

mk 04/08/2023

```
In [1]: import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.linear_model import LogisticRegression
from sklearn.preprocessing import StandardScaler
import re
from sklearn.datasets import load_digits
from sklearn.model_selection import train_test_split
```

```
In [2]: a=pd.read_csv(r"C:\Users\user\Downloads\Book31.csv")
a
```

Out[2]:

| | index | SUBDIVISION | YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT |
|-----|-------|----------------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 0 | 552 | GANGETIC WEST BENGAL | 1901 | 37.1 | 58.4 | 3.9 | 64.1 | 121.7 | 198.0 | 280.8 | 275.7 | 313.5 | 51.7 |
| 1 | 553 | GANGETIC WEST BENGAL | 1902 | 0.0 | 1.2 | 44.2 | 103.8 | 161.6 | 140.9 | 347.8 | 264.8 | 230.5 | 32.1 |
| 2 | 554 | GANGETIC WEST BENGAL | 1903 | 17.5 | 24.6 | 37.3 | 30.6 | 78.5 | 201.7 | 179.6 | 277.6 | 300.7 | 198.0 |
| 3 | 555 | GANGETIC WEST BENGAL | 1904 | 0.1 | 23.9 | 35.6 | 17.5 | 160.2 | 286.7 | 435.3 | 241.7 | 142.8 | 35.7 |
| 4 | 556 | GANGETIC WEST BENGAL | 1905 | 30.9 | 49.6 | 84.7 | 84.9 | 156.8 | 70.9 | 525.5 | 263.6 | 287.6 | 107.1 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 110 | 662 | GANGETIC WEST BENGAL | 2011 | 2.5 | 2.7 | 40.5 | 75.0 | 132.6 | 434.5 | 219.9 | 443.2 | 295.9 | 36.9 |
| 111 | 663 | GANGETIC WEST BENGAL | 2012 | 40.7 | 15.3 | 4.4 | 57.7 | 44.2 | 146.6 | 315.0 | 261.4 | 246.9 | 64.1 |
| 112 | 664 | GANGETIC WEST BENGAL | 2013 | 2.5 | 10.0 | 4.8 | 45.6 | 195.9 | 233.4 | 263.2 | 401.4 | 254.0 | 353.1 |
| 113 | 665 | GANGETIC WEST BENGAL | 2014 | 0.9 | 42.2 | 19.9 | 1.9 | 124.4 | 193.6 | 298.7 | 292.6 | 229.5 | 56.9 |
| 114 | 666 | GANGETIC WEST BENGAL | 2015 | 12.9 | 5.5 | 19.3 | 88.7 | 57.6 | 247.2 | 633.1 | 260.6 | 164.0 | 32.7 |

115 rows × 20 columns



```
In [3]: a.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 115 entries, 0 to 114
Data columns (total 20 columns):
#   Column                Non-Null Count  Dtype
---  -
0   index                 115 non-null   int64
1   SUBDIVISION           115 non-null   object
2   YEAR                  115 non-null   int64
3   JAN                   115 non-null   float64
4   FEB                   115 non-null   float64
5   MAR                   115 non-null   float64
6   APR                   115 non-null   float64
7   MAY                   115 non-null   float64
8   JUN                   115 non-null   float64
9   JUL                   115 non-null   float64
10  AUG                   115 non-null   float64
11  SEP                   115 non-null   float64
12  OCT                   115 non-null   float64
13  NOV                   115 non-null   float64
14  DEC                   115 non-null   float64
15  ANNUAL                115 non-null   float64
16  Jan-Feb               115 non-null   float64
17  Mar-May               115 non-null   float64
18  Jun-Sep               115 non-null   float64
19  Oct-Dec               115 non-null   float64
dtypes: float64(17), int64(2), object(1)
memory usage: 18.1+ KB
```

```
In [4]: b=a.fillna(method='ffill')
b
```

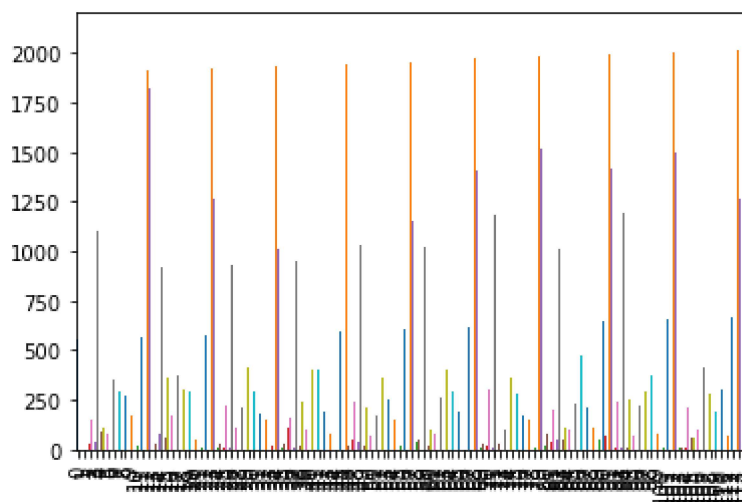
Out[4]:

| | index | SUBDIVISION | YEAR | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT |
|-----|-------|----------------------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| 0 | 552 | GANGETIC WEST BENGAL | 1901 | 37.1 | 58.4 | 3.9 | 64.1 | 121.7 | 198.0 | 280.8 | 275.7 | 313.5 | 51.7 |
| 1 | 553 | GANGETIC WEST BENGAL | 1902 | 0.0 | 1.2 | 44.2 | 103.8 | 161.6 | 140.9 | 347.8 | 264.8 | 230.5 | 32.1 |
| 2 | 554 | GANGETIC WEST BENGAL | 1903 | 17.5 | 24.6 | 37.3 | 30.6 | 78.5 | 201.7 | 179.6 | 277.6 | 300.7 | 198.1 |
| 3 | 555 | GANGETIC WEST BENGAL | 1904 | 0.1 | 23.9 | 35.6 | 17.5 | 160.2 | 286.7 | 435.3 | 241.7 | 142.8 | 35.7 |
| 4 | 556 | GANGETIC WEST BENGAL | 1905 | 30.9 | 49.6 | 84.7 | 84.9 | 156.8 | 70.9 | 525.5 | 263.6 | 287.6 | 107.1 |
| ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 110 | 662 | GANGETIC WEST BENGAL | 2011 | 2.5 | 2.7 | 40.5 | 75.0 | 132.6 | 434.5 | 219.9 | 443.2 | 295.9 | 36.1 |
| 111 | 663 | GANGETIC WEST BENGAL | 2012 | 40.7 | 15.3 | 4.4 | 57.7 | 44.2 | 146.6 | 315.0 | 261.4 | 246.9 | 64.1 |
| 112 | 664 | GANGETIC WEST BENGAL | 2013 | 2.5 | 10.0 | 4.8 | 45.6 | 195.9 | 233.4 | 263.2 | 401.4 | 254.0 | 353.1 |
| 113 | 665 | GANGETIC WEST BENGAL | 2014 | 0.9 | 42.2 | 19.9 | 1.9 | 124.4 | 193.6 | 298.7 | 292.6 | 229.5 | 56.1 |
| 114 | 666 | GANGETIC WEST BENGAL | 2015 | 12.9 | 5.5 | 19.3 | 88.7 | 57.6 | 247.2 | 633.1 | 260.6 | 164.0 | 32.7 |

115 rows × 20 columns

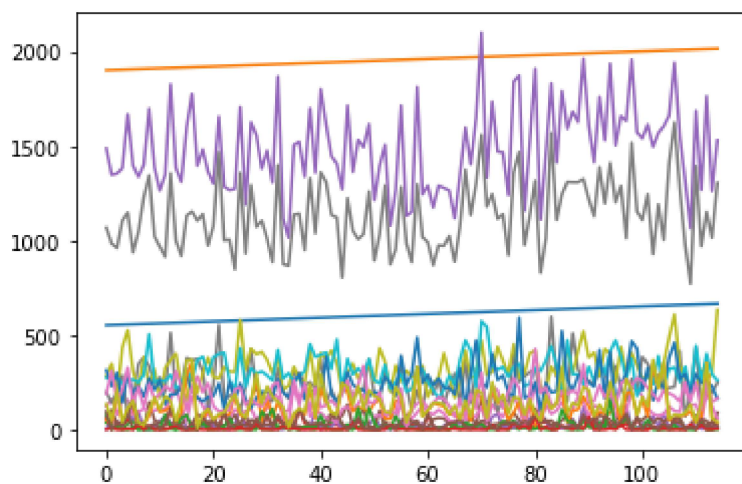
```
In [5]: b.plot.bar(legend=None)
```

```
Out[5]: <AxesSubplot:>
```



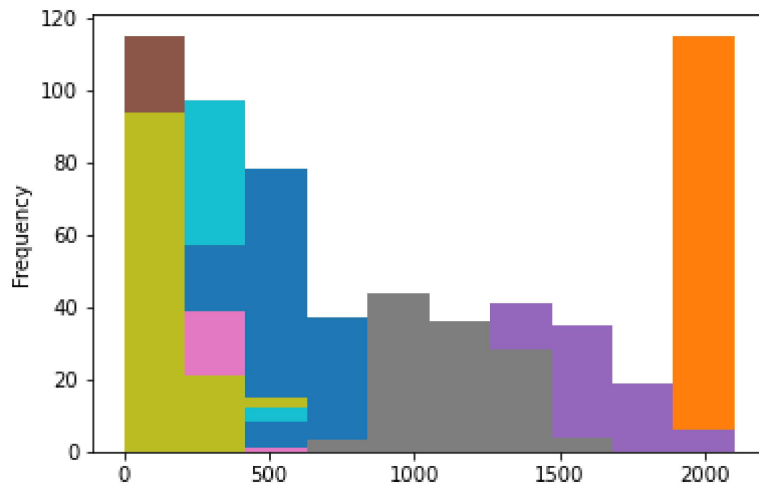
```
In [6]: b.plot.line(legend=None)
```

```
Out[6]: <AxesSubplot:>
```



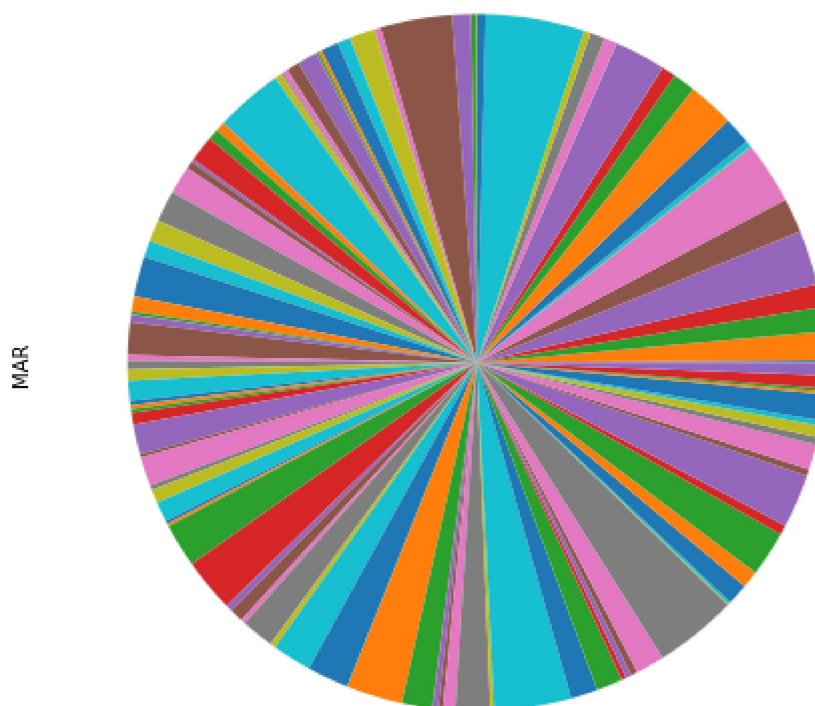
```
In [7]: b.plot.hist(legend=None)
```

```
Out[7]: <AxesSubplot:ylabel='Frequency'>
```



```
In [8]: a.plot.pie(y='MAR',figsize=(8,8),labels=None,legend=None)
```

```
Out[8]: <AxesSubplot:ylabel='MAR'>
```



```
In [ ]:
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