:15,:]											
df_all_1 = df_all_1	= df.iloc[[1:15,:]	ation_id loca	tion_name sex	_id s	sex age_group_nan	ne rei_i	id rei_nam	e metric_i	d metric_na	me year	_id v	/al
df_all_1 = df_all_1	= df.iloc[ation_id loca	tion_name sex	_id s			Chawin	9			id v	
df_all_1 = df_all_1 measur	= df.iloc[re_id mea	sure_name loca			2 Fem		19 33	Chewin tobacc	g o	3 R	late 19		56 0.
df_all_1 = df_all_1 measur	= df.iloc[re_id mea 5	sure_name loca	1	Global	2 Fem	ale 15 to	19 33 19 33	Chewin tobacc	9 0 9 0	3 R	late 19	90 0.0113	56 0.
df_all_1 : df_all_1 measur 1	= df.iloc[re_id mea 5	prevalence Prevalence Prevalence	1 1 1	Global Global	2 Fem. 1 M. 2 Fem.	ale 15 to ale 15 to	19 33 19 33 19 33	Chewin tobacc Chewin tobacc Chewin tobacc Chewin tobacc Chewin tobacc	9 0 9 0 9	3 R 3 R	late 19	90 0.0113: 91 0.0392:	56 0. 53 0.
df_all_1 = df_all_1 = measur 1 2	= df.iloc[re_id mea 5 5 5	Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1	Global Global Global	2 Fem. 1 M. 2 Fem. 1 M.	ale 15 to ale 15 to ale 15 to ale 15 to	19 33 19 33 19 33	Chewin tobacc	9 0 9 0 9 0	3 R 3 R 3 R	late 19	90 0.0113: 91 0.0392: 91 0.0115	56 0. 53 0. 16 0.
df_all_1 =	= df.iloc[re_id mea 5 5 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1 1 1	Global Global Global Global	2 Fem 1 M 2 Fem 1 M 2 Fem	ale 15 to	19 33 19 33 19 33 19 33	32 Chewin tobacc	g 9 9 0 9 0 9	3 R 3 R 3 R 3 R	late 19	90 0.01138 91 0.03928 91 0.0115 92 0.03988 92 0.01168	56 0 53 0 16 0 63 0
df_all_1 =	= df.iloc[re_id mea 5 5 5 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1 1 1 1 1	Global Global Global Global Global	2 Fem 1 M 2 Fem 1 M 2 Fem 1 M	ale 15 to	19 33 19 33 19 33 19 33 19 33	Chewin tobacc	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	3 R 3 R 3 R 3 R	late 19	90 0.0113 91 0.0392 91 0.0115 92 0.0398 92 0.0116 93 0.0405	56 0 53 0 16 0 63 0 85 0
df_all_1 = df_all_1 = df_all_1 = measur 1	= df.iloc[re_id mea 5 5 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1 1 1	Global Global Global Global	2 Fem 1 M 2 Fem 1 M 2 Fem	ale 15 to	19 33 19 33 19 33 19 33 19 33	Chewin tobacc	9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0	3 R 3 R 3 R 3 R	late 19	90 0.01138 91 0.03928 91 0.0115 92 0.03988 92 0.01168	56 0 53 0 16 0 63 0 85 0
df_all_1 =	= df.iloc[re_id mea 5 5 5 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1 1 1 1 1	Global Global Global Global Global	2 Fem 1 M 2 Fem 1 M 2 Fem 1 M 2 Fem 1 M 2 Fem	ale 15 to	19 33 19 33 19 33 19 33 19 33 19 33	Chewin tobacc	9 9 9 9 9 9 9 9 9 9	3 R R 3 R R 3 R R 3 R R 3 R R 3 R R R 3 R R	late 19	90 0.0113 91 0.0392 91 0.0115 92 0.0398 92 0.0116 93 0.0405	56 0 53 0 16 0 63 0 85 0 08 0
df_all_1 df_all_1 df_all_1 measur 1	= df.iloc[re_id mea 5 5 5 5 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1 1 1 1 1	Global Global Global Global Global Global Global	2 Fem 1 M 2 Fem 1 M 2 Fem 1 M 2 Fem 1 M 2 Fem	ale 15 to	19 33 19 33 19 33 19 33 19 33 19 33 19 33	Chewin tobacc Ch	9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0	3 R 3 R 3 R 3 R 3 R 3 R 3 R	19	990 0.0113! 991 0.0392! 991 0.0115! 992 0.0398! 992 0.0116! 993 0.0405!	556 0 53 0 116 0 63 0 685 0 685 0 53 0
df_all_1 = df_all_1 = df_all_3 = measur 1	= df.iloc[re_id mea 5 5 5 5 5 5	Prevalence	1 1 1 1 1 1 1	Global Global Global Global Global Global Global	2 Fem. 1 M.	ale 15 to	19 33 19 33 19 33 19 33 19 33 19 33 19 33	Chewin tobacc	9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0	3 R 3 R 3 R 3 R 3 R 3 R 3 R 3 R	late 19	90 0.0113: 91 0.0392: 91 0.0115 92 0.0398: 93 0.0405: 93 0.0118: 94 0.0411:	56 0 53 0 16 0 63 0 85 0 85 0 53 0
df_all_1 =	= df.iloc[re_id mea 5 5 5 5 5 5 5 5 5 5 5	Prevalence	1 1 1 1 1 1 1 1	Global Global Global Global Global Global Global Global	2 Fem. 1 M.	ale 15 to	119 3: 119 3: 119 3: 119 3: 119 3: 119 3: 119 3:	Chewin tobacc Ch	9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0 9 0	3 R 3 R 3 R 3 R 3 R 3 R 3 R 3 R 3 R	19 late 19 lat	990 0.01131 991 0.03921 991 0.0115 992 0.03981 992 0.01161 993 0.04051 993 0.04111 994 0.0120	556 0. 553 0. 116 0. 163 0. 163 0. 153 0. 110 0. 163 0.
df_s1l_1 =	= df.iloc[re_id mea 5 5 5 5 5 5 5 5	prevalence	1 1 1 1 1 1 1 1	Global Global Global Global Global Global Global Global Global	2 Fem. 1 M.	ale 15 to	119 3:	Chewin tobacc	90 90 90 90 90 90 90 90 90 90 90 90 90 9	3 R 3 R 3 R 3 R 3 R 3 R 3 R 3 R 3 R 3 R	19 late 19 lat	990 0.01131 991 0.03925 991 0.0115 992 0.03986 992 0.01166 993 0.04056 993 0.04176 994 0.0120 995 0.04176	56 0.53 0.116 0.63 0.08 0.08 0.110 0
df_all_1 =	= df.iloc[re_id mea 5 5 5 5 5 5 5 5 5 5 5 5 5	prevalence	1 1 1 1 1 1 1 1 1	Global	2 Fem. 1 M.	ale 15 to	119 3: 11	Chewin tobacc Ch		3 R R 3 R R 3 R R 3 R R 3 R R 3 R R 3 R R 3 R R 3 R R 3 R R 3 R R 3 R R 3 R R 3 R R 3 R R	late 19	990 0.0113: 991 0.0392: 991 0.0115 992 0.0398: 993 0.0405(993 0.0418: 994 0.0120 995 0.0417(995 0.0121	56 0. 553 0. 553 0. 663
df_all_1 =	= df.iloc[re_id mea 5 5 5 5 5 5 5 5 5 5 5 5 5	prevalence	1 1 1 1 1 1 1 1 1 1	Global	2 Fem 1 M	ale 15 to	119 3: 11	Chewin tobacc Ch		3 R 3 R 3 R 3 R 3 R 3 R 3 R 3 R 3 R 3 R	19	90 0.0113: 91 0.0392: 91 0.0115 92 0.0398: 93 0.0405: 93 0.0418: 94 0.0120 95 0.0417: 96 0.0423	56 0.0 53 0.0 116 0.0 163 0.0 185 0.0 185 0.0 163 0.0 163 0.0 163 0.0 164 0.0 164 0.0 165 0.0
df_211_1 =	= df.iloc[re_id mea 5 5 5 5 5 5 5 5 5 5 5 5 5	prevalence Prevalence	1 1 1 1 1 1 1 1 1 1	Global	2 Fem 1 M 2 Fem	ale 15 to	119 3: 11	Chewin tobacc Ch		3 R 3 R 3 R 3 R 3 R 3 R 3 R 3 R 3 R 3 R	19	990 0.0113: 991 0.0392: 991 0.0115 992 0.0398: 992 0.0116: 993 0.0405: 994 0.0417: 994 0.0120: 995 0.0121: 996 0.0423:	56 0. 53 0. 53 0. 116 0. 63 0. 685 0. 685 0. 686 0. 687 0. 688 0. 688 0. 688 0. 688 0. 688 0. 688 0. 688 0.

[181]:		nozeuro id	mancura nama	location id	location_name	cov id	cov :	age_group_name	roi id	roi namo	notric id	matric name	waar id	val	upp
[101].	350535	5	Prevalence	522	Sudan		sex a	Age standardized	332	Chewing	3	Rate		0.028086	0.0340
	350536	5	Prevalence	522	Sudan		Both	Age standardized	332	Chewing	3	Rate		0.028140	
	350537	5	Prevalence	522	Sudan		Both	Age standardized	332	tobacco Chewing	3	Rate		0.028231	
	350538	5	Prevalence	522	Sudan		Both	Age standardized	332	Chewing	3	Rate		0.028319	
	350539	5	Prevalence	522	Sudan		Both	Age standardized	332	tobacco Chewing	3	Rate		0.028395	
	350540	5	Prevalence	522	Sudan		Both	Age standardized	332	Chewing	3	Rate		0.028506	
	350541	5	Prevalence	522	Sudan		Both	Age standardized	332	Chewing	3	Rate	2011	0.028617	0.03440
	350542	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing	3	Rate	2012	0.028790	0.0348
	350543	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing	3	Rate	2013	0.028989	0.0351
	350544	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing	3	Rate	2014	0.029232	0.03539
	350545	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2015	0.029518	0.03560
	350546	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2016	0.029855	0.03600
	350547	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2017	0.029768	0.0359
	350548	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2018	0.029760	0.03579
	350549	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2019	0.029752	0.0358!
	<														>
[182]:	# axis =	1, potem wa all_new.sh	edług kolumn	df_all_2],	axis = 0) # po	rtącz ra	mki dan	nych: jeśli axis	= 0, to	po wiersz	ach, jeśli				
[182]:		neasure_id	measure_name	location_id	location_name	sex_id	sex	age_group_name	e rei_id	rei_name	metric_id	metric_name	year_id	d va	al uj
	1	5	Prevalence	1	Global	2	Female	15 to 19	9 332	Chewing	3	Rate	1990	0 0.01135	6 0.01
	2	5	Prevalence	1	Global	1	Male	15 to 19	9 332	Chewing tobacco	3	Rate	199	1 0.03925	3 0.05
	3	5	Prevalence	1	Global	2	Female	15 to 19	9 332	Chewing tobacco	3	Rate	199	1 0.01151	6 0.01
	4	5	Prevalence	1	Global	1	Male	15 to 19	9 332	Chewing tobacco	3	Rate	1990	2 0.03986	3 0.05
	5	5	Prevalence	1	Global	2	Female	15 to 19							
	6	5	Prevalence						9 332	Chewing tobacco	3	Rate	199.	2 0.01168	35 0.01
	7			1	Global	1	Male			tobacco	3			2 0.01168 3 0.04050	
		5	Prevalence	1	Global		Male Female	15 to 19	9 332	Chewing tobacco	3	Rate	1993		0.05
	8	5					Female	15 to 19	9 332 9 332	Chewing tobacco	3	Rate	1993	3 0.04050	08 0.05
	9		Prevalence	1	Global	2	Female	15 to 19	9 332 9 332 9 332	tobacco Chewing tobacco Chewing tobacco Chewing tobacco Chewing	3	Rate Rate	1993 1993 1994	3 0.04050 3 0.01185	08 0.05 53 0.01 53 0.05
		5	Prevalence Prevalence	1	Global	2	Female Male Female	15 to 19 15 to 19 15 to 19	9 332 9 332 9 332 9 332	tobacco Chewing tobacco Chewing tobacco Chewing tobacco Chewing tobacco Chewing tobacco	3 3 3	Rate Rate Rate	1993 1993 1994 1994	3 0.04050 3 0.01185 4 0.04115	08 0.05 53 0.01 53 0.05 10 0.01
	9	5	Prevalence Prevalence Prevalence	1 1	Global Global	2 1 2	Female Male Female	15 to 19 15 to 19 15 to 19 15 to 19	9 332 9 332 9 332 9 332	tobacco Chewing tobacco	3 3 3 3 3 3 3	Rate Rate Rate Rate	2 1993 2 1994 2 1994 2 1994 2 1995	3 0.04050 3 0.01185 4 0.04115 4 0.01201	08 0.05 53 0.01 53 0.05 10 0.01 53 0.05
	9	5 5 5	Prevalence Prevalence Prevalence Prevalence	1 1 1	Global Global Global	2 1 2	Female Male Female Male	15 to 19	9 332 9 332 9 332 9 332 9 332	tobacco Chewing tobacco	3 3 3 3 3	Rate Rate Rate Rate	1993 1994 1994 1994 1999	3 0.04050 3 0.01185 4 0.04115 4 0.01201 5 0.04176	08 0.05 53 0.01 53 0.05 10 0.01 53 0.05 46 0.01
	9 10 11	5 5 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1	Global Global Global	2 1 2 1 2	Female Male Female Male	15 to 19	9 332 9 332 9 332 9 332 9 332 9 332	tobacco Chewing tobacco	3 3 3 3 3 3 3 3 3	Rate Rate Rate Rate Rate	1993 1993 1994 1994 1994 1999	3 0.04050 3 0.01185 4 0.04115 4 0.01201 5 0.04176 5 0.01214	08 0.05 53 0.01; 53 0.05 10 0.01; 53 0.05 46 0.01;
	9 10 11 12	5 5 5 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1 1	Global Global Global Global	2 1 2 1 2	Female Male Female Male Female Male	15 to 19	9 332 9 332 9 332 9 332 9 332 9 332	tobacco Chewing tobacco	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Rate Rate Rate Rate Rate Rate	1993 1994 1994 1995 1995 1996 1996	3 0.04050 3 0.01185 4 0.04115 4 0.01201 5 0.04176 5 0.01214 6 0.04234	08 0.05 53 0.01; 53 0.05 10 0.01; 53 0.05 46 0.01; 41 0.05
	9 10 11 12 13	5 5 5 5 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1 1 1 1	Global Global Global Global Global	2 1 2 1 2 1 2	Female Male Female Male Female Male	15 to 19	9 332 9 332 9 332 9 332 9 332 9 332 9 332	tobacco Chewing tobacco	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Rate Rate Rate Rate Rate Rate Rate Rate	1993 1993 1994 1994 1995 1996 1996 1997	3 0.04050 3 0.01185 4 0.04115 5 0.04176 5 0.01214 6 0.04234 6 0.01225	08 0.05 53 0.01; 53 0.05; 10 0.01; 53 0.05; 46 0.01; 11 0.05; 17 0.05;
	9 10 11 12 13	5 5 5 5 5 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1 1 1	Global Global Global Global Global Global	2 1 2 1 2 1 2	Female Male Female Male Female Male Male	15 to 19 Age standardized	9 332 9 332 9 332 9 332 9 332 9 332 9 332 9 332 1 332	tobacco Chewing tobacco	3 3 3 3 3 3 3 3 3	Rate Rate Rate Rate Rate Rate Rate Rate	1992 1993 1994 1994 1995 1996 1996 1996 1996 1997	3 0.04050 3 0.01185 4 0.04115 4 0.01201 5 0.04176 5 0.01214 6 0.04234 6 0.01225 7 0.04291	0.08 0.05 33 0.01 33 0.05 30 0.05 30 0.05 30 0.05 30 0.05 31 0.05 32 0.05 33 0.05 34 0.05 35 0.05 36 0.01 37 0.05 38 0.05 3
	9 10 11 12 13 14 350535	5 5 5 5 5 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1 1 1 1 1 522	Global Global Global Global Global Global Global Global	2 1 2 1 2 1 2 1 3	Female Male Female Male Female Male Both	15 to 19 Age standardized	9 332 9 332 9 332 9 332 9 332 9 332 9 332 9 332 1 332	tobacco Chewing tobacco	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Rate Rate Rate Rate Rate Rate Rate Rate	1993 1993 1994 1994 1995 1996 1996 1997 2006	3 0.04050 3 0.01185 4 0.04115 5 0.04176 5 0.01214 6 0.04234 6 0.01225 7 0.04291 5 0.02808	0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05

```
[183]: #pokaza'c dodawanie nowych kolumn zo pomoca, operacji matematy-
#cznych

df_all_new["smokers"] = df_all_new["val"] + df_all_new["upper"] + df_all_new["lower"]

df_all_new["%valfromUpper"] = df_all_new["val"] / df_all_new["upper"]*100

df_all_new["%valfromUpper"] = df_all_new["val"] / df_all_new["lower"]*100
```

[184]: df_all_new

	measure_id	measure_name	location_id	location_name	sex_id	sex	age_group_name	rei_id	rei_name	metric_id	metric_name	year_id	val	
1	5	Prevalence	1	Global	2	Female	15 to 19	332	Chewing tobacco	3	Rate	1990	0.011356	0.0
2	5	Prevalence	1	Global	1	Male	15 to 19	332	Chewing tobacco	3	Rate	1991	0.039253	0.
3	5	Prevalence	1	Global	2	Female	15 to 19	332	Chewing tobacco	3	Rate	1991	0.011516	0
4	5	Prevalence	1	Global	1	Male	15 to 19	332	Chewing tobacco	3	Rate	1992	0.039863	0
5	5	Prevalence	1	Global	2	Female	15 to 19	332	Chewing tobacco	3	Rate	1992	0.011685	(
6	5	Prevalence	1	Global	1	Male	15 to 19	332	Chewing tobacco	3	Rate	1993	0.040508	
7	5	Prevalence	1	Global	2	Female	15 to 19	332	Chewing tobacco	3	Rate	1993	0.011853	
8	5	Prevalence	1	Global	1	Male	15 to 19	332	Chewing tobacco	3	Rate	1994	0.041153	
9	5	Prevalence	1	Global	2	Female	15 to 19	332	Chewing tobacco	3	Rate	1994	0.012010	
10	5	Prevalence	1	Global	1	Male	15 to 19	332	Chewing tobacco	3	Rate	1995	0.041763	
11	5	Prevalence	1	Global	2	Female	15 to 19	332	Chewing tobacco	3	Rate	1995	0.012146	
12	5	Prevalence	1	Global	1	Male	15 to 19	332	Chewing tobacco	3	Rate	1996	0.042341	
13	5	Prevalence	1	Global	2	Female	15 to 19	332	Chewing tobacco	3	Rate	1996	0.012256	
14	5	Prevalence	1	Global	1	Male	15 to 19	332	Chewing tobacco	3	Rate	1997	0.042917	
350535	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2005	0.028086	
350536	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2006	0.028140	
350537	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2007	0.028231	
350538	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2008	0.028319	
350539	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2009	0.028395	
350540	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2010	0.028506	
350541	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2011	0.028617	
350542	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2012	0.028790	
350543	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2013	0.028989	
350544	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2014	0.029232	
350545	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2015	0.029518	
350546	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2016	0.029855	
350547	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2017	0.029768	
350548	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2018	0.029760	
350549	5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	3	Rate	2019	0.029752	
<														

```
[185]: #przedstawi'c na przykladzie dodawanie nowych kolumn z pomoca, funkcji
#lambda
year_id = [2017,2018,2019]
df_all_new = df_all_new.reset_index()
df_all_new['Is2017-2019'] = df_all['year_id'].apply(lambda x: True if x in year_id else False )
df_all_new
```

x measure_id 1 5 2 5 3 5 4 5 5 5 6 5 7 5 8 5 9 5 1 5 2 5 3 5	measure_name Prevalence	location_id	Global Global Global Global Global Global Global Global Global	2 1 2 1 2 1 2	Female Male Female Male Female Male Female Female Female	15 to 19	rei_id 332 332 332 332 332 332 332 3	Chewing tobacco	metric_nam Rai	e 1990 le 1991 le 1992 le 1992 le 1993 le 1993 le 1994	val 0.011356 0.039253 0.011516 0.039863 0.011685 0.040508 0.04153 0.041153	0.01759 0.05583 0.01780 0.05644 0.01842 0.05702 0.01867
2 5 3 5 4 5 5 5 6 5 7 5 8 5 9 5 1 5 2 5	Prevalence	1 1 1 1 1 1 1 1 1	Global Global Global Global Global Global Global	1 2 1 2 1 2 2	Male Female Male Female Male Female Female	15 to 19	332 332 332 332 332 332 332	tobacco Chewing tobacco	- Rai	e 1991 e 1992 e 1992 e 1993 e 1993 e 1994	0.039253 0.011516 0.039863 0.011685 0.040508 0.011853 0.041153	0.05583 0.01780 0.05644 0.01842 0.05702 0.01867
3 5 4 5 5 5 6 5 7 5 8 5 9 5 0 5 1 5 2 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1 1 1 1 1 1	Global Global Global Global Global	2 1 2 1 2 1 2	Female Male Female Male Female Male	15 to 19	332 332 332 332 332 332	tobacco Chewing tobacco	_ Rai _ Rai _ Rai _ Rai _ Rai _ Rai	e 1991 le 1992 le 1992 le 1993 le 1993 le 1994	0.011516 0.039863 0.011685 0.040508 0.011853	0.01780 0.05644 0.01844 0.05700 0.01861 0.05728
4 5 5 5 6 5 7 5 8 5 9 5 0 5 1 5 2 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1 1 1 1 1	Global Global Global Global	1 2 1 2 1 2	Male Female Male Female Male	15 to 19 15 to 19 15 to 19 15 to 19 15 to 19	332 332 332 332 332	tobacco Chewing tobacco	Rai Rai Rai Rai Rai	e 1992 e 1992 e 1993 e 1993	0.039863 0.011685 0.040508 0.011853 0.041153	0.05644 0.01845 0.05700 0.01866 0.05725
5 5 5 6 5 7 5 8 5 9 5 0 5 1 5 2 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1 1	Global Global Global Global	2 1 2 1	Female Male Female Male	15 to 19 15 to 19 15 to 19 15 to 19	332 332 332 332	tobacco Chewing tobacco Chewing tobacco Chewing tobacco Chewing tobacco Chewing tobacco Chewing tobacco	Rai	e 1992 e 1993 e 1993 e 1994	0.011685 0.040508 0.011853 0.041153	0.0184 0.0570 0.0186 0.0572
6 5 7 5 8 5 9 5 0 5 1 5	Prevalence Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1 1	Global Global Global	1 2 1 2	Male Female Male Female	15 to 19 15 to 19 15 to 19	332 332 332	tobacco Chewing tobacco Chewing tobacco Chewing tobacco Chewing tobacco Chewing tobacco	Ra:	e 1993 e 1993 e 1994	0.040508 0.011853 0.041153	0.0570 0.0186 0.0572
7 5 8 5 9 5 0 5 1 5 2 5	Prevalence Prevalence Prevalence Prevalence Prevalence	1 1 1	Global Global Global	1 2	Female Male Female	15 to 19	332 332	tobacco Chewing tobacco Chewing tobacco Chewing tobacco	Rar	e 1993 e 1994	0.011853	0.0186
5 9 5 0 5 1 5 2 5	Prevalence Prevalence Prevalence Prevalence	1 1	Global Global	1 2	Male Female	15 to 19	332	Chewing tobacco Chewing tobacco	Rat	e 1994	0.041153	0.0572
9 5 0 5 1 5 2 5	Prevalence Prevalence Prevalence	1	Global	2	Female			tobacco Chewing tobacco				
0 5 1 5 2 5	Prevalence Prevalence	1	Global			15 to 19	332	tobacco	Rat	e 1994	0.012010	0.0189
1 5	Prevalence			1								
2 5		1	en :		Male	15 to 19	332	Chewing tobacco	Ra	e 1995	0.041763	0.0573
	Prevalence		Global	2	Female	15 to 19	332	Chewing tobacco	Rar	e 1995	0.012146	0.0189
3 5		1	Global	1	Male	15 to 19	332	Chewing tobacco	Rar	e 1996	0.042341	0.0575
	Prevalence	1	Global	2	Female	15 to 19	332	Chewing tobacco	Rar	e 1996	0.012256	0.0192
4 5	Prevalence	1	Global	1	Male	15 to 19	332	Chewing tobacco	Rar	e 1997	0.042917	0.0581
5 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Rar	e 2005	0.028086	0.0340
6 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Rar	e 2006	0.028140	0.0341
7 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Rar	e 2007	0.028231	0.0342
8 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Ran	e 2008	0.028319	0.0343
9 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Ra	e 2009	0.028395	0.0344
0 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Ra	e 2010	0.028506	0.0344
1 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Ra	e 2011	0.028617	0.0344
2 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Ran	e 2012	0.028790	0.0348
3 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Ra	e 2013	0.028989	0.0351
4 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Ran	e 2014	0.029232	0.0353
5 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Ran	e 2015	0.029518	0.0356
5 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Rai	e 2016	0.029855	0.0360
7 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Ra	e 2017	0.029768	0.0359
8 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Rai	e 2018	0.029760	0.0357
9 5	Prevalence	522	Sudan	3	Both	Age standardized	332	Chewing tobacco	Rar	e 2019	0.029752	0.0358
	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	5 5 Prevalence 5 5 Prevalence 7 5 Prevalence 8 5 Prevalence 9 5 Prevalence 0 5 Prevalence 1 5 Prevalence 2 5 Prevalence 2 5 Prevalence 3 5 Prevalence 4 5 Prevalence 5 Prevalence 5 Prevalence 6 5 Prevalence 7 5 Prevalence 7 5 Prevalence 8 5 Prevalence 9 7 5 Prevalence 9 Prevalence	5	5 5 Prevalence 522 Sudan 5 5 Prevalence 522 Sudan 7 5 Prevalence 522 Sudan 8 5 Prevalence 522 Sudan 9 5 Prevalence 522 Sudan 0 5 Prevalence 522 Sudan 1 5 Prevalence 522 Sudan 2 5 Prevalence 522 Sudan 3 5 Prevalence 522 Sudan 4 5 Prevalence 522 Sudan 5 5 Prevalence 522 Sudan 6 5 Prevalence 522 Sudan 7 5 Prevalence 522 Sudan 8 5 Prevalence 522 Sudan 9 5 Prevalence 522 Sudan	5 5 Prevalence 522 Sudan 3 5 5 Prevalence 522 Sudan 3 7 5 Prevalence 522 Sudan 3 8 5 Prevalence 522 Sudan 3 9 5 Prevalence 522 Sudan 3 0 5 Prevalence 522 Sudan 3 1 5 Prevalence 522 Sudan 3 2 5 Prevalence 522 Sudan 3 3 5 Prevalence 522 Sudan 3 4 5 Prevalence 522 Sudan 3 5 5 Prevalence 522 Sudan 3 6 5 Prevalence 522 Sudan 3 7 5 Prevalence 522 Sudan 3 8 5 Prevalence 522 Sudan	5 5 Prevalence 522 Sudan 3 Both 5 5 Prevalence 522 Sudan 3 Both 7 5 Prevalence 522 Sudan 3 Both 8 5 Prevalence 522 Sudan 3 Both 9 5 Prevalence 522 Sudan 3 Both 0 5 Prevalence 522 Sudan 3 Both 1 5 Prevalence 522 Sudan 3 Both 2 5 Prevalence 522 Sudan 3 Both 3 5 Prevalence 522 Sudan 3 Both 4 5 Prevalence 522 Sudan 3 Both 5 5 Prevalence 522 Sudan 3 Both 6 5 Prevalence 522 Sudan 3 Both	5 5 Prevalence 522 Sudan 3 Both Age standardized 5 5 Prevalence 522 Sudan 3 Both Age standardized 7 5 Prevalence 522 Sudan 3 Both Age standardized 8 5 Prevalence 522 Sudan 3 Both Age standardized 9 5 Prevalence 522 Sudan 3 Both Age standardized 0 5 Prevalence 522 Sudan 3 Both Age standardized 1 5 Prevalence 522 Sudan 3 Both Age standardized 2 5 Prevalence 522 Sudan 3 Both Age standardized 3 5 Prevalence 522 Sudan 3 Both Age standardized 4 5 Prevalence 522 Sudan 3 Both Age standardized	5 5 Prevalence 522 Sudan 3 Both Age standardized 332 5 5 Prevalence 522 Sudan 3 Both Age standardized 332 7 5 Prevalence 522 Sudan 3 Both Age standardized 332 8 5 Prevalence 522 Sudan 3 Both Age standardized 332 9 5 Prevalence 522 Sudan 3 Both Age standardized 332 9 5 Prevalence 522 Sudan 3 Both Age standardized 332 1 5 Prevalence 522 Sudan 3 Both Age standardized 332 2 5 Prevalence 522 Sudan 3 Both Age standardized 332 3 5 Prevalence 522 Sudan 3 Both Age standardized 332 <t< td=""><td>5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 8 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 8 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 8 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 8 Prevalence 522 Sudan 3 Both Age st</td><td> Social Content</td><td> Section</td><td> Social Content</td></t<>	5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 5 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 6 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 7 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 8 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 8 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 8 Prevalence 522 Sudan 3 Both Age standardized 332 Chewing tobacco 8 Prevalence 522 Sudan 3 Both Age st	Social Content	Section	Social Content

(

```
[187]: #przedstawi'c mo'zliwo'sci pracy z du'zymi plikami przy u'zyciu argumentu
           print("CHUNK DF")
               print(chunk_df.head())
                                             measure_name location_id \

    Cigarette-Equivalents Per Capita
    Cigarette-Equivalents Per Capita
    Cigarette-Equivalents Per Capita

               Cigarette-Equivalents Per Capita
           4 Cigarette-Equivalents Per Capita
              location_name sex_id sex_name age_group_id \
Global 3 Both 29
Global 3 Both 29
Southeast Asia, East Asia, and Oceania 3 Both 29
Southeast Asia, East Asia, and Oceania 3 Both 29
East Asia 3 Both 29

        age_group_name
        year_id
        val
        upper
        lower

        15+ years
        1990
        1484.256502
        1531.563739
        1436.151878

        15+ years
        2019
        1113.754663
        1161.263946
        1069.765328

        15+ years
        1990
        1827.374739
        1993.399866
        1692.908363

        15+ years
        2019
        1778.846998
        1927.560165
        1640.645875

        15+ years
        1990
        2689.743405
        2267.199999
        1908.301510

[189]: new_df = pd.DataFrame() # pusta ram
            for chunk_df in pd.read_csv('IHME_GBD_2019_CHEWING_TOB_1990_2019_CIG_PC_Y2021M05D27.CSV', chunksize = 50000):
                 result = chunk_df.groupby(['location_name', 'year_id']).agg({'val': 'mean',
                 new_df = pd.concat([new_df,result])
[189]:
           location_name year_id
               Afghanistan 1990 274.126957 320.558021
                            2019 444.334632 546.171500
                    Albania 1990 1894.040861 2224.731864
                      2019 1941.384044 2305.846372
                    Algeria 1990 1259.079364 1381.657971
                     Yemen 2019 1391.887788 1712.648491
                   Zambia 1990 308.165288 343.536927
                   2019 296.250416 366.554416
                Zimbabwe 1990 931.803728 1130.361142
              2019 898.367226 1132.376771
          462 rows × 2 columns
                                                                                                                                                                                                       ◎ ↑ ↓ 占 ♀ ■
```

3. Wnioski

Biblioteka Pandas w łątwy sposób pozwala manipulować danymi. Biblioteka Matplotlib pozwala na proste wizualizacje danych.