# hubert_mentel

November 7, 2024

[1]:
```
#ladowanie biblioteki Pandas
import pandas as pd
```

[3]:
```
#tworzenie ramki danych ze slownika

data = {'kolumna_1': [1, 2, 3, 4], 'kolumna_2': ['a', 'b', 'c', 'd'],␣
 ↪'kolumna_3': ['1a', '2b', '3c', '4d']}

pd.DataFrame.from_dict(data)
```

[3]:

| | kolumna_1 | kolumna_2 | kolumna_3 |
|---|---|---|---|
| 0 | 1 | a | 1a |
| 1 | 2 | b | 2b |
| 2 | 3 | c | 3c |
| 3 | 4 | d | 4d |

[5]:
```
#zachowanie ramki danych pobranych z pliku w formacie csv (xlsx)

df = pd.read_csv('IHME_ORB_C19HSDS_2020_Y2020M12D03.CSV')
print(df)
```

```
         SbjNum NetDuration InterviewTimeVStart InterviewTimeVEnd  \
0     133476254     0:10:14     7/17/2020 13:53   7/17/2020 14:26
1     133281846     0:22:16     7/10/2020 12:53   7/10/2020 14:47
2     133280780     0:19:23     7/10/2020 12:35   7/10/2020 12:54
3     133281834     0:10:11     7/10/2020 10:21   7/10/2020 10:32
4     133491249     0:09:59      7/18/2020 8:27    7/18/2020 8:39
…           …           …                   …                …
3053  133323839     0:09:03     7/11/2020 12:44   7/11/2020 12:53
3054  133305818     0:06:57     7/11/2020 16:18   7/11/2020 16:25
3055  133260048     0:21:46      7/9/2020 11:49    7/9/2020 12:12
3056  133305807     0:06:50      7/11/2020 9:05    7/11/2020 9:12
3057  133352713     0:09:20      7/13/2020 9:56   7/13/2020 14:44

                Date  Srvyr  Country  LANG  R1  R1_5  … G11_Other G11_99  \
0     7/17/2020 8:53   3232        2     1   9  15.0  …       NaN    NaN
1     7/10/2020 7:53   3206        2     4  12  22.0  …       NaN    NaN
2     7/10/2020 7:35   3202        2     3  10  13.0  …       NaN    NaN
```

```
3     7/10/2020 5:21   3212        2     1  12   9.0  …       NaN    NaN
4     7/18/2020 3:27   3225        2     3  11  28.0  …       NaN    NaN
…               …    …      …    …   ..   …  …       …    …
3053  7/11/2020 5:44   3012        1     7   8   NaN  …       NaN    NaN
3054  7/11/2020 9:18   3008        1     1   3   NaN  …       NaN    NaN
3055   7/9/2020 4:49   3004        1     1   7   NaN  …       NaN    NaN
3056  7/11/2020 2:05   3008        1     1   3   NaN  …       NaN    NaN
3057  7/13/2020 2:56   3003        1     1   2   NaN  …       NaN    NaN

      FinalOutcome  NumOfVisits  weight_combined kenya_weight  nigeria_weight  \
0                1            1         0.829860          NaN        0.829860
1                1            1         1.416946          NaN        1.416946
2                1            1         0.883601          NaN        0.883601
3                1            1         1.416946          NaN        1.416946
4                1            1         0.829860          NaN        0.829860
…              …          …               …          …              …
3053             1            1         3.791351     3.791351             NaN
3054             1            1         1.157689     1.157689             NaN
3055             1            1         0.799916     0.799916             NaN
3056             1            1         0.799916     0.799916             NaN
3057             1            3         1.157689     1.157689             NaN

     southafrica_weight  agegroup gk_weight
0                   NaN         1  1.555754
1                   NaN         2  1.949579
2                   NaN         2  2.151458
3                   NaN         2  2.325065
4                   NaN         1  1.640484
…                 …       …       …
3053                NaN         3  2.354356
3054                NaN         2  1.869021
3055                NaN         1  1.907830
3056                NaN         1  1.753344
3057                NaN         2  1.869021

[3058 rows x 247 columns]
```

[7]:
```
#tworzenie ramki danych z listy list

list_data = [["Pies", "Kot", "Kura"], [12,   4,  2]]

pd.DataFrame(list_data)
```

[7]:
```
      0    1     2
0  Pies  Kot  Kura
1    12    4     2
```

[9]:
```
#transponowanie (wymieniamy kolumny a wierszy)

df_1 = pd.DataFrame.transpose(pd.DataFrame(list_data))
print(df_1)
```

```
      0   1
0  Pies  12
1   Kot   4
2  Kura   2
```

[11]:
```
#wyswietlic pierwsze 10 wierszy ramki danych
df.head(10)
```

[11]:

| | SbjNum | NetDuration | InterviewTimeVStart | InterviewTimeVEnd | \ |
|---|---|---|---|---|---|
| 0 | 133476254 | 0:10:14 | 7/17/2020 13:53 | 7/17/2020 14:26 | |
| 1 | 133281846 | 0:22:16 | 7/10/2020 12:53 | 7/10/2020 14:47 | |
| 2 | 133280780 | 0:19:23 | 7/10/2020 12:35 | 7/10/2020 12:54 | |
| 3 | 133281834 | 0:10:11 | 7/10/2020 10:21 | 7/10/2020 10:32 | |
| 4 | 133491249 | 0:09:59 | 7/18/2020 8:27 | 7/18/2020 8:39 | |
| 5 | 133309774 | 0:17:14 | 7/11/2020 11:36 | 7/11/2020 11:54 | |
| 6 | 133520640 | 0:09:09 | 7/19/2020 13:20 | 7/19/2020 13:29 | |
| 7 | 133219300 | 0:12:21 | 7/8/2020 11:48 | 7/8/2020 12:05 | |
| 8 | 133325892 | 0:18:05 | 7/12/2020 9:42 | 7/12/2020 10:03 | |
| 9 | 133496489 | 0:11:29 | 7/18/2020 17:24 | 7/18/2020 17:36 | |

| | Date | Srvyr | Country | LANG | R1 | R1_5 | … | G11_Other | G11_99 | \ |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 7/17/2020 8:53 | 3232 | 2 | 1 | 9 | 15.0 | … | NaN | NaN | |
| 1 | 7/10/2020 7:53 | 3206 | 2 | 4 | 12 | 22.0 | … | NaN | NaN | |
| 2 | 7/10/2020 7:35 | 3202 | 2 | 3 | 10 | 13.0 | … | NaN | NaN | |
| 3 | 7/10/2020 5:21 | 3212 | 2 | 1 | 12 | 9.0 | … | NaN | NaN | |
| 4 | 7/18/2020 3:27 | 3225 | 2 | 3 | 11 | 28.0 | … | NaN | NaN | |
| 5 | 7/11/2020 6:36 | 3233 | 2 | 1 | 11 | 26.0 | … | NaN | NaN | |
| 6 | 7/19/2020 8:20 | 3240 | 2 | 1 | 9 | 35.0 | … | NaN | NaN | |
| 7 | 7/8/2020 6:48 | 3214 | 2 | 1 | 14 | 33.0 | … | NaN | NaN | |
| 8 | 7/12/2020 4:42 | 3204 | 2 | 3 | 11 | 29.0 | … | NaN | NaN | |
| 9 | 7/18/2020 12:24 | 3202 | 2 | 3 | 10 | 10.0 | … | NaN | NaN | |

| | FinalOutcome | NumOfVisits | weight_combined | kenya_weight | nigeria_weight | \ |
|---|---|---|---|---|---|---|
| 0 | 1 | 1 | 0.829860 | NaN | 0.829860 | |
| 1 | 1 | 1 | 1.416946 | NaN | 1.416946 | |
| 2 | 1 | 1 | 0.883601 | NaN | 0.883601 | |
| 3 | 1 | 1 | 1.416946 | NaN | 1.416946 | |
| 4 | 1 | 1 | 0.829860 | NaN | 0.829860 | |
| 5 | 1 | 1 | 0.872352 | NaN | 0.872352 | |
| 6 | 1 | 1 | 0.829860 | NaN | 0.829860 | |
| 7 | 1 | 1 | 0.829860 | NaN | 0.829860 | |
| 8 | 1 | 1 | 0.883601 | NaN | 0.883601 | |
| 9 | 1 | 1 | 0.829860 | NaN | 0.829860 | |

```
  southafrica_weight  agegroup gk_weight
0                NaN         1  1.555754
1                NaN         2  1.949579
2                NaN         2  2.151458
3                NaN         2  2.325065
4                NaN         1  1.640484
5                NaN         1  1.742496
6                NaN         1  1.616145
7                NaN         1  1.616145
8                NaN         2  2.107701
9                NaN         1  1.616145

[10 rows x 247 columns]
```

[12]:
```
#wyswietlic ostatnie 10 wierszy ramki danych

df.tail(10)
```

[12]:
```
         SbjNum NetDuration InterviewTimeVStart InterviewTimeVEnd  \
3048  133210782     0:08:02      7/8/2020 10:57    7/8/2020 11:23
3049  133323835     0:07:24     7/11/2020 12:11   7/11/2020 12:19
3050  133495603     0:08:51     7/18/2020 15:10   7/18/2020 15:48
3051  133259534     0:10:46      7/9/2020 13:39    7/9/2020 15:03
3052  133192430     0:14:41      7/7/2020 18:00    7/7/2020 18:15
3053  133323839     0:09:03     7/11/2020 12:44   7/11/2020 12:53
3054  133305818     0:06:57     7/11/2020 16:18   7/11/2020 16:25
3055  133260048     0:21:46      7/9/2020 11:49    7/9/2020 12:12
3056  133305807     0:06:50      7/11/2020 9:05    7/11/2020 9:12
3057  133352713     0:09:20      7/13/2020 9:56   7/13/2020 14:44

                Date  Srvyr  Country  LANG  R1  R1_5  … G11_Other G11_99  \
3048   7/8/2020 3:57   3008        1     1   4   NaN  …       NaN    NaN
3049  7/11/2020 5:11   3012        1     1   8   NaN  …       NaN    NaN
3050  7/18/2020 8:10   3006        1     1   8   NaN  …       NaN    NaN
3051   7/9/2020 6:39   3003        1     1   1   NaN  …       NaN    NaN
3052  7/7/2020 11:00   3005        1     1   2   NaN  …       NaN    NaN
3053  7/11/2020 5:44   3012        1     7   8   NaN  …       NaN    NaN
3054  7/11/2020 9:18   3008        1     1   3   NaN  …       NaN    NaN
3055   7/9/2020 4:49   3004        1     1   7   NaN  …       NaN    NaN
3056  7/11/2020 2:05   3008        1     1   3   NaN  …       NaN    NaN
3057  7/13/2020 2:56   3003        1     1   2   NaN  …       NaN    NaN

      FinalOutcome  NumOfVisits  weight_combined kenya_weight  nigeria_weight  \
3048             1            2         0.799916     0.799916             NaN
3049             1            1         1.157689     1.157689             NaN
3050             1            2         0.799916     0.799916             NaN
```

```
3051             1            2         1.157689     1.157689             NaN
3052             1            1         0.799916     0.799916             NaN
3053             1            1         3.791351     3.791351             NaN
3054             1            1         1.157689     1.157689             NaN
3055             1            1         0.799916     0.799916             NaN
3056             1            1         0.799916     0.799916             NaN
3057             1            3         1.157689     1.157689             NaN

     southafrica_weight  agegroup gk_weight
3048                NaN         1  1.753344
3049                NaN         2  1.869021
3050                NaN         1  1.753344
3051                NaN         2  1.869021
3052                NaN         1  2.006478
3053                NaN         3  2.354356
3054                NaN         2  1.869021
3055                NaN         1  1.907830
3056                NaN         1  1.753344
3057                NaN         2  1.869021

[10 rows x 247 columns]
```

[15]:
```
#wyswietlic informacje, o ramce danych

df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 3058 entries, 0 to 3057
Columns: 247 entries, SbjNum to gk_weight
dtypes: float64(208), int64(18), object(21)
memory usage: 5.8+ MB
```

[17]:
```
#wyswietlic, ile wierszy i kolumn znajduje sie w ramce danych

df.shape
```

[17]:
```
(3058, 247)
```

[19]:
```
#wyswietlic informacje statystyczna o kolumnach liczbowych (wartosci
#niepowtarzalne, srednia, odchylenie standardowe, minimum, kwartyle,
#maksimum)

df.describe()
```

[19]:
```
              SbjNum        Srvyr      Country         LANG           R1  \
count   3.058000e+03  3058.000000  3058.000000  3058.000000  3058.000000
mean    1.333905e+08  3084.743623     2.012426     2.180510    22.521583
std     1.256690e+05    97.219107     0.817203     2.364438    20.294923
```

```
min    1.331715e+08  3001.000000     1.000000     1.000000     1.000000
25%    1.332825e+08  3010.000000     1.000000     1.000000     7.000000
50%    1.333755e+08  3026.000000     2.000000     1.000000    11.000000
75%    1.334985e+08  3212.000000     3.000000     1.000000    49.000000
max    1.336450e+08  3264.000000     3.000000    11.000000    54.000000

              R1_5           R4           R5           R6           R7  … \
count  1016.000000  3058.000000  3058.000000  3058.000000  3058.000000  …
mean     27.378937     1.503270    34.038914     1.771419    24.448986  …
std      10.088041     0.500071    11.386285     3.130841    26.377909  …
min       9.000000     1.000000    18.000000     1.000000     1.000000  …
25%      18.750000     1.000000    25.000000     1.000000     8.000000  …
50%      28.000000     2.000000    31.500000     2.000000    21.000000  …
75%      35.000000     2.000000    40.000000     2.000000    24.000000  …
max      45.000000     2.000000    99.000000    99.000000    99.000000  …

          G11_96  G11_99  FinalOutcome  NumOfVisits  weight_combined  \
count  32.000000     2.0        3058.0  3058.000000      3058.000000
mean    0.718750     1.0           1.0     1.130150         1.000987
std     0.456803     0.0           0.0     0.449694         0.403105
min     0.000000     1.0           1.0     1.000000         0.799916
25%     0.000000     1.0           1.0     1.000000         0.829860
50%     1.000000     1.0           1.0     1.000000         0.883601
75%     1.000000     1.0           1.0     1.000000         1.000000
max     1.000000     1.0           1.0     5.000000         3.791351

       kenya_weight  nigeria_weight  southafrica_weight     agegroup  \
count   1002.000000     1016.000000              1040.0  3058.000000
mean       1.000000        1.002970                 1.0     1.475147
std        0.568149        0.413589                 0.0     0.653771
min        0.799916        0.829860                 1.0     1.000000
25%        0.799916        0.829860                 1.0     1.000000
50%        0.799916        0.872352                 1.0     1.000000
75%        1.157689        0.883601                 1.0     2.000000
max        3.791351        2.722043                 1.0     3.000000

         gk_weight
count  3058.000000
mean      2.325065
std       0.858712
min       1.555754
25%       1.753344
50%       2.046237
75%       2.325065
max       7.110619

[8 rows x 226 columns]
```

[21]:
```
#wyswietlic informacje statystyczna o kolumnach kategoryzowanych (ile
#unikalnych wartosci, top - jaka jest najpopularniejsza wartosc, freq -
#jak czesto najpopularniejsza


df.describe(include = 'all')
```

[21]:

| | SbjNum | NetDuration | InterviewTimeVStart | InterviewTimeVEnd | \ |
|---|---|---|---|---|---|
| count | 3.058000e+03 | 3058 | 3058 | 3058 | |
| unique | NaN | 983 | 2611 | 2607 | |
| top | NaN | 0:07:39 | 7/9/2020 13:11 | 7/10/2020 12:31 | |
| freq | NaN | 11 | 5 | 4 | |
| mean | 1.333905e+08 | NaN | NaN | NaN | |
| std | 1.256690e+05 | NaN | NaN | NaN | |
| min | 1.331715e+08 | NaN | NaN | NaN | |
| 25% | 1.332825e+08 | NaN | NaN | NaN | |
| 50% | 1.333755e+08 | NaN | NaN | NaN | |
| 75% | 1.334985e+08 | NaN | NaN | NaN | |
| max | 1.336450e+08 | NaN | NaN | NaN | |

| | Date | Srvyr | Country | LANG | R1 | \ |
|---|---|---|---|---|---|---|
| count | 3058 | 3058.000000 | 3058.000000 | 3058.000000 | 3058.000000 | |
| unique | 2611 | NaN | NaN | NaN | NaN | |
| top | 7/18/2020 8:50 | NaN | NaN | NaN | NaN | |
| freq | 4 | NaN | NaN | NaN | NaN | |
| mean | NaN | 3084.743623 | 2.012426 | 2.180510 | 22.521583 | |
| std | NaN | 97.219107 | 0.817203 | 2.364438 | 20.294923 | |
| min | NaN | 3001.000000 | 1.000000 | 1.000000 | 1.000000 | |
| 25% | NaN | 3010.000000 | 1.000000 | 1.000000 | 7.000000 | |
| 50% | NaN | 3026.000000 | 2.000000 | 1.000000 | 11.000000 | |
| 75% | NaN | 3212.000000 | 3.000000 | 1.000000 | 49.000000 | |
| max | NaN | 3264.000000 | 3.000000 | 11.000000 | 54.000000 | |

| | R1_5 | … | G11_Other | G11_99 | FinalOutcome | NumOfVisits | \ |
|---|---|---|---|---|---|---|---|
| count | 1016.000000 | … | 22 | 2.0 | 3058.0 | 3058.000000 | |
| unique | NaN | … | 1 | NaN | NaN | NaN | |
| top | NaN | … | XXXX | NaN | NaN | NaN | |
| freq | NaN | … | 22 | NaN | NaN | NaN | |
| mean | 27.378937 | … | NaN | 1.0 | 1.0 | 1.130150 | |
| std | 10.088041 | … | NaN | 0.0 | 0.0 | 0.449694 | |
| min | 9.000000 | … | NaN | 1.0 | 1.0 | 1.000000 | |
| 25% | 18.750000 | … | NaN | 1.0 | 1.0 | 1.000000 | |
| 50% | 28.000000 | … | NaN | 1.0 | 1.0 | 1.000000 | |
| 75% | 35.000000 | … | NaN | 1.0 | 1.0 | 1.000000 | |
| max | 45.000000 | … | NaN | 1.0 | 1.0 | 5.000000 | |

| | weight_combined | kenya_weight | nigeria_weight | southafrica_weight | \ |
|---|---|---|---|---|---|

```
count       3058.000000  1002.000000     1016.000000             1040.0
unique              NaN          NaN             NaN                NaN
top                 NaN          NaN             NaN                NaN
freq                NaN          NaN             NaN                NaN
mean           1.000987     1.000000        1.002970                1.0
std            0.403105     0.568149        0.413589                0.0
min            0.799916     0.799916        0.829860                1.0
25%            0.829860     0.799916        0.829860                1.0
50%            0.883601     0.799916        0.872352                1.0
75%            1.000000     1.157689        0.883601                1.0
max            3.791351     3.791351        2.722043                1.0

           agegroup    gk_weight
count   3058.000000  3058.000000
unique          NaN          NaN
top             NaN          NaN
freq            NaN          NaN
mean       1.475147     2.325065
std        0.653771     0.858712
min        1.000000     1.555754
25%        1.000000     1.753344
50%        1.000000     2.046237
75%        2.000000     2.325065
max        3.000000     7.110619

[11 rows x 247 columns]
```

[23]:
```
df = df.dropna(axis=1)
df
```

[23]:
```
         SbjNum NetDuration InterviewTimeVStart InterviewTimeVEnd  \
0     133476254     0:10:14     7/17/2020 13:53   7/17/2020 14:26
1     133281846     0:22:16     7/10/2020 12:53   7/10/2020 14:47
2     133280780     0:19:23     7/10/2020 12:35   7/10/2020 12:54
3     133281834     0:10:11     7/10/2020 10:21   7/10/2020 10:32
4     133491249     0:09:59      7/18/2020 8:27    7/18/2020 8:39
…           …           …                   …                 …
3053  133323839     0:09:03     7/11/2020 12:44   7/11/2020 12:53
3054  133305818     0:06:57     7/11/2020 16:18   7/11/2020 16:25
3055  133260048     0:21:46      7/9/2020 11:49    7/9/2020 12:12
3056  133305807     0:06:50      7/11/2020 9:05    7/11/2020 9:12
3057  133352713     0:09:20      7/13/2020 9:56   7/13/2020 14:44

                 Date  Srvyr  Country  LANG  R1    R3  …      R11  R12  H1  \
0     7/17/2020 8:53   3232        2     1   9  XXXX  …  80000.0    1   1
1     7/10/2020 7:53   3206        2     4  12  XXXX  …   2000.0    1   2
2     7/10/2020 7:35   3202        2     3  10  XXXX  …  43000.0    1   1
```

```
3     7/10/2020 5:21   3212        2     1  12  XXXX  …  10000.0    1   2
4     7/18/2020 3:27   3225        2     3  11  XXXX  …  15000.0    1   2
…               …    …      …    …   ..   …  …       …  …  ..
3053  7/11/2020 5:44   3012        1     7   8  XXXX  …   8000.0    1   1
3054  7/11/2020 9:18   3008        1     1   3  XXXX  …  12000.0    1   1
3055   7/9/2020 4:49   3004        1     1   7  XXXX  …   5000.0    1   1
3056  7/11/2020 2:05   3008        1     1   3  XXXX  …      0.0    1   2
3057  7/13/2020 2:56   3003        1     1   2  XXXX  …     99.0    2   1

      H6  H11  FinalOutcome  NumOfVisits  weight_combined  agegroup  gk_weight
0      1    1             1            1         0.829860         1   1.555754
1      2    1             1            1         1.416946         2   1.949579
2      2    1             1            1         0.883601         2   2.151458
3      1    1             1            1         1.416946         2   2.325065
4      1    1             1            1         0.829860         1   1.640484
…   ..  …           …          …              …       …        …
3053   1    2             1            1         3.791351         3   2.354356
3054   2    1             1            1         1.157689         2   1.869021
3055   2    1             1            1         0.799916         1   1.907830
3056   2    2             1            1         0.799916         1   1.753344
3057   2    1             1            3         1.157689         2   1.869021

[3058 rows x 27 columns]
```

[25]:
```
#przedstawic wybor wierszy i kolumny uzywajac nazw oraz indeksow na
#rozne sposoby

df["SbjNum"]
```

[25]:
```
0       133476254
1       133281846
2       133280780
3       133281834
4       133491249
          …
3053    133323839
3054    133305818
3055    133260048
3056    133305807
3057    133352713
Name: SbjNum, Length: 3058, dtype: int64
```

[27]:
```
# wszystkie wiersze z kolumny index 1
column_id = df.iloc[:,1]
print(column_id)
```

```
0       0:10:14
1       0:22:16
```

```
2       0:19:23
3       0:10:11
4       0:09:59
         …
3053    0:09:03
3054    0:06:57
3055    0:21:46
3056    0:06:50
3057    0:09:20
Name: NetDuration, Length: 3058, dtype: object
```

[29]:
```
df.SbjNum
```

[29]:
```
0       133476254
1       133281846
2       133280780
3       133281834
4       133491249
          …
3053    133323839
3054    133305818
3055    133260048
3056    133305807
3057    133352713
Name: SbjNum, Length: 3058, dtype: int64
```

[31]:
```
df[["SbjNum","NetDuration"]] # wybor wielu kolumn
```

[31]:
```
         SbjNum NetDuration
0     133476254     0:10:14
1     133281846     0:22:16
2     133280780     0:19:23
3     133281834     0:10:11
4     133491249     0:09:59
…         …         …
3053  133323839     0:09:03
3054  133305818     0:06:57
3055  133260048     0:21:46
3056  133305807     0:06:50
3057  133352713     0:09:20

[3058 rows x 2 columns]
```

[33]:
```
#wybor kolumn od SbjNum do InterviewTimeVEnd
df.loc[:, "SbjNum":"InterviewTimeVEnd"]
```

[33]:
```
         SbjNum NetDuration InterviewTimeVStart InterviewTimeVEnd
0     133476254     0:10:14     7/17/2020 13:53   7/17/2020 14:26
```

```
1      133281846     0:22:16     7/10/2020 12:53   7/10/2020 14:47
2      133280780     0:19:23     7/10/2020 12:35   7/10/2020 12:54
3      133281834     0:10:11     7/10/2020 10:21   7/10/2020 10:32
4      133491249     0:09:59      7/18/2020 8:27    7/18/2020 8:39
…          …          …                …                 …
3053   133323839     0:09:03     7/11/2020 12:44   7/11/2020 12:53
3054   133305818     0:06:57     7/11/2020 16:18   7/11/2020 16:25
3055   133260048     0:21:46      7/9/2020 11:49    7/9/2020 12:12
3056   133305807     0:06:50      7/11/2020 9:05    7/11/2020 9:12
3057   133352713     0:09:20      7/13/2020 9:56   7/13/2020 14:44

[3058 rows x 4 columns]
```

[35]:
```
#wybor kolumn od SbjNum do InterviewTimeVEnd oraz ograniczenie wiersze od 10 do␣
↪15
df.loc[10:15, "SbjNum":"InterviewTimeVEnd"]
```

[35]:
```
       SbjNum NetDuration InterviewTimeVStart InterviewTimeVEnd
10  133282746     0:15:03     7/10/2020 11:09   7/10/2020 11:26
11  133508499     0:07:16     7/18/2020 16:20   7/18/2020 16:27
12  133367630     0:15:19     7/14/2020 11:56   7/14/2020 12:12
13  133555121     0:12:55     7/20/2020 12:15   7/20/2020 12:58
14  133337639     0:10:22     7/12/2020 20:57   7/12/2020 21:15
15  133521046     0:24:57     7/19/2020 11:25   7/19/2020 12:38
```

[37]:
```
#wybor kolumn od SbjNum do InterviewTimeVEnd oraz ograniczenie wiersze od 10 do␣
↪15 indexami
df.iloc[10:15, 0:4]
```

[37]:
```
       SbjNum NetDuration InterviewTimeVStart InterviewTimeVEnd
10  133282746     0:15:03     7/10/2020 11:09   7/10/2020 11:26
11  133508499     0:07:16     7/18/2020 16:20   7/18/2020 16:27
12  133367630     0:15:19     7/14/2020 11:56   7/14/2020 12:12
13  133555121     0:12:55     7/20/2020 12:15   7/20/2020 12:58
14  133337639     0:10:22     7/12/2020 20:57   7/12/2020 21:15
```

[39]:
```
#przedstawic wybor wierszy z ramki danych pod warunkiem odnosnie
#okreslonej wartosci kolumny

df[df["Country"] == 2]
```

[39]:
```
       SbjNum NetDuration InterviewTimeVStart InterviewTimeVEnd  \
0   133476254     0:10:14     7/17/2020 13:53   7/17/2020 14:26
1   133281846     0:22:16     7/10/2020 12:53   7/10/2020 14:47
2   133280780     0:19:23     7/10/2020 12:35   7/10/2020 12:54
3   133281834     0:10:11     7/10/2020 10:21   7/10/2020 10:32
4   133491249     0:09:59      7/18/2020 8:27    7/18/2020 8:39
```

```
…          …          …                    …                    …
1011  133350222     0:18:10     7/13/2020 11:03   7/13/2020 11:24
1012  133325893     0:18:36     7/12/2020 10:08   7/12/2020 10:30
1013  133325270     0:20:53     7/12/2020 12:02   7/12/2020 12:40
1014  133521045     0:21:34     7/19/2020 11:01   7/19/2020 12:57
1015  133490330     0:41:25     7/18/2020 13:09   7/18/2020 14:01

                Date  Srvyr  Country  LANG  R1    R3  …      R11  R12  H1  \
0     7/17/2020 8:53   3232        2     1   9  XXXX  …  80000.0    1   1
1     7/10/2020 7:53   3206        2     4  12  XXXX  …   2000.0    1   2
2     7/10/2020 7:35   3202        2     3  10  XXXX  …  43000.0    1   1
3     7/10/2020 5:21   3212        2     1  12  XXXX  …  10000.0    1   2
4     7/18/2020 3:27   3225        2     3  11  XXXX  …  15000.0    1   2
…               …    …       …    …  ..   …  …       …  …  ..
1011  7/13/2020 6:03   3204        2     3  11  XXXX  …   3000.0    1   1
1012  7/12/2020 5:08   3204        2     3  11  XXXX  …  15000.0    1   1
1013  7/12/2020 7:02   3205        2     3  11  XXXX  …  27000.0    1   1
1014  7/19/2020 6:01   3205        2     1  11  XXXX  …   7000.0    1   2
1015  7/18/2020 8:09   3202        2     1  10  XXXX  …  10000.0    1   2

      H6  H11  FinalOutcome  NumOfVisits  weight_combined  agegroup  gk_weight
0      1    1             1            1         0.829860         1   1.555754
1      2    1             1            1         1.416946         2   1.949579
2      2    1             1            1         0.883601         2   2.151458
3      1    1             1            1         1.416946         2   2.325065
4      1    1             1            1         0.829860         1   1.640484
…   ..  …          …          …              …       …        …
1011   2    2             1            1         1.416946         2   7.110619
1012   2    2             1            1         0.883601         2   2.325065
1013   2    2             1            1         0.829860         1   1.616145
1014   2    2             1            1         0.829860         1   1.555754
1015   2    2             1            1         0.829860         1   1.577708

[1016 rows x 27 columns]
```

[45]:
```
#przedstawi´c wyb´or wierszy z ramki danych pod warunkiem spelnienia
#kilku warunk´ow jednocze´snie

final_df = df[(df["Country"] == 2)&(df["R1"] == 11)&(df["SbjNum"] > 133521043)]
final_df
```

[45]:
```
         SbjNum NetDuration InterviewTimeVStart InterviewTimeVEnd  \
15    133521046     0:24:57     7/19/2020 11:25   7/19/2020 12:38
44    133617209     0:14:32      7/23/2020 9:25    7/23/2020 9:43
79    133521684     0:11:55     7/19/2020 17:34   7/19/2020 17:48
140   133521683     0:08:25     7/19/2020 17:05   7/19/2020 17:22
143   133521054     0:10:43     7/19/2020 14:59   7/19/2020 15:09
```

| | | | | |
|---|---|---|---|---|
| 145 | 133521050 | 0:11:29 | 7/19/2020 13:21 | 7/19/2020 13:32 |
| 155 | 133559779 | 0:12:42 | 7/21/2020 10:47 | 7/21/2020 10:59 |
| 237 | 133521048 | 0:10:09 | 7/19/2020 12:42 | 7/19/2020 12:52 |
| 310 | 133528919 | 0:07:03 | 7/19/2020 20:08 | 7/19/2020 20:19 |
| 312 | 133615526 | 0:08:31 | 7/21/2020 12:38 | 7/21/2020 12:54 |
| 370 | 133528916 | 0:13:41 | 7/19/2020 19:21 | 7/19/2020 19:37 |
| 443 | 133617208 | 0:14:02 | 7/23/2020 9:02 | 7/23/2020 9:20 |
| 465 | 133556251 | 0:16:22 | 7/21/2020 10:10 | 7/21/2020 10:27 |
| 477 | 133559778 | 0:14:39 | 7/21/2020 10:28 | 7/21/2020 10:42 |
| 631 | 133617210 | 0:13:33 | 7/23/2020 9:50 | 7/23/2020 10:07 |
| 637 | 133627182 | 0:14:45 | 7/23/2020 16:11 | 7/23/2020 16:33 |
| 638 | 133532122 | 0:15:23 | 7/20/2020 11:42 | 7/20/2020 12:00 |
| 645 | 133521053 | 0:16:21 | 7/19/2020 14:37 | 7/19/2020 14:56 |
| 653 | 133521044 | 0:09:47 | 7/19/2020 10:32 | 7/19/2020 11:00 |
| 672 | 133528915 | 0:10:34 | 7/19/2020 18:57 | 7/19/2020 19:15 |
| 736 | 133528917 | 0:06:42 | 7/19/2020 19:45 | 7/19/2020 19:55 |
| 964 | 133533796 | 0:05:49 | 7/19/2020 18:37 | 7/19/2020 18:48 |
| 965 | 133528918 | 0:05:59 | 7/19/2020 19:53 | 7/19/2020 20:02 |
| 969 | 133521049 | 0:08:24 | 7/19/2020 12:58 | 7/19/2020 13:06 |
| 991 | 133627181 | 0:11:08 | 7/23/2020 15:42 | 7/23/2020 15:58 |
| 1002 | 133627180 | 0:15:44 | 7/23/2020 10:55 | 7/23/2020 11:14 |
| 1014 | 133521045 | 0:21:34 | 7/19/2020 11:01 | 7/19/2020 12:57 |

| | Date | Srvyr | Country | LANG | R1 | R3 | … | R11 | R12 | H1 | \ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 7/19/2020 6:25 | 3205 | 2 | 3 | 11 | XXXX | … | 15000.0 | 1 | 1 | |
| 44 | 7/23/2020 4:25 | 3204 | 2 | 3 | 11 | XXXX | … | 5000.0 | 1 | 2 | |
| 79 | 7/19/2020 12:34 | 3225 | 2 | 3 | 11 | XXXX | … | 0.0 | 1 | 2 | |
| 140 | 7/19/2020 12:05 | 3225 | 2 | 3 | 11 | XXXX | … | 0.0 | 1 | 2 | |
| 143 | 7/19/2020 9:59 | 3205 | 2 | 1 | 11 | XXXX | … | 10000.0 | 1 | 2 | |
| 145 | 7/19/2020 8:21 | 3205 | 2 | 3 | 11 | XXXX | … | 28000.0 | 1 | 2 | |
| 155 | 7/21/2020 5:47 | 3205 | 2 | 3 | 11 | XXXX | … | 5000.0 | 1 | 2 | |
| 237 | 7/19/2020 7:42 | 3205 | 2 | 3 | 11 | XXXX | … | 10000.0 | 1 | 2 | |
| 310 | 7/19/2020 15:08 | 3225 | 2 | 3 | 11 | XXXX | … | 20000.0 | 1 | 2 | |
| 312 | 7/21/2020 7:38 | 3233 | 2 | 1 | 11 | XXXX | … | 20000.0 | 1 | 1 | |
| 370 | 7/19/2020 14:21 | 3225 | 2 | 3 | 11 | XXXX | … | 0.0 | 1 | 2 | |
| 443 | 7/23/2020 4:02 | 3204 | 2 | 3 | 11 | XXXX | … | 10000.0 | 1 | 2 | |
| 465 | 7/21/2020 5:10 | 3205 | 2 | 3 | 11 | XXXX | … | 3000.0 | 1 | 1 | |
| 477 | 7/21/2020 5:28 | 3205 | 2 | 3 | 11 | XXXX | … | 9000.0 | 1 | 1 | |
| 631 | 7/23/2020 4:50 | 3204 | 2 | 3 | 11 | XXXX | … | 11000.0 | 1 | 1 | |
| 637 | 7/23/2020 11:11 | 3223 | 2 | 3 | 11 | XXXX | … | 99.0 | 1 | 2 | |
| 638 | 7/20/2020 6:42 | 3204 | 2 | 3 | 11 | XXXX | … | 70000.0 | 1 | 2 | |
| 645 | 7/19/2020 9:37 | 3205 | 2 | 1 | 11 | XXXX | … | 2000.0 | 1 | 2 | |
| 653 | 7/19/2020 5:32 | 3205 | 2 | 3 | 11 | XXXX | … | 5000.0 | 1 | 1 | |
| 672 | 7/19/2020 13:57 | 3225 | 2 | 3 | 11 | XXXX | … | 5000.0 | 1 | 2 | |
| 736 | 7/19/2020 14:45 | 3225 | 2 | 3 | 11 | XXXX | … | 40000.0 | 1 | 2 | |
| 964 | 7/19/2020 13:37 | 3225 | 2 | 3 | 11 | XXXX | … | 0.0 | 1 | 2 | |
| 965 | 7/19/2020 14:53 | 3225 | 2 | 3 | 11 | XXXX | … | 25000.0 | 1 | 2 | |

```
969    7/19/2020 7:58   3205        2     3  11  XXXX  …   2000.0    1   2
991   7/23/2020 10:42   3223        2     3  11  XXXX  …      0.0    1   2
1002   7/23/2020 5:55   3223        2     3  11  XXXX  …      0.0    1   1
1014   7/19/2020 6:01   3205        2     1  11  XXXX  …   7000.0    1   2

      H6  H11  FinalOutcome  NumOfVisits  weight_combined  agegroup  gk_weight
15     2    1              1            1         0.829860         1   1.577708
44     1    1              1            1         1.416946         2   1.855697
79     2    1              1            1         0.872352         1   1.742496
140    2    2              1            1         0.872352         1   1.771827
143   99    2              1            1         0.872352         1   1.823179
145    2    2              1            1         0.872352         1   1.742496
155    2    2              1            1         0.829860         1   1.950901
237    2    2              1            1         0.829860         1   2.054230
310    2    2              1            1         0.829860         1   1.640484
312    2    1              1            1         0.883601         2   1.738832
370    2    1              1            1         0.872352         1   1.771827
443    2    1              1            1         0.872352         1   2.270418
465    2    2              1            1         1.416946         2   2.325065
477    2    2              1            1         0.829860         1   1.640484
631    1    1              1            1         0.872352         1   1.742496
637    1    2              1            1         0.872352         1   2.270418
638    1    1              1            1         0.872352         1   1.771827
645    2    2              1            1         0.872352         1   1.855697
653    2    1              1            1         0.829860         1   1.555754
672    1    1              1            1         1.416946         2   1.949579
736    1    1              1            1         0.829860         1   1.577708
964    2    2              1            1         0.829860         1   1.577708
965    2    2              1            1         0.829860         1   1.616145
969    2    2              1            1         0.829860         1   1.616145
991    2    2              1            1         0.872352         1   1.823179
1002   1    1              1            1         0.872352         1   1.823179
1014   2    2              1            1         0.829860         1   1.555754

[27 rows x 27 columns]
```

[47]:
```
# wybrac wiersze ktore zawieraja w kolumnie kategoryzowanej okreslone slowo

df[df["InterviewTimeVStart"].str.contains("7/10/2020")]
```

[47]:
```
         SbjNum NetDuration InterviewTimeVStart InterviewTimeVEnd  \
1     133281846     0:22:16     7/10/2020 12:53   7/10/2020 14:47
2     133280780     0:19:23     7/10/2020 12:35   7/10/2020 12:54
3     133281834     0:10:11     7/10/2020 10:21   7/10/2020 10:32
10    133282746     0:15:03     7/10/2020 11:09   7/10/2020 11:26
58    133282912     0:21:46      7/10/2020 9:39   7/10/2020 10:03
…           …           …                   …                …
```

```
3010  133283791     0:10:23     7/10/2020 16:22   7/10/2020 18:08
3018  133275037     0:13:01     7/10/2020 12:05   7/10/2020 12:18
3033  133302364     0:13:49     7/10/2020 12:32   7/11/2020 10:08
3034  133296327     0:14:52     7/10/2020 10:41   7/10/2020 10:56
3045  133290062     0:07:22     7/10/2020 12:18   7/10/2020 12:26

                Date  Srvyr  Country  LANG  R1    R3  …       R11  R12  H1  \
1     7/10/2020 7:53   3206        2     4  12  XXXX  …    2000.0    1   2
2     7/10/2020 7:35   3202        2     3  10  XXXX  …   43000.0    1   1
3     7/10/2020 5:21   3212        2     1  12  XXXX  …   10000.0    1   2
10    7/10/2020 6:09   3214        2     1  13  XXXX  …      99.0    1   2
58    7/10/2020 4:39   3216        2     1  13  XXXX  …      99.0    1   1
…               …    …      …   …  ..   …  …       …  …  ..
3010  7/10/2020 9:22   3012        1     7   8  XXXX  …   37000.0    1   1
3018  7/10/2020 5:05   3002        1     1   6  XXXX  …   60000.0    2   2
3033  7/10/2020 5:32   3002        1     1   6  XXXX  …  150000.0    1   1
3034  7/10/2020 3:41   3006        1     1   1  XXXX  …     200.0    2   1
3045  7/10/2020 5:18   3008        1     1   2  XXXX  …    8000.0    1   2

      H6  H11  FinalOutcome  NumOfVisits  weight_combined  agegroup  gk_weight
1      2    1             1            1         1.416946         2   1.949579
2      2    1             1            1         0.883601         2   2.151458
3      1    1             1            1         1.416946         2   2.325065
10     1    1             1            1         0.829860         1   1.616145
58     1    1             1            1         2.722043         3   2.895287
…   ..  …           …          …              …       …        …
3010   2    1             1            3         1.157689         2   1.869021
3018   2    2             1            1         0.799916         1   1.753344
3033   2    2             1            1         0.799916         1   1.753344
3034   2    2             1            1         0.799916         1   1.907830
3045   2    1             1            1         0.799916         1   1.753344

[264 rows x 27 columns]
```

[49]:
```
# wybrac wiersze ktore nie zawieraja w kolumnie kategoryzowanej okreslone slowo

df[df["InterviewTimeVStart"].str.contains("7/10/2020") == False]
```

[49]:
```
        SbjNum NetDuration InterviewTimeVStart InterviewTimeVEnd  \
0    133476254     0:10:14     7/17/2020 13:53   7/17/2020 14:26
4    133491249     0:09:59      7/18/2020 8:27    7/18/2020 8:39
5    133309774     0:17:14     7/11/2020 11:36   7/11/2020 11:54
6    133520640     0:09:09     7/19/2020 13:20   7/19/2020 13:29
7    133219300     0:12:21      7/8/2020 11:48    7/8/2020 12:05
…          …           …                 …                 …
3053 133323839     0:09:03     7/11/2020 12:44   7/11/2020 12:53
3054 133305818     0:06:57     7/11/2020 16:18   7/11/2020 16:25
```

```
3055  133260048     0:21:46      7/9/2020 11:49    7/9/2020 12:12
3056  133305807     0:06:50      7/11/2020 9:05    7/11/2020 9:12
3057  133352713     0:09:20      7/13/2020 9:56   7/13/2020 14:44

                Date  Srvyr  Country  LANG  R1    R3  …      R11  R12  H1  \
0     7/17/2020 8:53   3232        2     1   9  XXXX  …  80000.0    1   1
4     7/18/2020 3:27   3225        2     3  11  XXXX  …  15000.0    1   2
5     7/11/2020 6:36   3233        2     1  11  XXXX  …  15000.0    1   2
6     7/19/2020 8:20   3240        2     1   9  XXXX  …  10000.0    1   1
7      7/8/2020 6:48   3214        2     1  14  XXXX  …  70000.0    1   2
…                …    …       …   …  ..   …  …       …  …  ..
3053  7/11/2020 5:44   3012        1     7   8  XXXX  …   8000.0    1   1
3054  7/11/2020 9:18   3008        1     1   3  XXXX  …  12000.0    1   1
3055   7/9/2020 4:49   3004        1     1   7  XXXX  …   5000.0    1   1
3056  7/11/2020 2:05   3008        1     1   3  XXXX  …      0.0    1   2
3057  7/13/2020 2:56   3003        1     1   2  XXXX  …     99.0    2   1

      H6  H11  FinalOutcome  NumOfVisits  weight_combined  agegroup  gk_weight
0      1    1             1            1         0.829860         1   1.555754
4      1    1             1            1         0.829860         1   1.640484
5      2    1             1            1         0.872352         1   1.742496
6      2    1             1            1         0.829860         1   1.616145
7      2    1             1            1         0.829860         1   1.616145
…   ..  …           …          …                …       …        …
3053   1    2             1            1         3.791351         3   2.354356
3054   2    1             1            1         1.157689         2   1.869021
3055   2    1             1            1         0.799916         1   1.907830
3056   2    2             1            1         0.799916         1   1.753344
3057   2    1             1            3         1.157689         2   1.869021

[2794 rows x 27 columns]
```

[51]:
```
#utworz kolumne na podstawie istniejacej

df["new_column"] = df["Country"] - df["LANG"]
print(df[["Country", "LANG", "new_column"]])
```

```
      Country  LANG  new_column
0           2     1           1
1           2     4          -2
2           2     3          -1
3           2     1           1
4           2     3          -1
…       …   …         …
3053        1     7          -6
3054        1     1           0
3055        1     1           0
3056        1     1           0
```

```
3057        1     1            0

[3058 rows x 3 columns]
```

[53]:
```
#usun kolumne

df = df.drop("InterviewTimeVStart", axis = 1)
df
```

[53]:

| | SbjNum | NetDuration | InterviewTimeVEnd | Date | Srvyr | Country | \ |
|---|---|---|---|---|---|---|---|
| 0 | 133476254 | 0:10:14 | 7/17/2020 14:26 | 7/17/2020 8:53 | 3232 | 2 | |
| 1 | 133281846 | 0:22:16 | 7/10/2020 14:47 | 7/10/2020 7:53 | 3206 | 2 | |
| 2 | 133280780 | 0:19:23 | 7/10/2020 12:54 | 7/10/2020 7:35 | 3202 | 2 | |
| 3 | 133281834 | 0:10:11 | 7/10/2020 10:32 | 7/10/2020 5:21 | 3212 | 2 | |
| 4 | 133491249 | 0:09:59 | 7/18/2020 8:39 | 7/18/2020 3:27 | 3225 | 2 | |
| … | … | … | … | … | … | … | |
| 3053 | 133323839 | 0:09:03 | 7/11/2020 12:53 | 7/11/2020 5:44 | 3012 | 1 | |
| 3054 | 133305818 | 0:06:57 | 7/11/2020 16:25 | 7/11/2020 9:18 | 3008 | 1 | |
| 3055 | 133260048 | 0:21:46 | 7/9/2020 12:12 | 7/9/2020 4:49 | 3004 | 1 | |
| 3056 | 133305807 | 0:06:50 | 7/11/2020 9:12 | 7/11/2020 2:05 | 3008 | 1 | |
| 3057 | 133352713 | 0:09:20 | 7/13/2020 14:44 | 7/13/2020 2:56 | 3003 | 1 | |

| | LANG | R1 | R3 | R4 | … | R12 | H1 | H6 | H11 | FinalOutcome | NumOfVisits | \ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 9 | XXXX | 1 | … | 1 | 1 | 1 | 1 | 1 | 1 | |
| 1 | 4 | 12 | XXXX | 2 | … | 1 | 2 | 2 | 1 | 1 | 1 | |
| 2 | 3 | 10 | XXXX | 1 | … | 1 | 1 | 2 | 1 | 1 | 1 | |
| 3 | 1 | 12 | XXXX | 2 | … | 1 | 2 | 1 | 1 | 1 | 1 | |
| 4 | 3 | 11 | XXXX | 1 | … | 1 | 2 | 1 | 1 | 1 | 1 | |
| … | … | .. | … | .. | … | … | .. | .. | … | … | … | |
| 3053 | 7 | 8 | XXXX | 1 | … | 1 | 1 | 1 | 2 | 1 | 1 | |
| 3054 | 1 | 3 | XXXX | 1 | … | 1 | 1 | 2 | 1 | 1 | 1 | |
| 3055 | 1 | 7 | XXXX | 2 | … | 1 | 1 | 2 | 1 | 1 | 1 | |
| 3056 | 1 | 3 | XXXX | 1 | … | 1 | 2 | 2 | 2 | 1 | 1 | |
| 3057 | 1 | 2 | XXXX | 1 | … | 2 | 1 | 2 | 1 | 1 | 3 | |

| | weight_combined | agegroup | gk_weight | new_column |
|---|---|---|---|---|
| 0 | 0.829860 | 1 | 1.555754 | 1 |
| 1 | 1.416946 | 2 | 1.949579 | -2 |
| 2 | 0.883601 | 2 | 2.151458 | -1 |
| 3 | 1.416946 | 2 | 2.325065 | 1 |
| 4 | 0.829860 | 1 | 1.640484 | -1 |
| … | … | … | … | … |
| 3053 | 3.791351 | 3 | 2.354356 | -6 |
| 3054 | 1.157689 | 2 | 1.869021 | 0 |
| 3055 | 0.799916 | 1 | 1.907830 | 0 |
| 3056 | 0.799916 | 1 | 1.753344 | 0 |
| 3057 | 1.157689 | 2 | 1.869021 | 0 |

```
[3058 rows x 27 columns]
```

[55]:
```
#zmien nazwe kolumny

df = df.rename(columns = {"SbjNum":"new_name"})
df
```

[55]:
```
        new_name NetDuration InterviewTimeVEnd            Date  Srvyr  Country  \
0      133476254     0:10:14   7/17/2020 14:26  7/17/2020 8:53   3232        2
1      133281846     0:22:16   7/10/2020 14:47  7/10/2020 7:53   3206        2
2      133280780     0:19:23   7/10/2020 12:54  7/10/2020 7:35   3202        2
3      133281834     0:10:11   7/10/2020 10:32  7/10/2020 5:21   3212        2
4      133491249     0:09:59    7/18/2020 8:39  7/18/2020 3:27   3225        2
…            …           …                 …               …    …       …
3053   133323839     0:09:03   7/11/2020 12:53  7/11/2020 5:44   3012        1
3054   133305818     0:06:57   7/11/2020 16:25  7/11/2020 9:18   3008        1
3055   133260048     0:21:46    7/9/2020 12:12   7/9/2020 4:49   3004        1
3056   133305807     0:06:50    7/11/2020 9:12  7/11/2020 2:05   3008        1
3057   133352713     0:09:20   7/13/2020 14:44  7/13/2020 2:56   3003        1

       LANG  R1    R3  R4  …  R12  H1  H6  H11  FinalOutcome  NumOfVisits  \
0         1   9  XXXX   1  …    1   1   1    1             1            1
1         4  12  XXXX   2  …    1   2   2    1             1            1
2         3  10  XXXX   1  …    1   1   2    1             1            1
3         1  12  XXXX   2  …    1   2   1    1             1            1
4         3  11  XXXX   1  …    1   2   1    1             1            1
…    …   ..   …   ..  …  …   ..  ..  …            …           …
3053      7   8  XXXX   1  …    1   1   1    2             1            1
3054      1   3  XXXX   1  …    1   1   2    1             1            1
3055      1   7  XXXX   2  …    1   1   2    1             1            1
3056      1   3  XXXX   1  …    1   2   2    2             1            1
3057      1   2  XXXX   1  …    2   1   2    1             1            3

       weight_combined  agegroup  gk_weight  new_column
0             0.829860         1   1.555754           1
1             1.416946         2   1.949579          -2
2             0.883601         2   2.151458          -1
3             1.416946         2   2.325065           1
4             0.829860         1   1.640484          -1
…                …         …         …           …
3053          3.791351         3   2.354356          -6
3054          1.157689         2   1.869021           0
3055          0.799916         1   1.907830           0
3056          0.799916         1   1.753344           0
3057          1.157689         2   1.869021           0
```

```
[3058 rows x 27 columns]
```

[57]:
```
#zachowaj ramke danych jako plik csv na komputerze

df.to_csv("F.csv")
```

[59]:
```
#wyswietlic srednia (maksymalna, minimalna) wartosc z jednej kolumny

print(df["Country"].mean())
print(df["Country"].max())
print(df["Country"].min())
```

```
2.012426422498365
3
1
```

[61]:
```
#wyswietlic liczbe wierszy

rows = len(df.axes[0])
rows
```

[61]:
```
3058
```

[63]:
```
#wyswietlic wartosci unikatowe w kolumnie

df['Country'].unique()
```

[63]:
```
array([2, 1, 3], dtype=int64)
```

[65]:
```
#wyswietlic liczby rekordow odpowiadajacych do wartosci

df['Country'].value_counts()
```

[65]:
```
Country
3    1040
2    1016
1    1002
Name: count, dtype: int64
```

[67]:
```
#sortowanie wierszy ramki danych wedlug wartosci okreslonej kolumny
#(malejaco, rosnaco)

df.sort_values(['R1'], ascending = True) # sortowanie rosnaco
```

[67]:
```
       new_name NetDuration InterviewTimeVEnd            Date  Srvyr  \
2646  133216690     0:16:22    7/8/2020 14:24    7/8/2020 5:03   3007
2768  133352717     0:11:51   7/13/2020 11:22   7/13/2020 3:42   3003
2949  133380015     0:06:55   7/14/2020 15:23   7/14/2020 8:16   3001
```

```
2770  133198153     0:11:11    7/7/2020 19:33   7/7/2020 12:18   3007
2772  133198457     0:13:46    7/7/2020 17:10    7/7/2020 9:26   3001
…         …          …               …              …    …
1379  133238505     0:07:31    7/9/2020 11:24    7/9/2020 5:17   3024
1717  133464158     0:10:34   7/17/2020 14:15   7/17/2020 8:04   3029
1348  133518560     0:05:56   7/19/2020 19:08  7/19/2020 13:02   3021
2035  133244583     0:05:46    7/9/2020 15:01    7/9/2020 8:56   3022
1716  133464159     0:09:54   7/17/2020 14:27   7/17/2020 8:17   3029

      Country  LANG  R1    R3  R4  …  R12  H1  H6  H11  FinalOutcome  \
2646        1     1   1  XXXX   2  …    1   1   2    2             1
2768        1     7   1  XXXX   1  …    1   1   1    1             1
2949        1     1   1  XXXX   2  …    1   2   2    2             1
2770        1     7   1  XXXX   2  …    2   1   1    1             1
2772        1     1   1  XXXX   2  …    1   2   2    2             1
…       …    …   ..   …  ..  …  …  ..  ..  …          …
1379        3     1  54  XXXX   2  …    1   1   2    2             1
1717        3     1  54  XXXX   2  …    2   2   2    1             1
1348        3     1  54  XXXX   2  …    1   1   2    1             1
2035        3     1  54  XXXX   1  …    2   2   2    2             1
1716        3     1  54  XXXX   2  …    2   2   1    2             1

      NumOfVisits  weight_combined  agegroup  gk_weight  new_column
2646            2         0.799916         1   1.943691           0
2768            1         0.799916         1   1.753344          -6
2949            1         0.799916         1   2.006478           0
2770            1         0.799916         1   1.907830          -6
2772            1         0.799916         1   1.907830           0
…           …              …        …         …         …
1379            1         1.000000         3   5.774278           2
1717            1         1.000000         3   2.325065           2
1348            1         1.000000         3   5.774278           2
2035            1         1.000000         1   2.325065           2
1716            1         1.000000         3   5.774278           2

[3058 rows x 27 columns]
```

[69]:
```
df.sort_values(['R1'], ascending =  False) # sortowanie malejaco
```

[69]:
```
       new_name NetDuration InterviewTimeVEnd             Date  Srvyr  \
2063  133238732     0:06:12    7/9/2020 11:31    7/9/2020 5:25   3024
1556  133568903     0:05:55   7/21/2020 19:15  7/21/2020 13:09   3029
1813  133422463     0:07:03   7/16/2020 11:35   7/16/2020 5:28   3029
1346  133568620     0:07:19   7/21/2020 19:03  7/21/2020 12:56   3029
1342  133300438     0:09:59   7/11/2020 12:04   7/11/2020 5:54   3021
…         …          …               …              …    …
2829  133193703     0:11:36    7/7/2020 19:16   7/7/2020 11:57   3011
```

```
2827  133259522     0:17:00    7/9/2020 10:23    7/8/2020 6:36   3003
2957  133379605     0:09:19   7/14/2020 12:17   7/14/2020 5:07   3003
2562  133347600     0:18:46   7/13/2020 15:41   7/13/2020 5:32   3001
2743  133326526     0:09:20   7/12/2020 14:29   7/12/2020 7:19   3010

      Country  LANG  R1    R3  R4  …  R12  H1  H6  H11  FinalOutcome  \
2063        3     1  54  XXXX   1  …    2   2   2    2             1
1556        3     1  54  XXXX   2  …    2   2   1    2             1
1813        3     1  54  XXXX   2  …    1   2   2    1             1
1346        3     1  54  XXXX   2  …    2   1   2    2             1
1342        3     1  54  XXXX   1  …    1   1   1    2             1
…         …   …  ..   …  ..  …  …   ..  ..  …          …
2829        1     7   1  XXXX   2  …    1   1   2    2             1
2827        1     1   1  XXXX   1  …    1   1   1    1             1
2957        1     7   1  XXXX   1  …    1   2   2    2             1
2562        1     1   1  XXXX   2  …    1   1   1    1             1
2743        1     7   1  XXXX   1  …    2   1   2    2             1

      NumOfVisits  weight_combined  agegroup  gk_weight  new_column
2063            1         1.000000         3   2.325065           2
1556            1         1.000000         2   5.774278           2
1813            1         1.000000         2   2.325065           2
1346            1         1.000000         2   2.325065           2
1342            1         1.000000         1   2.325065           2
…             …              …        …         …          …
2829            1         0.799916         1   2.006478          -6
2827            3         0.799916         1   1.679506           0
2957            1         0.799916         1   1.753344          -6
2562            1         0.799916         1   2.046237           0
2743            1         0.799916         1   1.753344          -6

[3058 rows x 27 columns]
```

[71]:
```
#wyswietlic wierszy dla 10 najwiekszych (najmniejszych) wartosci okreslonej
#kolumny
df.sort_values(['Srvyr'], ascending =  True).head(10)
```

[71]:
```
       new_name NetDuration InterviewTimeVEnd           Date  Srvyr  Country  \
2772  133198457     0:13:46    7/7/2020 17:10   7/7/2020 9:26   3001        1
2403  133332015     0:07:24   7/12/2020 12:12  7/12/2020 5:04   3001        1
2615  133442400     0:09:51   7/16/2020 16:02  7/16/2020 8:52   3001        1
2617  133256525     0:11:39     7/9/2020 9:38   7/9/2020 2:27   3001        1
2399  133279344     0:16:54   7/10/2020 14:46  7/10/2020 4:54   3001        1
2393  133279345     0:10:08   7/10/2020 13:21  7/10/2020 5:03   3001        1
2919  133595179     0:11:24   7/22/2020 16:10  7/22/2020 8:58   3001        1
2392  133492671     0:09:25   7/17/2020 13:40  7/17/2020 6:31   3001        1
2609  133558507     0:11:43   7/21/2020 14:20  7/21/2020 5:46   3001        1
```

```
2917  133332016     0:09:26   7/12/2020 15:20  7/12/2020 5:17   3001        1

      LANG  R1    R3  R4  …  R12  H1  H6  H11  FinalOutcome  NumOfVisits  \
2772     1   1  XXXX   2  …    1   2   2    2             1            1
2403     1   1  XXXX   1  …    1   2   2    2             1            1
2615     1   7  XXXX   1  …    1   2   2    2             1            1
2617     1   7  XXXX   2  …    1   2   2    2             1            1
2399     1   7  XXXX   1  …    1   1   2    2             1            1
2393     1   3  XXXX   1  …    1   2   2    1             1            1
2919     1   1  XXXX   2  …    1   2   2    2             1            1
2392     1   7  XXXX   1  …    1   2   2    2             1            1
2609     1   1  XXXX   2  …    1   1   2    1             1            1
2917     1   6  XXXX   2  …    1   2   2    2             1            1

      weight_combined  agegroup  gk_weight  new_column
2772         0.799916         1   1.907830           0
2403         0.799916         1   1.783103           0
2615         0.799916         1   1.706348           0
2617         0.799916         1   1.943691           0
2399         0.799916         1   1.706348           0
2393         0.799916         1   1.706348           0
2919         0.799916         1   2.006478           0
2392         0.799916         1   1.706348           0
2609         1.157689         2   2.206889           0
2917         0.799916         1   2.006478           0

[10 rows x 27 columns]
```

[73]:
```
df.sort_values(['Srvyr'], ascending =  False).head(10)
```

[73]:
```
      new_name NetDuration InterviewTimeVEnd             Date  Srvyr  Country  \
460  133603974     0:14:42   7/22/2020 20:12  7/22/2020 14:57   3264        2
530  133251451     0:11:49    7/9/2020 14:13    7/9/2020 9:01   3264        2
531  133603975     0:12:01   7/22/2020 20:28  7/22/2020 15:16   3264        2
51   133262795     0:22:17    7/9/2020 21:08   7/9/2020 15:45   3264        2
888  133617615     0:13:28    7/23/2020 9:17   7/23/2020 4:03   3264        2
884  133309082     0:12:21   7/11/2020 12:37   7/11/2020 7:11   3263        2
275  133309079     0:24:18    7/11/2020 9:53   7/11/2020 4:29   3263        2
340  133282813     0:17:57    7/10/2020 9:49    7/9/2020 8:11   3263        2
134  133254937     0:17:03    7/9/2020 14:23    7/9/2020 8:57   3263        2
754  133282820     0:15:52   7/10/2020 11:45   7/10/2020 6:28   3263        2

     LANG  R1    R3  R4  …  R12  H1  H6  H11  FinalOutcome  NumOfVisits  \
460     1  13  XXXX   2  …    1   2   1    2             1            1
530     1  13  XXXX   2  …    1   2   1    1             1            1
531     1  13  XXXX   2  …    1   2   2    2             1            1
51      1  13  XXXX   2  …    2   2   1    2             1            1
```

```
888     1  14  XXXX   2  …    1   2   2    1             1             1
884     1  14  XXXX   1  …    1   2   2    2             1             1
275     1  14  XXXX   2  …    1   1   2    2             1             1
340     1  13  XXXX   1  …    1   1   2    1             1             2
134     1  12  XXXX   1  …    1   2   2    1             1             2
754     1  13  XXXX   1  …    1   1   1    1             1             1

     weight_combined  agegroup  gk_weight  new_column
460         0.872352         1   1.823179           1
530         0.872352         1   1.823179           1
531         0.872352         1   1.771827           1
51          0.872352         1   1.771827           1
888         0.872352         1   1.771827           1
884         0.829860         1   1.640484           1
275         0.872352         1   1.823179           1
340         0.829860         1   1.616145           1
134         0.829860         1   1.640484           1
754         0.829860         1   1.577708           1

[10 rows x 27 columns]
```

[75]:
```
#wyswietlic wierszy dla 10 najwiekszych wartosci okreslonej kolumny
#pod warunkiem okreslonych wartosci innej kolumny
df[(df['Srvyr'].isin([3264]))].nlargest(10,'new_name')
```

[75]:
```
      new_name NetDuration InterviewTimeVEnd             Date  Srvyr  Country  \
888  133617615     0:13:28    7/23/2020 9:17   7/23/2020 4:03   3264        2
531  133603975     0:12:01   7/22/2020 20:28  7/22/2020 15:16   3264        2
460  133603974     0:14:42   7/22/2020 20:12  7/22/2020 14:57   3264        2
51   133262795     0:22:17    7/9/2020 21:08   7/9/2020 15:45   3264        2
530  133251451     0:11:49    7/9/2020 14:13    7/9/2020 9:01   3264        2

     LANG  R1    R3  R4  …  R12  H1  H6  H11  FinalOutcome  NumOfVisits  \
888     1  14  XXXX   2  …    1   2   2    1             1            1
531     1  13  XXXX   2  …    1   2   2    2             1            1
460     1  13  XXXX   2  …    1   2   1    2             1            1
51      1  13  XXXX   2  …    2   2   1    2             1            1
530     1  13  XXXX   2  …    1   2   1    1             1            1

     weight_combined  agegroup  gk_weight  new_column
888         0.872352         1   1.771827           1
531         0.872352         1   1.771827           1
460         0.872352         1   1.823179           1
51          0.872352         1   1.771827           1
530         0.872352         1   1.823179           1

[5 rows x 27 columns]
```

[79]:
```
#grupowanie wierszy wedlug wartosci kolumny kategoryzowanej, potem
#- usrednienie wartosci wszystkich kolumn w grupie - MultiIndex

df_3 = df.groupby(['new_name','Country']).agg({'weight_combined': 'mean',
                                                'agegroup': 'mean',
                                                'gk_weight': 'mean'})
df_3
```

[79]:

| new_name | Country | weight_combined | agegroup | gk_weight |
|---|---|---|---|---|
| 133171538 | 2 | 0.829860 | 1.0 | 2.054230 |
| 133172154 | 2 | 1.416946 | 2.0 | 1.949579 |
| 133172253 | 2 | 2.722043 | 3.0 | 2.479905 |
| 133183877 | 3 | 1.000000 | 1.0 | 2.987726 |
| 133184260 | 3 | 1.000000 | 1.0 | 3.655632 |
| … | | … | … | … |
| 133645011 | 3 | 1.000000 | 1.0 | 2.325065 |
| 133645012 | 3 | 1.000000 | 1.0 | 2.912190 |
| 133645013 | 3 | 1.000000 | 1.0 | 2.912190 |
| 133645016 | 3 | 1.000000 | 1.0 | 2.325065 |
| 133645018 | 3 | 1.000000 | 1.0 | 2.912190 |

[3058 rows x 3 columns]

[81]:
```
#grupowanie wierszy wedlug wartosci kolumny kategoryzowanej, potem
#- usrednienie wartosci dla pewnych kolumn, liczba wartosci i mediana
#dla pozostalych kolumn w grupach

df_4 = df.groupby(['new_name','Country']).agg({
                        'weight_combined': 'mean',
                        'agegroup': ['median','count'],
                        'gk_weight' : ['median','count']})
df_4
```

[81]:

| | | weight_combined | agegroup | | gk_weight | |
|---|---|---|---|---|---|---|
| | | mean | median | count | median | count |
| new_name | Country | | | | | |
| 133171538 | 2 | 0.829860 | 1.0 | 1 | 2.054230 | 1 |
| 133172154 | 2 | 1.416946 | 2.0 | 1 | 1.949579 | 1 |
| 133172253 | 2 | 2.722043 | 3.0 | 1 | 2.479905 | 1 |
| 133183877 | 3 | 1.000000 | 1.0 | 1 | 2.987726 | 1 |
| 133184260 | 3 | 1.000000 | 1.0 | 1 | 3.655632 | 1 |
| … | | … | … | … | … | … |
| 133645011 | 3 | 1.000000 | 1.0 | 1 | 2.325065 | 1 |
| 133645012 | 3 | 1.000000 | 1.0 | 1 | 2.912190 | 1 |
| 133645013 | 3 | 1.000000 | 1.0 | 1 | 2.912190 | 1 |
| 133645016 | 3 | 1.000000 | 1.0 | 1 | 2.325065 | 1 |

```
133645018 3              1.000000      1.0     1  2.912190     1

[3058 rows x 5 columns]
```

[83]:
```
#wyswietlic nazwy kolumn indeksu zlozonego

df_4.columns
```

[83]:
```
MultiIndex([('weight_combined',   'mean'),
            (       'agegroup', 'median'),
            (       'agegroup',  'count'),
            (      'gk_weight', 'median'),
            (      'gk_weight',  'count')],
           )
```

[87]:
```
#sortowac kolumne indeksu zlozonego

df_4['gk_weight']['median'].sort_values(ascending = True)
```

[87]:
```
new_name   Country
133476254  2          1.555754
133402438  2          1.555754
133301837  2          1.555754
133264434  2          1.555754
133224163  2          1.555754
                        …
133525201  2          7.110619
133438178  2          7.110619
133365835  2          7.110619
133621876  2          7.110619
133350222  2          7.110619
Name: median, Length: 3058, dtype: float64
```

[89]:
```
#stworzyc tabele przystawna (pivot table) na podstawie ramki danych

df_pivot = df.pivot_table(values='weight_combined', index='new_name',␣
 ↪columns='Country', aggfunc='mean',
                      margins=False, dropna=True, fill_value=None) # tabela␣
 ↪podsumowująca
df_pivot
```

[89]:
```
Country     1         2    3
new_name
133171538 NaN  0.829860  NaN
133172154 NaN  1.416946  NaN
133172253 NaN  2.722043  NaN
133183877 NaN       NaN  1.0
```

```
133184260 NaN       NaN  1.0
…         ..        …  …
133645011 NaN       NaN  1.0
133645012 NaN       NaN  1.0
133645013 NaN       NaN  1.0
133645016 NaN       NaN  1.0
133645018 NaN       NaN  1.0

[3058 rows x 3 columns]
```

[91]:
```
#wyswietlic indeksy i kolumny tabeli przystawnej

print(df_pivot.index)
print(df_pivot.columns)
```

```
Index([133171538, 133172154, 133172253, 133183877, 133184260, 133184356,
       133184416, 133184425, 133184636, 133184864,
       …
       133645006, 133645007, 133645008, 133645009, 133645010, 133645011,
       133645012, 133645013, 133645016, 133645018],
      dtype='int64', name='new_name', length=3058)
Index([1, 2, 3], dtype='int64', name='Country')
```

[105]:
```
#utworz indeks zlozony tabeli przystawnej i wyswietl go

df_pivot = df.pivot_table(values='new_name', index=['LANG','R1'],␣
 ↪columns='Country', aggfunc='mean',
                      margins=False, dropna=True, fill_value=None)
df_pivot
```

[105]:
```
Country             1   2            3
LANG R1
1    1   1.333413e+08 NaN          NaN
     2   1.333515e+08 NaN          NaN
     3   1.333371e+08 NaN          NaN
     4   1.333337e+08 NaN          NaN
     5   1.333749e+08 NaN          NaN
…                  …  ..          …
10   52           NaN NaN  133274171.5
     54           NaN NaN  133626309.0
11   49           NaN NaN  133318968.0
     53           NaN NaN  133563096.0
     54           NaN NaN  133588302.0

[64 rows x 3 columns]
```

[107]:
```
#zaimportuj modul pyplot z biblioteki matplotlib
import matplotlib.pyplot as plt
```

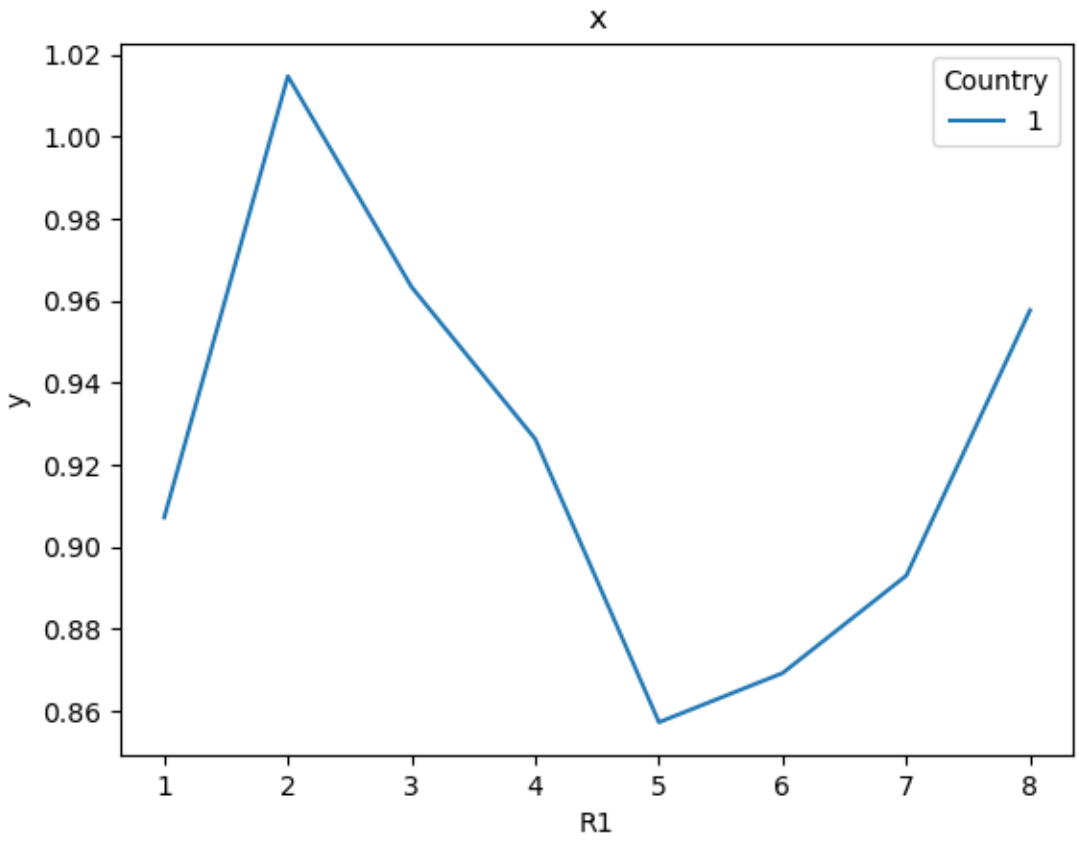
[109]:
```
#wskazac, ze wykresy nalezy rysowac bezposrednio w zeszycie a nie w
#osobnej zakladce
%matplotlib inline
```

[115]:
```
#wyswietlic wykres na podstawie tabeli przystawnej

df[(df['LANG'] == 1) & (df['Country'] == 1)].
 ↪pivot_table(values='weight_combined', index='R1', columns='Country',␣
 ↪aggfunc='mean',
                                                fill_value=None, margins=False,␣
 ↪dropna=True).plot(kind = 'line')

plt.ylabel('y')
plt.title('x')
```

[115]: Text(0.5, 1.0, 'x')

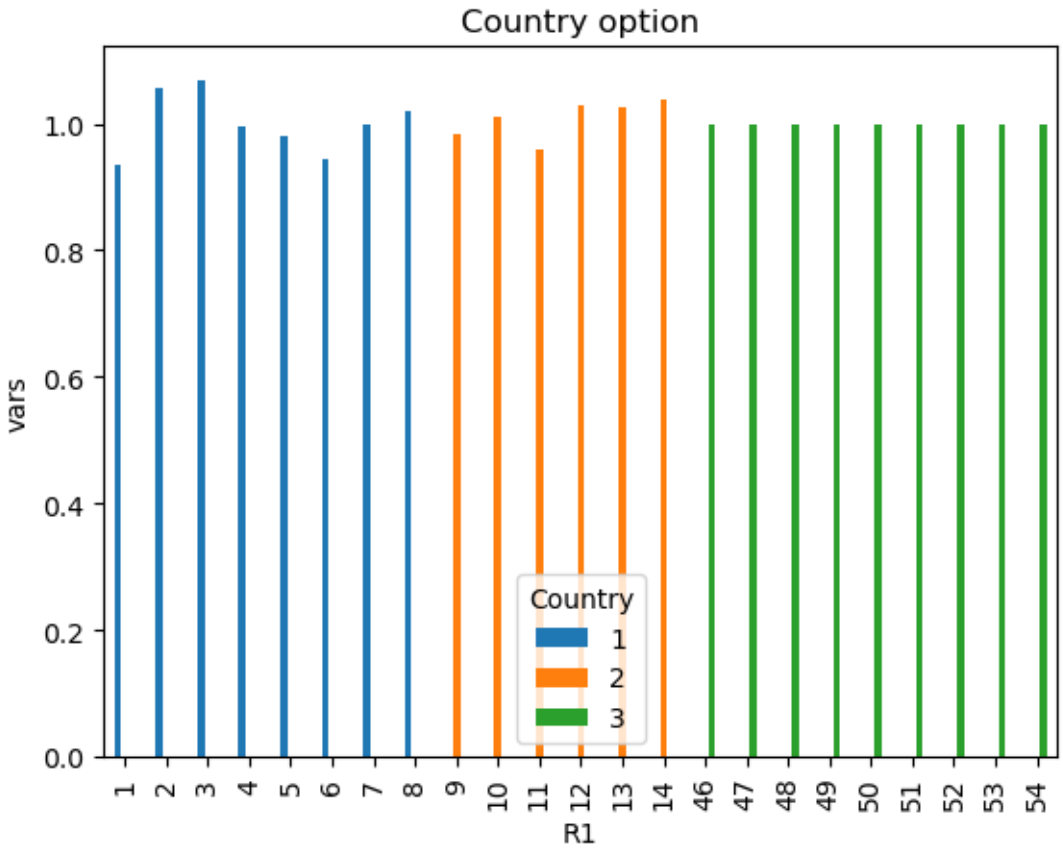



[119]:
```
#narysowac histogram na podstawie wartosci kolumny

df_bar = df[(df['Country'].isin([1,2,3]))].pivot_table(values='weight_combined',
```

```
                index='R1', columns='Country', aggfunc='mean',
                      fill_value=None, margins=False, dropna=True)
df_bar.plot(kind = 'bar')
plt.ylabel('vars')
plt.title('Country option')
```

[119]: `Text(0.5, 1.0, 'Country option')`




[121]:
```
#przedstawic sposoby laczenia ramek danych za pomoca metod merge i
#concat

df2 = pd.read_csv('IHME_ORB_C19HSDS_2020_Y2020M12D03.CSV')
df2
```

[121]:

| | SbjNum | NetDuration | InterviewTimeVStart | InterviewTimeVEnd | \ |
|---|---|---|---|---|---|
| 0 | 133476254 | 0:10:14 | 7/17/2020 13:53 | 7/17/2020 14:26 | |
| 1 | 133281846 | 0:22:16 | 7/10/2020 12:53 | 7/10/2020 14:47 | |
| 2 | 133280780 | 0:19:23 | 7/10/2020 12:35 | 7/10/2020 12:54 | |
| 3 | 133281834 | 0:10:11 | 7/10/2020 10:21 | 7/10/2020 10:32 | |
| 4 | 133491249 | 0:09:59 | 7/18/2020 8:27 | 7/18/2020 8:39 | |

```
…          …          …                    …                    …
3053  133323839     0:09:03     7/11/2020 12:44   7/11/2020 12:53
3054  133305818     0:06:57     7/11/2020 16:18   7/11/2020 16:25
3055  133260048     0:21:46      7/9/2020 11:49    7/9/2020 12:12
3056  133305807     0:06:50      7/11/2020 9:05    7/11/2020 9:12
3057  133352713     0:09:20      7/13/2020 9:56   7/13/2020 14:44

                Date  Srvyr  Country  LANG  R1  R1_5  … G11_Other G11_99  \
0     7/17/2020 8:53   3232        2     1   9  15.0  …       NaN    NaN
1     7/10/2020 7:53   3206        2     4  12  22.0  …       NaN    NaN
2     7/10/2020 7:35   3202        2     3  10  13.0  …       NaN    NaN
3     7/10/2020 5:21   3212        2     1  12   9.0  …       NaN    NaN
4     7/18/2020 3:27   3225        2     3  11  28.0  …       NaN    NaN
…               …    …       …   …  ..   …  …        …    …
3053  7/11/2020 5:44   3012        1     7   8   NaN  …       NaN    NaN
3054  7/11/2020 9:18   3008        1     1   3   NaN  …       NaN    NaN
3055   7/9/2020 4:49   3004        1     1   7   NaN  …       NaN    NaN
3056  7/11/2020 2:05   3008        1     1   3   NaN  …       NaN    NaN
3057  7/13/2020 2:56   3003        1     1   2   NaN  …       NaN    NaN

      FinalOutcome  NumOfVisits  weight_combined kenya_weight  nigeria_weight  \
0                1            1         0.829860          NaN        0.829860
1                1            1         1.416946          NaN        1.416946
2                1            1         0.883601          NaN        0.883601
3                1            1         1.416946          NaN        1.416946
4                1            1         0.829860          NaN        0.829860
…              …          …               …          …              …
3053             1            1         3.791351     3.791351             NaN
3054             1            1         1.157689     1.157689             NaN
3055             1            1         0.799916     0.799916             NaN
3056             1            1         0.799916     0.799916             NaN
3057             1            3         1.157689     1.157689             NaN

     southafrica_weight  agegroup gk_weight
0                   NaN         1  1.555754
1                   NaN         2  1.949579
2                   NaN         2  2.151458
3                   NaN         2  2.325065
4                   NaN         1  1.640484
…                 …       …       …
3053                NaN         3  2.354356
3054                NaN         2  1.869021
3055                NaN         1  1.907830
3056                NaN         1  1.753344
3057                NaN         2  1.869021

[3058 rows x 247 columns]
```

[127]:
```
#przedstawic sposoby laczenia ramek danych za pomoca metod merge i
#concat

dfm_1 = df2[['SbjNum', 'NetDuration', 'Date', 'Srvyr']]
dfm_2 = df2[['SbjNum', 'Country', 'LANG', 'R1']]
merged_df = pd.merge(dfm_1, dfm_2, on='SbjNum', how='inner')
print(merged_df)
```

```
         SbjNum NetDuration            Date  Srvyr  Country  LANG  R1
0     133476254     0:10:14  7/17/2020 8:53   3232        2     1   9
1     133281846     0:22:16  7/10/2020 7:53   3206        2     4  12
2     133280780     0:19:23  7/10/2020 7:35   3202        2     3  10
3     133281834     0:10:11  7/10/2020 5:21   3212        2     1  12
4     133491249     0:09:59  7/18/2020 3:27   3225        2     3  11
…           …           …              …     …       …   …  ..
3053  133323839     0:09:03  7/11/2020 5:44   3012        1     7   8
3054  133305818     0:06:57  7/11/2020 9:18   3008        1     1   3
3055  133260048     0:21:46   7/9/2020 4:49   3004        1     1   7
3056  133305807     0:06:50  7/11/2020 2:05   3008        1     1   3
3057  133352713     0:09:20  7/13/2020 2:56   3003        1     1   2

[3058 rows x 7 columns]
```

[129]:
```
dfm_1 = dfm_1.reindex(columns=['SbjNum', 'NetDuration', 'Date', 'Srvyr',␣
 ↪'Country', 'LANG', 'R1'])
combined_df_rows = pd.concat([dfm_1, dfm_2], axis=0, ignore_index=True)
print(combined_df_rows)
```

```
         SbjNum NetDuration            Date   Srvyr  Country  LANG   R1
0     133476254     0:10:14  7/17/2020 8:53  3232.0      NaN   NaN  NaN
1     133281846     0:22:16  7/10/2020 7:53  3206.0      NaN   NaN  NaN
2     133280780     0:19:23  7/10/2020 7:35  3202.0      NaN   NaN  NaN
3     133281834     0:10:11  7/10/2020 5:21  3212.0      NaN   NaN  NaN
4     133491249     0:09:59  7/18/2020 3:27  3225.0      NaN   NaN  NaN
…           …           …              …      …       …   …  …
6111  133323839         NaN            NaN     NaN      1.0   7.0  8.0
6112  133305818         NaN            NaN     NaN      1.0   1.0  3.0
6113  133260048         NaN            NaN     NaN      1.0   1.0  7.0
6114  133305807         NaN            NaN     NaN      1.0   1.0  3.0
6115  133352713         NaN            NaN     NaN      1.0   1.0  2.0

[6116 rows x 7 columns]
```

[147]:
```
#pokazac dodawanie nowych kolumn za pomoca operacji matematycznych

df2['R1_plus_R1_5'] = df2['R1'] + df2['R1_5']
# Wyświetlenie DataFrame z nowymi kolumnami
print(df)
```

```
       new_name NetDuration InterviewTimeVEnd            Date  Srvyr  Country  \
0     133476254     0:10:14   7/17/2020 14:26  7/17/2020 8:53   3232        2
1     133281846     0:22:16   7/10/2020 14:47  7/10/2020 7:53   3206        2
2     133280780     0:19:23   7/10/2020 12:54  7/10/2020 7:35   3202        2
3     133281834     0:10:11   7/10/2020 10:32  7/10/2020 5:21   3212        2
4     133491249     0:09:59    7/18/2020 8:39  7/18/2020 3:27   3225        2
…         …          …               …              …    …       …
3053  133323839     0:09:03   7/11/2020 12:53  7/11/2020 5:44   3012        1
3054  133305818     0:06:57   7/11/2020 16:25  7/11/2020 9:18   3008        1
3055  133260048     0:21:46    7/9/2020 12:12   7/9/2020 4:49   3004        1
3056  133305807     0:06:50    7/11/2020 9:12  7/11/2020 2:05   3008        1
3057  133352713     0:09:20   7/13/2020 14:44  7/13/2020 2:56   3003        1

      LANG  R1    R3  R4  …  R12  H1  H6  H11  FinalOutcome  NumOfVisits  \
0        1   9  XXXX   1  …    1   1   1    1             1            1
1        4  12  XXXX   2  …    1   2   2    1             1            1
2        3  10  XXXX   1  …    1   1   2    1             1            1
3        1  12  XXXX   2  …    1   2   1    1             1            1
4        3  11  XXXX   1  …    1   2   1    1             1            1
…    …   ..   …   ..  …  …   ..  ..  …          …          …
3053     7   8  XXXX   1  …    1   1   1    2             1            1
3054     1   3  XXXX   1  …    1   1   2    1             1            1
3055     1   7  XXXX   2  …    1   1   2    1             1            1
3056     1   3  XXXX   1  …    1   2   2    2             1            1
3057     1   2  XXXX   1  …    2   1   2    1             1            3

      weight_combined  agegroup  gk_weight  new_column
0            0.829860         1   1.555754           1
1            1.416946         2   1.949579          -2
2            0.883601         2   2.151458          -1
3            1.416946         2   2.325065           1
4            0.829860         1   1.640484          -1
…               …       …         …          …
3053         3.791351         3   2.354356          -6
3054         1.157689         2   1.869021           0
3055         0.799916         1   1.907830           0
3056         0.799916         1   1.753344           0
3057         1.157689         2   1.869021           0

[3058 rows x 27 columns]
```

[153]:
```
#przedstawic na przyk ladzie dodawanie nowych kolumn z pomoca funkcji
#lambda
df2['TotalScore'] = df2.apply(lambda x: x['R1'] + x['R1_5'], axis=1)
df2
```

[153]:

| | SbjNum | NetDuration | InterviewTimeVStart | InterviewTimeVEnd |
|---|---|---|---|---|
| 0 | 133476254 | 0:10:14 | 7/17/2020 13:53 | 7/17/2020 14:26 |
| 1 | 133281846 | 0:22:16 | 7/10/2020 12:53 | 7/10/2020 14:47 |
| 2 | 133280780 | 0:19:23 | 7/10/2020 12:35 | 7/10/2020 12:54 |
| 3 | 133281834 | 0:10:11 | 7/10/2020 10:21 | 7/10/2020 10:32 |
| 4 | 133491249 | 0:09:59 | 7/18/2020 8:27 | 7/18/2020 8:39 |
| … | … | … | … | … |
| 3053 | 133323839 | 0:09:03 | 7/11/2020 12:44 | 7/11/2020 12:53 |
| 3054 | 133305818 | 0:06:57 | 7/11/2020 16:18 | 7/11/2020 16:25 |
| 3055 | 133260048 | 0:21:46 | 7/9/2020 11:49 | 7/9/2020 12:12 |
| 3056 | 133305807 | 0:06:50 | 7/11/2020 9:05 | 7/11/2020 9:12 |
| 3057 | 133352713 | 0:09:20 | 7/13/2020 9:56 | 7/13/2020 14:44 |

| | Date | Srvyr | Country | LANG | R1 | R1_5 | … | NumOfVisits |
|---|---|---|---|---|---|---|---|---|
| 0 | 7/17/2020 8:53 | 3232 | 2 | 1 | 9 | 15.0 | … | 1 |
| 1 | 7/10/2020 7:53 | 3206 | 2 | 4 | 12 | 22.0 | … | 1 |
| 2 | 7/10/2020 7:35 | 3202 | 2 | 3 | 10 | 13.0 | … | 1 |
| 3 | 7/10/2020 5:21 | 3212 | 2 | 1 | 12 | 9.0 | … | 1 |
| 4 | 7/18/2020 3:27 | 3225 | 2 | 3 | 11 | 28.0 | … | 1 |
| … | … | … | … | … | .. | … | … | … |
| 3053 | 7/11/2020 5:44 | 3012 | 1 | 7 | 8 | NaN | … | 1 |
| 3054 | 7/11/2020 9:18 | 3008 | 1 | 1 | 3 | NaN | … | 1 |
| 3055 | 7/9/2020 4:49 | 3004 | 1 | 1 | 7 | NaN | … | 1 |
| 3056 | 7/11/2020 2:05 | 3008 | 1 | 1 | 3 | NaN | … | 1 |
| 3057 | 7/13/2020 2:56 | 3003 | 1 | 1 | 2 | NaN | … | 3 |

| | weight_combined | kenya_weight | nigeria_weight | southafrica_weight |
|---|---|---|---|---|
| 0 | 0.829860 | NaN | 0.829860 | NaN |
| 1 | 1.416946 | NaN | 1.416946 | NaN |
| 2 | 0.883601 | NaN | 0.883601 | NaN |
| 3 | 1.416946 | NaN | 1.416946 | NaN |
| 4 | 0.829860 | NaN | 0.829860 | NaN |
| … | … | … | … | … |
| 3053 | 3.791351 | 3.791351 | NaN | NaN |
| 3054 | 1.157689 | 1.157689 | NaN | NaN |
| 3055 | 0.799916 | 0.799916 | NaN | NaN |
| 3056 | 0.799916 | 0.799916 | NaN | NaN |
| 3057 | 1.157689 | 1.157689 | NaN | NaN |

| | agegroup | gk_weight | R1_plus_R1_5 | R1_times_2 | TotalScore |
|---|---|---|---|---|---|
| 0 | 1 | 1.555754 | 24.0 | 18 | 24.0 |
| 1 | 2 | 1.949579 | 34.0 | 24 | 34.0 |
| 2 | 2 | 2.151458 | 23.0 | 20 | 23.0 |
| 3 | 2 | 2.325065 | 21.0 | 24 | 21.0 |
| 4 | 1 | 1.640484 | 39.0 | 22 | 39.0 |
| … | … | … | … | … | … |
| 3053 | 3 | 2.354356 | NaN | 16 | NaN |

```
3054        2   1.869021          NaN           6        NaN
3055        1   1.907830          NaN          14        NaN
3056        1   1.753344          NaN           6        NaN
3057        2   1.869021          NaN           4        NaN

[3058 rows x 250 columns]
```

[155]:
```
#przedstawic mozliwosci pracy z duzymi plikami przy uzyciu argumentu
#chunksize


chunksize = 1000  # Liczba wierszy w każdym kawałku
results = []

for chunk in pd.read_csv('IHME_ORB_C19HSDS_2020_Y2020M12D03.CSV',␣
 ↪chunksize=chunksize):
    chunk['Total'] = chunk['R1'] + chunk['R1_5']
    results.append(chunk)

final_result = pd.concat(results)

print(final_result.head())
```

```
      SbjNum NetDuration InterviewTimeVStart InterviewTimeVEnd  \
0  133476254     0:10:14     7/17/2020 13:53   7/17/2020 14:26
1  133281846     0:22:16     7/10/2020 12:53   7/10/2020 14:47
2  133280780     0:19:23     7/10/2020 12:35   7/10/2020 12:54
3  133281834     0:10:11     7/10/2020 10:21   7/10/2020 10:32
4  133491249     0:09:59      7/18/2020 8:27    7/18/2020 8:39

             Date  Srvyr  Country  LANG  R1  R1_5  … G11_99 FinalOutcome  \
0  7/17/2020 8:53   3232        2     1   9  15.0  …    NaN            1
1  7/10/2020 7:53   3206        2     4  12  22.0  …    NaN            1
2  7/10/2020 7:35   3202        2     3  10  13.0  …    NaN            1
3  7/10/2020 5:21   3212        2     1  12   9.0  …    NaN            1
4  7/18/2020 3:27   3225        2     3  11  28.0  …    NaN            1

   NumOfVisits  weight_combined  kenya_weight nigeria_weight  \
0            1         0.829860           NaN       0.829860
1            1         1.416946           NaN       1.416946
2            1         0.883601           NaN       0.883601
3            1         1.416946           NaN       1.416946
4            1         0.829860           NaN       0.829860

   southafrica_weight agegroup  gk_weight Total
0                 NaN        1   1.555754  24.0
1                 NaN        2   1.949579  34.0
2                 NaN        2   2.151458  23.0
```

```
3                NaN        2   2.325065  21.0
4                NaN        1   1.640484  39.0

[5 rows x 248 columns]
```

[ ]: