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Roll no: CO3A09. **Assignment No: 03** BATCH:B1

Batch: B1

Title:

Descriptive Statistics - Measures of Central Tendency and variability Perform the following operations on any open source dataset (e.g., data.csv) 1. Provide summary statistics (mean, median, minimum, maximum, standard deviation) for a dataset (age, income etc.) with numeric variables grouped by one of the qualitative (categorical) variable. For example, if your categorical variable is age groups and quantitative variable is income, then provide summary statistics of income grouped by the age groups. Create a list that contains a numeric value for each response to the categorical variable. 2. Write a Python program to display some basic statistical details like percentile, mean, standard deviation etc. of the species of 'Iris-setosa', 'Iris-versicolor' and 'Iris-versicolor' of iris.csv dataset.

Source Code:

In [1]:

```
import pandas as pd
```

In [ ]:

```
df=pd.read_
```

In [2]:

```
df=pd.read_csv('age_income.csv')
```

In [3]:

```
summary_static=df.groupby('age')['income']
```

In [4]:

```
print (summary_static)
```

```
<pandas.core.groupby.generic.SeriesGroupBy object at 0x000001AB919F8B50>
```

In [5]:

```
summary_static=df.groupby('age')['income'].describe()
```

In [6]:

```
print ((summary_static))
```

```
     count      mean  std      min      25%      50%      75%      max
age
25     1.0   49000.0  NaN  49000.0  49000.0  49000.0  49000.0  49000.0
32     1.0  192000.0  NaN  192000.0 192000.0 192000.0 192000.0 192000.0
41     1.0   39000.0  NaN  39000.0  39000.0  39000.0  39000.0  39000.0
56     1.0  156000.0  NaN  156000.0 156000.0 156000.0 156000.0 156000.0
59     1.0   57000.0  NaN  57000.0  57000.0  57000.0  57000.0  57000.0
65     1.0   99000.0  NaN  99000.0  99000.0  99000.0  99000.0  99000.0
```

In [7]:

```
df
```

Out[7]:

	age	income
0	25	49000
1	56	156000

	age	income
2	65	99000
3	32	192000
4	41	39000
5	59	57000

In [8]:
```
df=pd.read_csv('iris.csv')
```

In [9]:
```
df
```

Out[9]:

	sepal.length	sepal.width	petal.length	petal.width	variety
0	5.1	3.5	1.4	0.2	Setosa
1	4.9	3.0	1.4	0.2	Setosa
2	4.7	3.2	1.3	0.2	Setosa
3	4.6	3.1	1.5	0.2	Setosa
4	5.0	3.6	1.4	0.2	Setosa
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	Virginica
146	6.3	2.5	5.0	1.9	Virginica
147	6.5	3.0	5.2	2.0	Virginica
148	6.2	3.4	5.4	2.3	Virginica
149	5.9	3.0	5.1	1.8	Virginica

150 rows × 5 columns

In [10]:
```
setosa=df[df['variety']=='Setosa']
```

In [11]:
```
virginica=df[df['variety']=='Virginica']
```

In [12]:
```
versicolor=df[df['variety']=='Versicolor']
```

In [13]:
```
setosa
```

Out[13]:

	sepal.length	sepal.width	petal.length	petal.width	variety
0	5.1	3.5	1.4	0.2	Setosa
1	4.9	3.0	1.4	0.2	Setosa
2	4.7	3.2	1.3	0.2	Setosa
3	4.6	3.1	1.5	0.2	Setosa
4	5.0	3.6	1.4	0.2	Setosa
5	5.4	3.9	1.7	0.4	Setosa
6	4.6	3.4	1.4	0.3	Setosa
7	5.0	3.4	1.5	0.2	Setosa
8	4.4	2.9	1.4	0.2	Setosa

	sepal.length	sepal.width	petal.length	petal.width	variety
9	4.9	3.1	1.5	0.1	Setosa
10	5.4	3.7	1.5	0.2	Setosa
11	4.8	3.4	1.6	0.2	Setosa
12	4.8	3.0	1.4	0.1	Setosa
13	4.3	3.0	1.1	0.1	Setosa
14	5.8	4.0	1.2	0.2	Setosa
15	5.7	4.4	1.5	0.4	Setosa
16	5.4	3.9	1.3	0.4	Setosa
17	5.1	3.5	1.4	0.3	Setosa
18	5.7	3.8	1.7	0.3	Setosa
19	5.1	3.8	1.5	0.3	Setosa
20	5.4	3.4	1.7	0.2	Setosa
21	5.1	3.7	1.5	0.4	Setosa
22	4.6	3.6	1.0	0.2	Setosa
23	5.1	3.3	1.7	0.5	Setosa
24	4.8	3.4	1.9	0.2	Setosa
25	5.0	3.0	1.6	0.2	Setosa
26	5.0	3.4	1.6	0.4	Setosa
27	5.2	3.5	1.5	0.2	Setosa
28	5.2	3.4	1.4	0.2	Setosa
29	4.7	3.2	1.6	0.2	Setosa
30	4.8	3.1	1.6	0.2	Setosa
31	5.4	3.4	1.5	0.4	Setosa
32	5.2	4.1	1.5	0.1	Setosa
33	5.5	4.2	1.4	0.2	Setosa
34	4.9	3.1	1.5	0.2	Setosa
35	5.0	3.2	1.2	0.2	Setosa
36	5.5	3.5	1.3	0.2	Setosa
37	4.9	3.6	1.4	0.1	Setosa
38	4.4	3.0	1.3	0.2	Setosa
39	5.1	3.4	1.5	0.2	Setosa
40	5.0	3.5	1.3	0.3	Setosa
41	4.5	2.3	1.3	0.3	Setosa
42	4.4	3.2	1.3	0.2	Setosa
43	5.0	3.5	1.6	0.6	Setosa
44	5.1	3.8	1.9	0.4	Setosa
45	4.8	3.0	1.4	0.3	Setosa
46	5.1	3.8	1.6	0.2	Setosa
47	4.6	3.2	1.4	0.2	Setosa

	sepal.length	sepal.width	petal.length	petal.width	variety
48	5.3	3.7	1.5	0.2	Setosa
49	5.0	3.3	1.4	0.2	Setosa

In [14]:
virginica

Out[14]:

	sepal.length	sepal.width	petal.length	petal.width	variety
100	6.3	3.3	6.0	2.5	Virginica
101	5.8	2.7	5.1	1.9	Virginica
102	7.1	3.0	5.9	2.1	Virginica
103	6.3	2.9	5.6	1.8	Virginica
104	6.5	3.0	5.8	2.2	Virginica
105	7.6	3.0	6.6	2.1	Virginica
106	4.9	2.5	4.5	1.7	Virginica
107	7.3	2.9	6.3	1.8	Virginica
108	6.7	2.5	5.8	1.8	Virginica
109	7.2	3.6	6.1	2.5	Virginica
110	6.5	3.2	5.1	2.0	Virginica
111	6.4	2.7	5.3	1.9	Virginica
112	6.8	3.0	5.5	2.1	Virginica
113	5.7	2.5	5.0	2.0	Virginica
114	5.8	2.8	5.1	2.4	Virginica
115	6.4	3.2	5.3	2.3	Virginica
116	6.5	3.0	5.5	1.8	Virginica
117	7.7	3.8	6.7	2.2	Virginica
118	7.7	2.6	6.9	2.3	Virginica
119	6.0	2.2	5.0	1.5	Virginica
120	6.9	3.2	5.7	2.3	Virginica
121	5.6	2.8	4.9	2.0	Virginica
122	7.7	2.8	6.7	2.0	Virginica
123	6.3	2.7	4.9	1.8	Virginica
124	6.7	3.3	5.7	2.1	Virginica
125	7.2	3.2	6.0	1.8	Virginica
126	6.2	2.8	4.8	1.8	Virginica
127	6.1	3.0	4.9	1.8	Virginica
128	6.4	2.8	5.6	2.1	Virginica
129	7.2	3.0	5.8	1.6	Virginica
130	7.4	2.8	6.1	1.9	Virginica
131	7.9	3.8	6.4	2.0	Virginica
132	6.4	2.8	5.6	2.2	Virginica

	sepal.length	sepal.width	petal.length	petal.width	variety
133	6.3	2.8	5.1	1.5	Virginica
134	6.1	2.6	5.6	1.4	Virginica
135	7.7	3.0	6.1	2.3	Virginica
136	6.3	3.4	5.6	2.4	Virginica
137	6.4	3.1	5.5	1.8	Virginica
138	6.0	3.0	4.8	1.8	Virginica
139	6.9	3.1	5.4	2.1	Virginica
140	6.7	3.1	5.6	2.4	Virginica
141	6.9	3.1	5.1	2.3	Virginica
142	5.8	2.7	5.1	1.9	Virginica
143	6.8	3.2	5.9	2.3	Virginica
144	6.7	3.3	5.7	2.5	Virginica
145	6.7	3.0	5.2	2.3	Virginica
146	6.3	2.5	5.0	1.9	Virginica
147	6.5	3.0	5.2	2.0	Virginica
148	6.2	3.4	5.4	2.3	Virginica
149	5.9	3.0	5.1	1.8	Virginica

In [15]:
versicolor

Out[15]:

	sepal.length	sepal.width	petal.length	petal.width	variety
50	7.0	3.2	4.7	1.4	Versicolor
51	6.4	3.2	4.5	1.5	Versicolor
52	6.9	3.1	4.9	1.5	Versicolor
53	5.5	2.3	4.0	1.3	Versicolor
54	6.5	2.8	4.6	1.5	Versicolor
55	5.7	2.8	4.5	1.3	Versicolor
56	6.3	3.3	4.7	1.6	Versicolor
57	4.9	2.4	3.3	1.0	Versicolor
58	6.6	2.9	4.6	1.3	Versicolor
59	5.2	2.7	3.9	1.4	Versicolor
60	5.0	2.0	3.5	1.0	Versicolor
61	5.9	3.0	4.2	1.5	Versicolor
62	6.0	2.2	4.0	1.0	Versicolor
63	6.1	2.9	4.7	1.4	Versicolor
64	5.6	2.9	3.6	1.3	Versicolor
65	6.7	3.1	4.4	1.4	Versicolor
66	5.6	3.0	4.5	1.5	Versicolor
67	5.8	2.7	4.1	1.0	Versicolor

	sepal.length	sepal.width	petal.length	petal.width	variety
68	6.2	2.2	4.5	1.5	Versicolor
69	5.6	2.5	3.9	1.1	Versicolor
70	5.9	3.2	4.8	1.8	Versicolor
71	6.1	2.8	4.0	1.3	Versicolor
72	6.3	2.5	4.9	1.5	Versicolor
73	6.1	2.8	4.7	1.2	Versicolor
74	6.4	2.9	4.3	1.3	Versicolor
75	6.6	3.0	4.4	1.4	Versicolor
76	6.8	2.8	4.8	1.4	Versicolor
77	6.7	3.0	5.0	1.7	Versicolor
78	6.0	2.9	4.5	1.5	Versicolor
79	5.7	2.6	3.5	1.0	Versicolor
80	5.5	2.4	3.8	1.1	Versicolor
81	5.5	2.4	3.7	1.0	Versicolor
82	5.8	2.7	3.9	1.2	Versicolor
83	6.0	2.7	5.1	1.6	Versicolor
84	5.4	3.0	4.5	1.5	Versicolor
85	6.0	3.4	4.5	1.6	Versicolor
86	6.7	3.1	4.7	1.5	Versicolor
87	6.3	2.3	4.4	1.3	Versicolor
88	5.6	3.0	4.1	1.3	Versicolor
89	5.5	2.5	4.0	1.3	Versicolor
90	5.5	2.6	4.4	1.2	Versicolor
91	6.1	3.0	4.6	1.4	Versicolor
92	5.8	2.6	4.0	1.2	Versicolor
93	5.0	2.3	3.3	1.0	Versicolor
94	5.6	2.7	4.2	1.3	Versicolor
95	5.7	3.0	4.2	1.2	Versicolor
96	5.7	2.9	4.2	1.3	Versicolor
97	6.2	2.9	4.3	1.3	Versicolor
98	5.1	2.5	3.0	1.1	Versicolor
99	5.7	2.8	4.1	1.3	Versicolor

In [17]:

```
setosa_temp=setosa.describe()
```

In [18]:

```
setosa_temp
```

Out[18]:

	sepal.length	sepal.width	petal.length	petal.width
count	50.00000	50.000000	50.000000	50.000000
mean	5.00600	3.428000	1.462000	0.246000

	sepal.length	sepal.width	petal.length	petal.width
std	0.35249	0.379064	0.173664	0.105386
min	4.30000	2.300000	1.000000	0.100000
25%	4.80000	3.200000	1.400000	0.200000
50%	5.00000	3.400000	1.500000	0.200000
75%	5.20000	3.675000	1.575000	0.300000
max	5.80000	4.400000	1.900000	0.600000

In [19]:
versicolor_temp=versicolor.describe()

In [20]:
versicolor_temp

Out[20]:

	sepal.length	sepal.width	petal.length	petal.width
count	50.000000	50.000000	50.000000	50.000000
mean	5.936000	2.770000	4.260000	1.326000
std	0.516171	0.313798	0.469911	0.197753
min	4.900000	2.000000	3.000000	1.000000
25%	5.600000	2.525000	4.000000	1.200000
50%	5.900000	2.800000	4.350000	1.300000
75%	6.300000	3.000000	4.600000	1.500000
max	7.000000	3.400000	5.100000	1.800000

In [21]:
virginica_temp=virginica.describe()

In [22]:
virginica_temp

Out[22]:

	sepal.length	sepal.width	petal.length	petal.width
count	50.00000	50.000000	50.000000	50.00000
mean	6.58800	2.974000	5.552000	2.02600
std	0.63588	0.322497	0.551895	0.27465
min	4.90000	2.200000	4.500000	1.40000
25%	6.22500	2.800000	5.100000	1.80000
50%	6.50000	3.000000	5.550000	2.00000
75%	6.90000	3.175000	5.875000	2.30000
max	7.90000	3.800000	6.900000	2.50000

In [ ]: