Import pandas ¶

In [1]:
```
import pandas as pd
```

Reading data

In [2]:
```
# csv, excel, html, json, sql, xml,etc
data =  pd.read_csv('Health_conditions_among_children_under_age_18__by_selected_characteristics__United_States.csv')
```

Copying data

In [3]:
```
df = data.copy()
```

Data overview

In [4]:
```
df.shape
```

Out[4]:
```
(2744, 16)
```

In [5]:
```
df.size
```

Out[5]:
```
43904
```

In [6]:
```
df.index
```

Out[6]:
```
RangeIndex(start=0, stop=2744, step=1)
```

In [7]:
```
df.columns
```

Out[7]:
```
Index(['INDICATOR', 'PANEL', 'PANEL_NUM', 'UNIT', 'UNIT_NUM', 'STUB_NAME',
       'STUB_NAME_NUM', 'STUB_LABEL', 'STUB_LABEL_NUM', 'YEAR', 'YEAR_NUM',
       'AGE', 'AGE_NUM', 'ESTIMATE', 'SE', 'FLAG'],
      dtype='object')
```

In [8]:
```
df.dtypes
```

Out[8]:
```
INDICATOR          object
PANEL              object
PANEL_NUM           int64
UNIT               object
UNIT_NUM            int64
STUB_NAME          object
STUB_NAME_NUM       int64
STUB_LABEL         object
STUB_LABEL_NUM    float64
YEAR               object
YEAR_NUM            int64
AGE                object
AGE_NUM           float64
ESTIMATE          float64
SE                float64
FLAG               object
dtype: object
```

In [9]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2744 entries, 0 to 2743
Data columns (total 16 columns):
 #   Column          Non-Null Count  Dtype  
---  ------          --------------  -----  
 0   INDICATOR       2744 non-null   object 
 1   PANEL           2744 non-null   object 
 2   PANEL_NUM       2744 non-null   int64  
 3   UNIT            2744 non-null   object 
 4   UNIT_NUM        2744 non-null   int64  
 5   STUB_NAME       2744 non-null   object 
 6   STUB_NAME_NUM   2744 non-null   int64  
 7   STUB_LABEL      2744 non-null   object 
 8   STUB_LABEL_NUM  2744 non-null   float64
 9   YEAR            2744 non-null   object 
 10  YEAR_NUM        2744 non-null   int64  
 11  AGE             2744 non-null   object 
 12  AGE_NUM         2744 non-null   float64
 13  ESTIMATE        2516 non-null   float64
 14  SE              2516 non-null   float64
 15  FLAG            287 non-null    object 
dtypes: float64(4), int64(4), object(8)
memory usage: 343.1+ KB
```

In [10]:
```
df.isna().sum()
```

Out[10]:
```
INDICATOR           0
PANEL               0
PANEL_NUM           0
UNIT                0
UNIT_NUM            0
STUB_NAME           0
STUB_NAME_NUM       0
STUB_LABEL          0
STUB_LABEL_NUM      0
YEAR                0
YEAR_NUM            0
AGE                 0
AGE_NUM             0
ESTIMATE          228
SE                228
FLAG             2457
dtype: int64
```

In [11]:
```
df.head(3)
```

Out[11]:

	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_NUM
0	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	Total	0	Under 18 years	0.00	1997-1999	1
1	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	Total	0	Under 18 years	0.00	2000-2002	2
2	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Age	1	10-17 years	1.22	1997-1999	1

In [12]:
```
df.tail(3)
```

Out[12]:

	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_
2741	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.2	2014-2016	
2742	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.2	2015-2017	
2743	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.2	2016-2018	

Sorting data

In [13]:
```
df.sort_values(by='AGE' , ascending=True)
```

Out[13]:

	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_
1371	Health conditions among children under age 18	Food allergy among persons under 18 years	5	Percent of children, crude	1	Age	1	0-4 years	1.10	2016-2018	
374	Health conditions among children under age 18	Asthma attack in last 12 months among persons ...	2	Percent of children, crude	1	Age	1	0-4 years	1.10	2009-2011	
373	Health conditions among children under age 18	Asthma attack in last 12 months among persons ...	2	Percent of children, crude	1	Age	1	0-4 years	1.10	2008-2010	
372	Health conditions among children under age 18	Asthma attack in last 12 months among persons ...	2	Percent of children, crude	1	Age	1	0-4 years	1.10	2007-2009	
371	Health conditions among children under age 18	Asthma attack in last 12 months among persons ...	2	Percent of children, crude	1	Age	1	0-4 years	1.10	2006-2008	
...	...	...	...	...	...	...	...	...	...	...	
986	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Health insurance status at the time of interview	6	Insured: Private	6.11	2009-2011	

	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_
987	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Health insurance status at the time of interview	6	Insured: Private	6.11	2010-2012	
988	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Health insurance status at the time of interview	6	Insured: Private	6.11	2011-2013	
981	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Health insurance status at the time of interview	6	Insured: Private	6.11	2000-2002	
2743	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2016-2018	

2744 rows × 16 columns

Statistical analysis of data

In [14]:
```
df.describe()
```

Out[14]:

	PANEL_NUM	UNIT_NUM	STUB_NAME_NUM	STUB_LABEL_NUM	YEAR_NUM	AGE_NUM	ESTIMATE	SE
count	2744.000000	2744.0	2744.000000	2744.000000	2744.000000	2744.000000	2516.000000	2516.000000
mean	4.520408	1.0	3.500000	3.718980	7.500000	0.268805	8.480008	0.441852
std	2.309363	0.0	1.733839	1.737358	4.031864	0.679294	4.287880	0.364903
min	1.000000	1.0	0.000000	0.000000	1.000000	0.000000	1.100000	0.100000
25%	2.000000	1.0	2.000000	2.200000	4.000000	0.000000	5.200000	0.200000
50%	5.000000	1.0	3.000000	3.600000	7.500000	0.000000	7.100000	0.300000
75%	7.000000	1.0	5.000000	5.200000	11.000000	0.000000	11.225000	0.500000
max	8.000000	1.0	6.000000	6.200000	14.000000	2.200000	21.700000	3.000000

Data grouping

In [15]:
```
# sum, median, max, first, agg
df.groupby('STUB_NAME').size()
```

Out[15]:
```
STUB_NAME
Age                                                 420
Health insurance status at the time of interview    448
Hispanic origin and race                            448
Percent of poverty level                            448
Race                                                672
Sex                                                 224
Total                                                84
dtype: int64
```

Filtering by operators

In [16]:
```
# operators : (> < != == >= <=)  , ( & | ~ )
df[(df['STUB_NAME'] == 'Age') & (df['ESTIMATE'] > 10)]
```

Out[16]:

	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_
34	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	Age	1	5-17 years	1.2	2006-2008	
35	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	Age	1	5-17 years	1.2	2007-2009	
36	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	Age	1	5-17 years	1.2	2008-2010	
37	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	Age	1	5-17 years	1.2	2009-2011	
38	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	Age	1	5-17 years	1.2	2010-2012	
...	...	...	...	...	...	...	...	...	...	...	...
2412	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Age	1	0-4 years	1.1	2007-2009	

	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_
2413	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Age	1	0-4 years	1.1	2008-2010	
2414	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Age	1	0-4 years	1.1	2009-2011	
2415	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Age	1	0-4 years	1.1	2010-2012	
2416	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Age	1	0-4 years	1.1	2011-2013	

141 rows × 16 columns

Deleting columns or rows

In [17]:
```
df.drop('FLAG' , axis= 1 , inplace=True)
```

In [18]:
```
df.drop(columns=['INDICATOR', 'PANEL'] )
```

Out[18]:

	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_NUM	AGE	AGE_NUI
0	1	Percent of children, crude	1	Total	0	Under 18 years	0.00	1997-1999	1	Under 18 years	0.
1	1	Percent of children, crude	1	Total	0	Under 18 years	0.00	2000-2002	2	Under 18 years	0.
2	3	Percent of children, crude	1	Age	1	10-17 years	1.22	1997-1999	1	10-17 years	2.
3	3	Percent of children, crude	1	Age	1	10-17 years	1.22	2000-2002	2	10-17 years	2.
4	3	Percent of children, crude	1	Age	1	10-17 years	1.22	2003-2005	3	10-17 years	2.
...	...	...	...	...	...	...	...	...	...	...	.
2739	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2012-2014	10	Under 18 years	0.
2740	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2013-2015	11	Under 18 years	0.
2741	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2014-2016	12	Under 18 years	0.

	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_NUM	AGE	AGE_NUI
2742	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2015-2017	13	Under 18 years	0.
2743	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2016-2018	14	Under 18 years	0.

2744 rows × 13 columns

In [19]:
```
df.drop([0] , axis=0 )
```

Out[19]:

	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_
1	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	Total	0	Under 18 years	0.00	2000-2002	
2	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Age	1	10-17 years	1.22	1997-1999	
3	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Age	1	10-17 years	1.22	2000-2002	
4	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Age	1	10-17 years	1.22	2003-2005	
5	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	Total	0	Under 18 years	0.00	2003-2005	
...	...	...	...	...	...	...	...	...	...	...	...
2739	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2012-2014	

	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_
2740	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2013-2015	
2741	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2014-2016	
2742	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2015-2017	
2743	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2016-2018	

2743 rows × 15 columns

In [20]:
```
df.drop(df[df['PANEL_NUM']==1].index )
```

Out[20]:

	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_
2	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Age	1	10-17 years	1.22	1997-1999	
3	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Age	1	10-17 years	1.22	2000-2002	
4	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Age	1	10-17 years	1.22	2003-2005	
353	Health conditions among children under age 18	Asthma attack in last 12 months among persons ...	2	Percent of children, crude	1	Total	0	Under 18 years	0.00	1997-1999	
354	Health conditions among children under age 18	Asthma attack in last 12 months among persons ...	2	Percent of children, crude	1	Total	0	Under 18 years	0.00	2000-2002	
...	...	...	...	...	...	...	...	...	...	...	...
2739	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2012-2014	

	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_
2740	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2013-2015	
2741	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2014-2016	
2742	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2015-2017	
2743	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2016-2018	

2394 rows × 15 columns

Adding new columns

In [21]:
```
import numpy as np
df['New_Col'] = np.arange(0,df.shape[0])
```

In [22]:
```
df['New_col2'] = df[['STUB_NAME']]
```

Removing and replacing null

In [23]:
```
df.dropna(subset=['ESTIMATE'] , inplace= True)
```

In [24]:
```
pd.isna(df['ESTIMATE']).sum()
```

Out[24]:
```
0
```

In [25]:
```
df['SE'].fillna(0)
```

Out[25]:
```
2       0.2
3       0.3
4       0.3
5       0.2
6       0.2
       ...
2739    0.5
2740    0.6
2741    0.5
2742    0.6
2743    0.6
Name: SE, Length: 2516, dtype: float64
```

Removing duplicated data

In [26]:
```
df.duplicated(subset=['PANEL']).sum()
```

Out[26]:
```
2508
```

In [27]:
```
df.drop_duplicates(subset= ['PANEL'])
```

Out[27]:

	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR
2	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Age	1	10-17 years	1.22	1997-1999	
5	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	Total	0	Under 18 years	0.00	2003-2005	
353	Health conditions among children under age 18	Asthma attack in last 12 months among persons ...	2	Percent of children, crude	1	Total	0	Under 18 years	0.00	1997-1999	
1024	Health conditions among children under age 18	Serious emotional or behavioral difficulties a...	4	Percent of children, crude	1	Age	1	5-17 years	1.20	2003-2005	
1169	Health conditions among children under age 18	Food allergy among persons under 18 years	5	Percent of children, crude	1	Age	1	0-4 years	1.10	2007-2009	
1670	Health conditions among children under age 18	Skin allergy among persons under 18 years	6	Percent of children, crude	1	Total	0	Under 18 years	0.00	2000-2002	
2044	Health conditions among children under age 18	Hay fever or respiratory allergy among persons...	7	Percent of children, crude	1	Total	0	Under 18 years	0.00	1997-1999	

	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR
2394	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Total	0	Under 18 years	0.00	1997-1999	

Unique values

In [28]:
```
df['STUB_LABEL'].unique()
```

Out[28]:
```
array(['10-17 years', 'Under 18 years', '0-4 years', '5-17 years',
       '5-9 years', 'Male', 'Female', 'White only',
       'Black or African American only',
       'American Indian or Alaska Native only', 'Asian only',
       '2 or more races', 'Hispanic or Latino: All races',
       'Not Hispanic or Latino: All races', '100%-199%',
       'Not Hispanic or Latino: White only',
       'Not Hispanic or Latino: Black or African American only',
       'Below 100%', '200%-399%', '400% or more', 'Insured',
       'Insured: Private', 'Insured: Medicaid', 'Uninsured',
       'Native Hawaiian or Other Pacific Islander only'], dtype=object)
```

Renaming columns

In [29]:
```
df.rename(columns={'New_Col': 'index'} , inplace=True)
```

Indexing

In [30]:
```
df.set_index(['index'] , inplace=True)
```

In [31]:
```
df.reset_index()
```

Out[31]:

	index	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR
0	2	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Age	1	10-17 years	1.22	1997-1999
1	3	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Age	1	10-17 years	1.22	2000-2002
2	4	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	Age	1	10-17 years	1.22	2003-2005
3	5	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	Total	0	Under 18 years	0.00	2003-2005
4	6	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	Total	0	Under 18 years	0.00	2006-2008
...	...	...	...	...	...	...	...	...	...	...	...
2511	2739	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2012-2014

	index	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR
2512	2740	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2013-2015
2513	2741	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2014-2016
2514	2742	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2015-2017
2515	2743	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	Health insurance status at the time of interview	6	Uninsured	6.20	2016-2018

2516 rows × 17 columns

Loc , iLoc

In [32]:
```
df.loc[3]
```

Out[32]:
```
INDICATOR         Health conditions among children under age 18
PANEL                          ADHD among persons under 18 years
PANEL_NUM                                                      3
UNIT                                  Percent of children, crude
UNIT_NUM                                                       1
STUB_NAME                                                    Age
STUB_NAME_NUM                                                  1
STUB_LABEL                                            10-17 years
STUB_LABEL_NUM                                               1.22
YEAR                                                    2000-2002
YEAR_NUM                                                       2
AGE                                                   10-17 years
AGE_NUM                                                      2.2
ESTIMATE                                                     9.0
SE                                                           0.3
New_col2                                                     Age
Name: 3, dtype: object
```

In [33]:
```
df.set_index(['STUB_NAME'] , inplace=True)
```

In [34]:
```
df.loc[['Age']]
```

Out[34]:

STUB_NAME	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_NUM
Age	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	1	10-17 years	1.22	1997-1999	1
Age	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	1	10-17 years	1.22	2000-2002	2
Age	Health conditions among children under age 18	ADHD among persons under 18 years	3	Percent of children, crude	1	1	10-17 years	1.22	2003-2005	3
Age	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	1	0-4 years	1.10	2003-2005	3
Age	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	1	0-4 years	1.10	2006-2008	4
...	...	...	...	...	...	...	...	...	...	...
Age	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	1	10-17 years	1.22	2012-2014	10

	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_NUM
STUB_NAME										
Age	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	1	10-17 years	1.22	2013-2015	11
Age	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	1	10-17 years	1.22	2014-2016	12
Age	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	1	10-17 years	1.22	2015-2017	13
Age	Health conditions among children under age 18	Ear infections among persons under 18 years	8	Percent of children, crude	1	1	10-17 years	1.22	2016-2018	14

406 rows × 15 columns

In [35]:
```
df.loc[['Age']][['PANEL','PANEL_NUM']]
```

Out[35]:

STUB_NAME	PANEL	PANEL_NUM
Age	ADHD among persons under 18 years	3
Age	ADHD among persons under 18 years	3
Age	ADHD among persons under 18 years	3
Age	Current asthma among persons under 18 years	1
Age	Current asthma among persons under 18 years	1
...	...	...
Age	Ear infections among persons under 18 years	8
Age	Ear infections among persons under 18 years	8
Age	Ear infections among persons under 18 years	8
Age	Ear infections among persons under 18 years	8
Age	Ear infections among persons under 18 years	8

406 rows × 2 columns

In [36]:
```
df.iloc[10:30]
```

Out[36]:

STUB_NAME	INDICATOR	PANEL	PANEL_NUM	UNIT	UNIT_NUM	STUB_NAME_NUM	STUB_LABEL	STUB_LABEL_NUM	YEAR	YEAR_NUM
Total	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	0	Under 18 years	0.0	2012-2014	10
Total	Health conditions among children under age 18	Current asthma among persons under 18 years	1	Percent of children, crude	1	0	Under 18 years	0.0	2013-2015	11
	Health conditions	Current asthma		Percent						

In [37]:
```
df.iloc[-1]
```

Out[37]:
```
INDICATOR            Health conditions among children under age 18
PANEL                  Ear infections among persons under 18 years
PANEL_NUM                                                        8
UNIT                                       Percent of children, crude
UNIT_NUM                                                         1
STUB_NAME_NUM                                                    6
STUB_LABEL                                                Uninsured
STUB_LABEL_NUM                                                 6.2
YEAR                                                     2016-2018
YEAR_NUM                                                        14
AGE                                                  Under 18 years
AGE_NUM                                                        0.0
ESTIMATE                                                       2.9
SE                                                             0.6
New_col2          Health insurance status at the time of interview
Name: Health insurance status at the time of interview, dtype: object
```

In [38]:
```
df[['AGE'][:20]]
```

Out[38]:

	AGE
STUB_NAME	
Age	10-17 years
Age	10-17 years
Age	10-17 years
Total	Under 18 years
Total	Under 18 years
...	...
Health insurance status at the time of interview	Under 18 years
Health insurance status at the time of interview	Under 18 years
Health insurance status at the time of interview	Under 18 years
Health insurance status at the time of interview	Under 18 years
Health insurance status at the time of interview	Under 18 years

2516 rows × 1 columns

Concatenate and merge

In [39]:
```
df1 = df[['INDICATOR', 'PANEL','UNIT_NUM']]
df2 = df[['STUB_NAME_NUM', 'STUB_LABEL','UNIT_NUM']]
```

In [40]:
```
df3 = pd.concat((df1,df2), axis=1 )
```

In [41]:
```
df4 = pd.merge(df1,df2,on='UNIT_NUM' , how= 'inner')
```

Writing data

In [42]:
```
# excel, dict, latex, numpy, json, html, sql and etc.
df.to_('new_file.csv')
```