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высшего профессионального образования
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Лабораторная работа №1
по курсу «Методы машинного обучения»

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XXXX

Москва, 2023

1. Задание

1. Выбрать набор данных (датасет)
2. Создать ”историю о данных” в виде юпитер-ноутбука
3. Сформировать отчет и разместить его в своем репозитории на github

In [1]:
```
import pandas as pd
data = pd.read_csv("stroke-data.csv.zst")
```

In [2]:
```
display(data.shape)
display(data.head())
display(data.info())
```

```
(5110, 12)
```

	id	gender	age	hypertension	heart_disease	ever_married	work_type	Residence_typ
0	9046	Male	67.0	0	1	Yes	Private	Urba
1	51676	Female	61.0	0	0	Yes	Self-employed	Rur
2	31112	Male	80.0	0	1	Yes	Private	Rur
3	60182	Female	49.0	0	0	Yes	Private	Urba
4	1665	Female	79.0	1	0	Yes	Self-employed	Rur

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 5110 entries, 0 to 5109
Data columns (total 12 columns):
 #   Column             Non-Null Count  Dtype  
---  ------             --------------  -----  
 0   id                 5110 non-null   int64  
 1   gender             5110 non-null   object 
 2   age                5110 non-null   float64
 3   hypertension       5110 non-null   int64  
 4   heart_disease      5110 non-null   int64  
 5   ever_married       5110 non-null   object 
 6   work_type          5110 non-null   object 
 7   Residence_type     5110 non-null   object 
 8   avg_glucose_level  5110 non-null   float64
 9   bmi                4909 non-null   float64
 10  smoking_status     5110 non-null   object 
 11  stroke             5110 non-null   int64  
dtypes: float64(3), int64(4), object(5)
memory usage: 479.2+ KB
None
```

In [3]:
```
data.isnull().sum()
```

Out[3]:
```
id                     0
gender                 0
age                    0
hypertension           0
heart_disease          0
ever_married           0
work_type              0
Residence_type         0
avg_glucose_level      0
bmi                  201
smoking_status         0
stroke                 0
dtype: int64
```

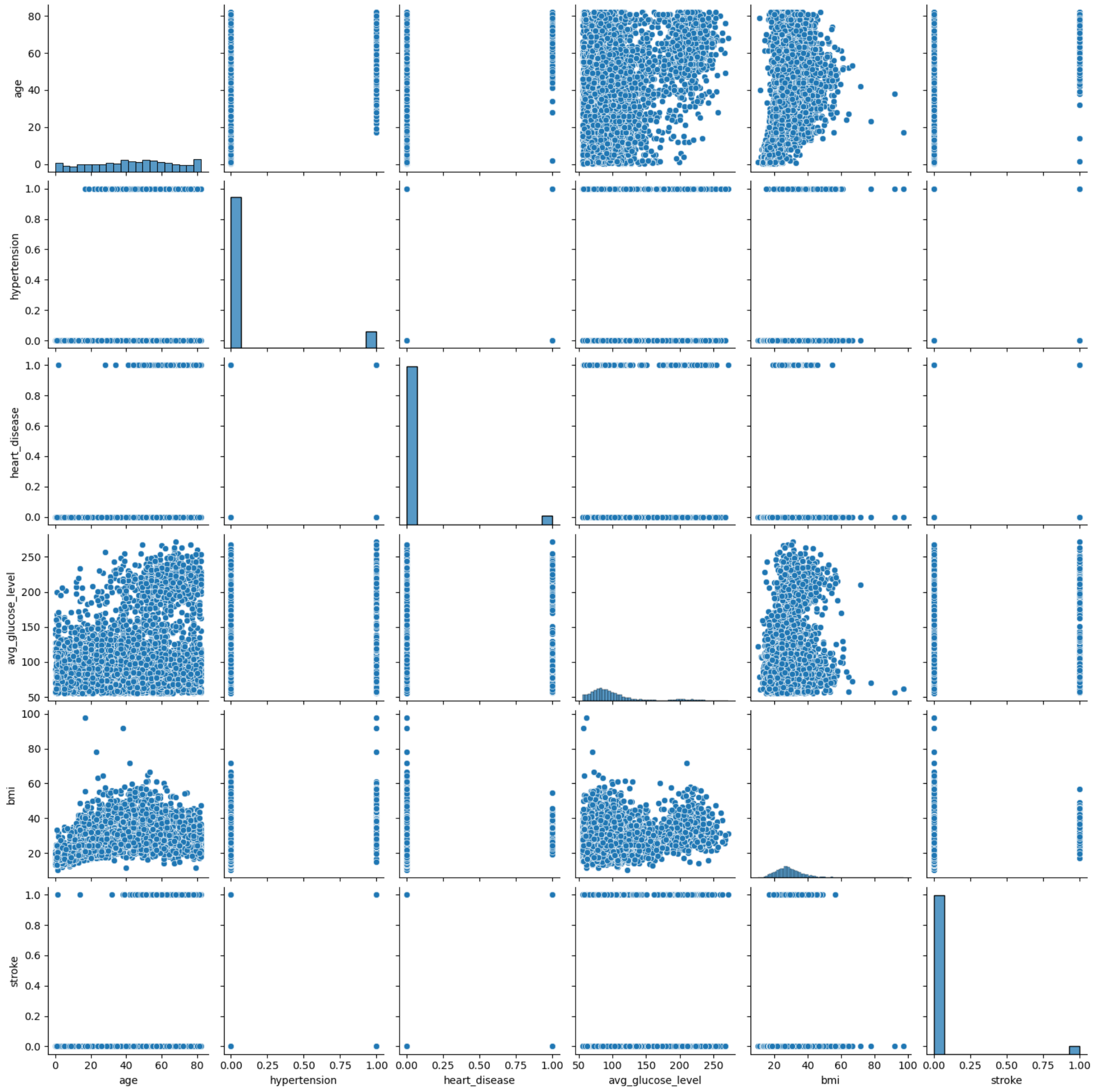
In [4]:

```
display(data["gender"].unique())
display(data["hypertension"].unique())
display(data["heart_disease"].unique())
display(data["ever_married"].unique())
display(data["work_type"].unique())
display(data["Residence_type"].unique())
display(data["smoking_status"].unique())
display(data["stroke"].unique())
```

```
array(['Male', 'Female', 'Other'], dtype=object)
array([0, 1])
array([1, 0])
array(['Yes', 'No'], dtype=object)
array(['Private', 'Self-employed', 'Govt_job', 'children', 'Never_worked
'],
      dtype=object)
array(['Urban', 'Rural'], dtype=object)
array(['formerly smoked', 'never smoked', 'smokes', 'Unknown'],
      dtype=object)
array([1, 0])
```

In [5]:

```
import seaborn as sns
sns.pairplot(data = data.drop(columns = ["id"]));
```



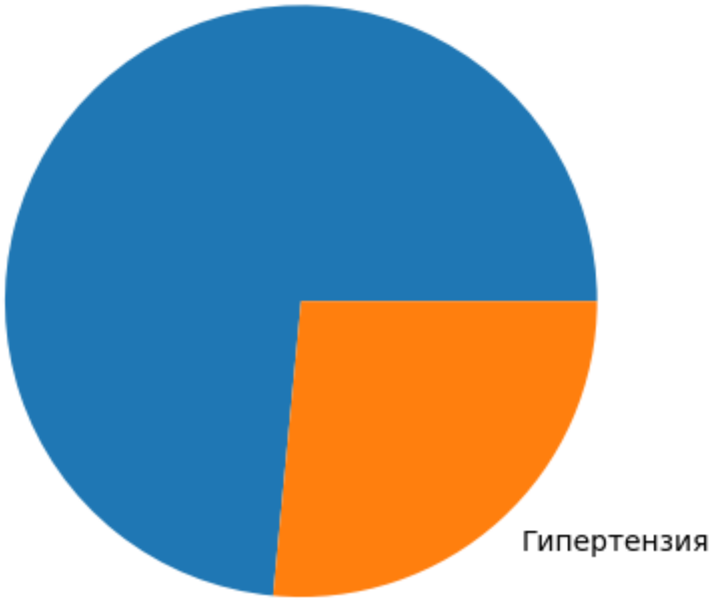
In [6]:

```
stroke = data.drop(data[data.stroke != 1].index)
display(stroke.head())
```

	id	gender	age	hypertension	heart_disease	ever_married	work_type	Residence_typ
0	9046	Male	67.0	0	1	Yes	Private	Urba
1	51676	Female	61.0	0	0	Yes	Self-employed	Rur
2	31112	Male	80.0	0	1	Yes	Private	Rur
3	60182	Female	49.0	0	0	Yes	Private	Urba
4	1665	Female	79.0	1	0	Yes	Self-employed	Rur

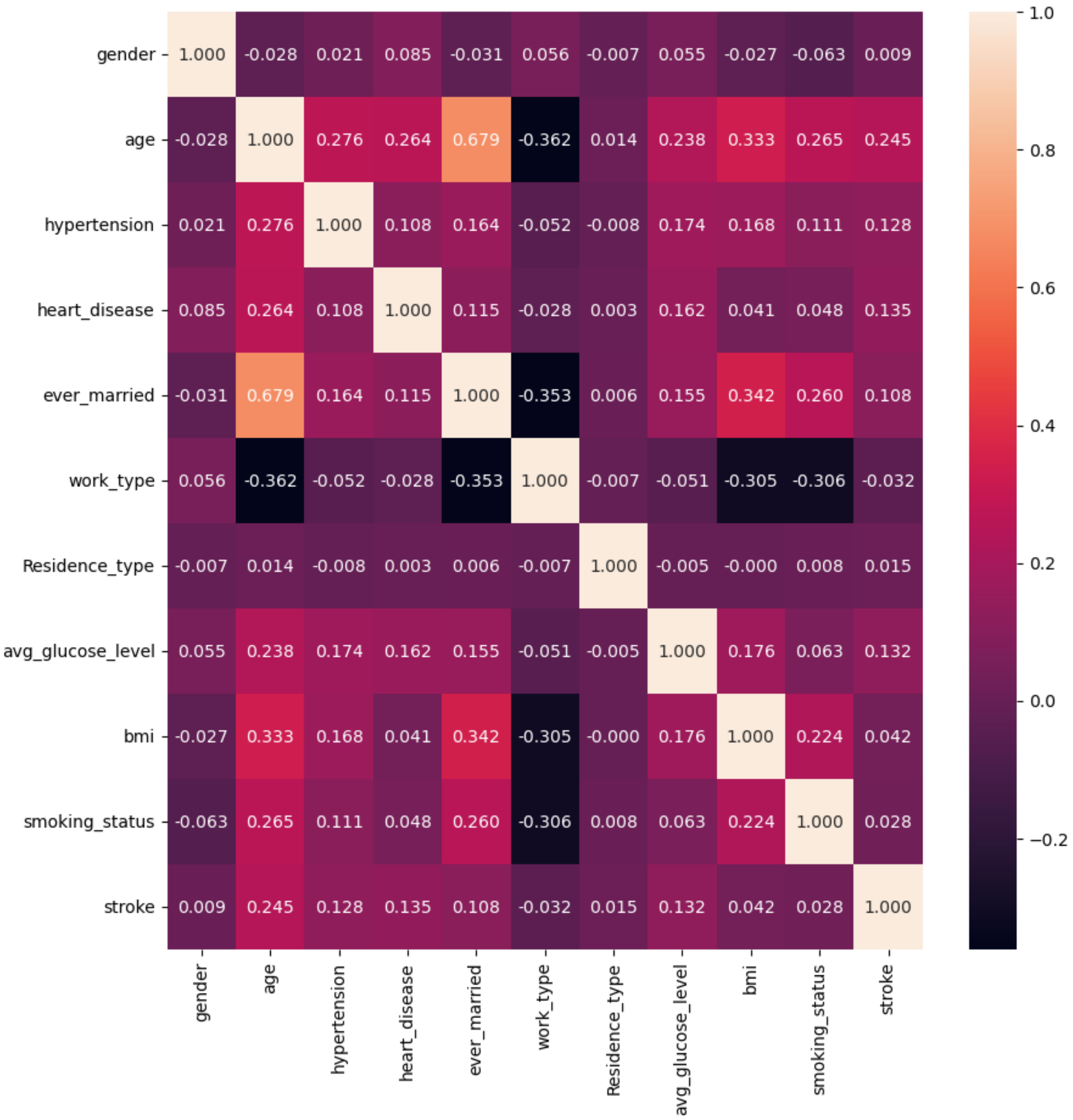
In [7]:

```
import matplotlib.pyplot as plt

plt.pie([stroke[stroke["hypertension"] == 0]["hypertension"].count(), str
plt.show()
```

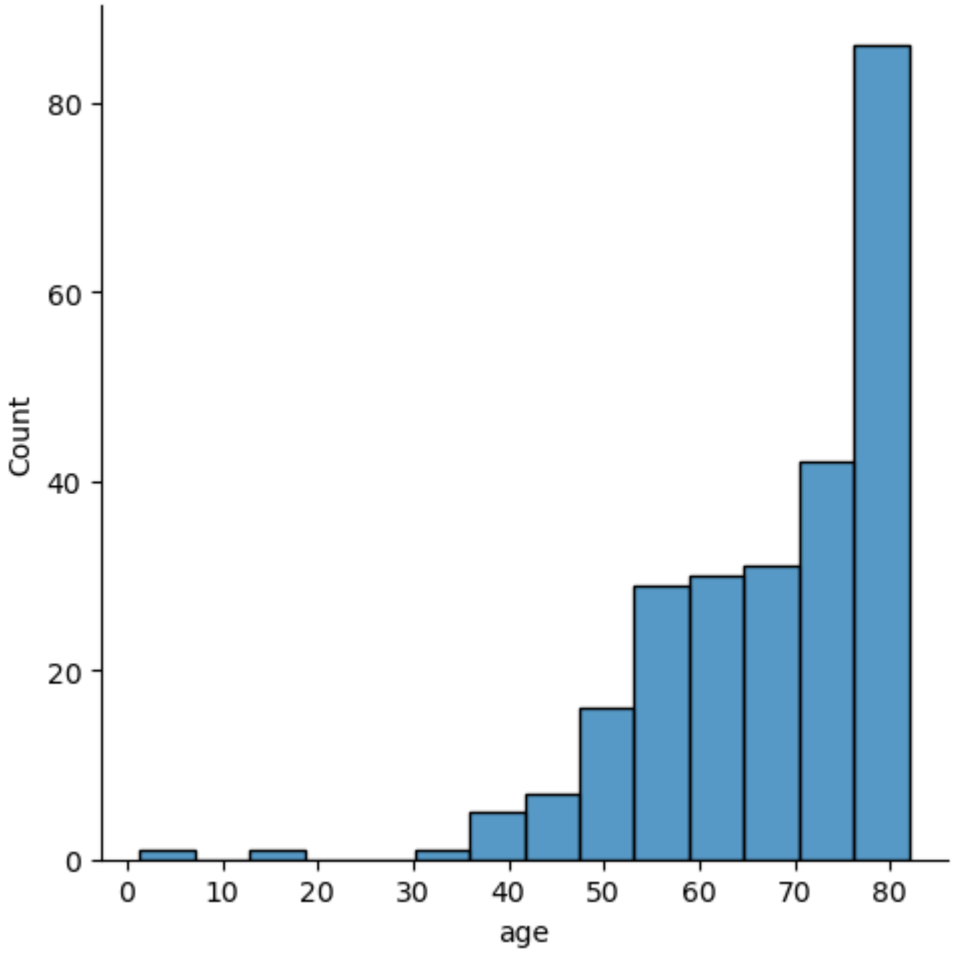


In [8]:

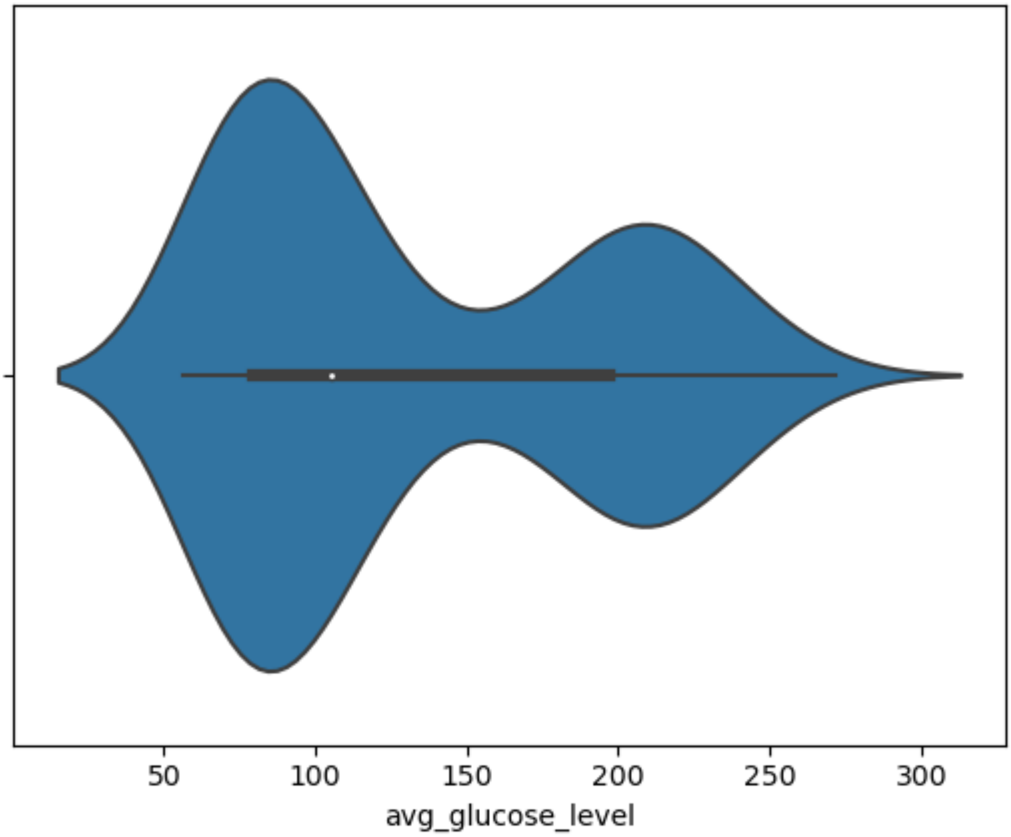
```
from sklearn.preprocessing import LabelEncoder

encoded = data
for col in ["gender", "ever_married", "work_type", "Residence_type", "smo
  encoded[col] = LabelEncoder().fit_transform(data[col])

plt.figure(figsize = (10, 10))
sns.heatmap(encoded.drop(columns = ["id"]).corr(numeric_only = True), ann
```



```
In [9]: sns.displot(stroke, x = "age");
```



```
In [10]: sns.violinplot(stroke, x = "avg_glucose_level");
```


avg_glucose_level