Descriptive Stats Project_June 3rd

June 5, 2025

```
[3]: import pandas as pd
```

```
[9]: income_df=pd.read_csv("/Users/shashi/Desktop/NARESH IT /Inc_Exp_Data.csv")
```

```
[11]: income_df.head()
```

```
[11]:    Mthly_HH_Income  Mthly_HH_Expense  No_of_Fly_Members  Emi_or_Rent_Amt  \
      0             5000              8000                  3             2000
      1             6000              7000                  2             3000
      2            10000              4500                  2                0
      3            10000              2000                  1                0
      4            12500             12000                  2             3000

         Annual_HH_Income Highest_Qualified_Member  No_of_Earning_Members
      0            64200           Under-Graduate                      1
      1            79920               Illiterate                      1
      2           112800           Under-Graduate                      1
      3            97200               Illiterate                      1
      4           147000                 Graduate                      1
```

```
[13]: income_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 50 entries, 0 to 49
Data columns (total 7 columns):
 #   Column                    Non-Null Count  Dtype
---  ------                    --------------  -----
 0   Mthly_HH_Income           50 non-null     int64
 1   Mthly_HH_Expense          50 non-null     int64
 2   No_of_Fly_Members         50 non-null     int64
 3   Emi_or_Rent_Amt           50 non-null     int64
 4   Annual_HH_Income          50 non-null     int64
 5   Highest_Qualified_Member  50 non-null     object
 6   No_of_Earning_Members     50 non-null     int64
dtypes: int64(6), object(1)
memory usage: 2.9+ KB
```

```
[17]: income_df.shape
```

[17]:
```
(50, 7)
```

[21]:
```
# describe computes mean,median,mode
# T means tarnspose rows becomes columns & columns becomes rows

income_df.describe().T
```

[21]:
```
                       count       mean            std      min       25%  \
Mthly_HH_Income         50.0   41558.00   26097.908979   5000.0   23550.0
Mthly_HH_Expense        50.0   18818.00   12090.216824   2000.0   10000.0
No_of_Fly_Members       50.0       4.06       1.517382      1.0       3.0
Emi_or_Rent_Amt         50.0    3060.00    6241.434948      0.0       0.0
Annual_HH_Income        50.0  490019.04  320135.792123  64200.0  258750.0
No_of_Earning_Members   50.0       1.46       0.734291      1.0       1.0

                            50%       75%        max
Mthly_HH_Income         35000.0   50375.0   100000.0
Mthly_HH_Expense        15500.0   25000.0    50000.0
No_of_Fly_Members           4.0       5.0        7.0
Emi_or_Rent_Amt             0.0    3500.0    35000.0
Annual_HH_Income       447420.0  594720.0  1404000.0
No_of_Earning_Members       1.0       2.0        4.0
```

[23]:
```
income_df.isna().any()
```

[23]:
```
Mthly_HH_Income           False
Mthly_HH_Expense          False
No_of_Fly_Members         False
Emi_or_Rent_Amt           False
Annual_HH_Income          False
Highest_Qualified_Member  False
No_of_Earning_Members     False
dtype: bool
```

1 WHAT IS THE MEAN EXPENSE OF A HOUSEHOLD ?

[28]:
```
income_df["Mthly_HH_Expense"].mean()
```

[28]:
```
18818.0
```

1.1 Median of Household Expense?

[31]:
```
income_df["Mthly_HH_Expense"].median()
```

[31]:
```
15500.0
```

[33]:
```
income_df["Mthly_HH_Expense"].mode()
```

[33]:
```
0    25000
Name: Mthly_HH_Expense, dtype: int64
```

2 what is the monthly expense for most of the households?

[ ]:
```
# this gives how many time  - 1st line - a frequency table (cross-tabulation)
## that counts how many times each unique value appears in the column␣
 ↪Mthly_HH_Expense.
# mth_exp_tmp[mth_exp_tmp['count'] == income_df.Mthly_HH_Expense.value_counts().
 ↪max()]
## This filters the table to only show the row(s) with the highest count.

income_df.Mthly_HH_Expense.value_counts().max() gets the maximum frequency of␣
 ↪any expense value.
```

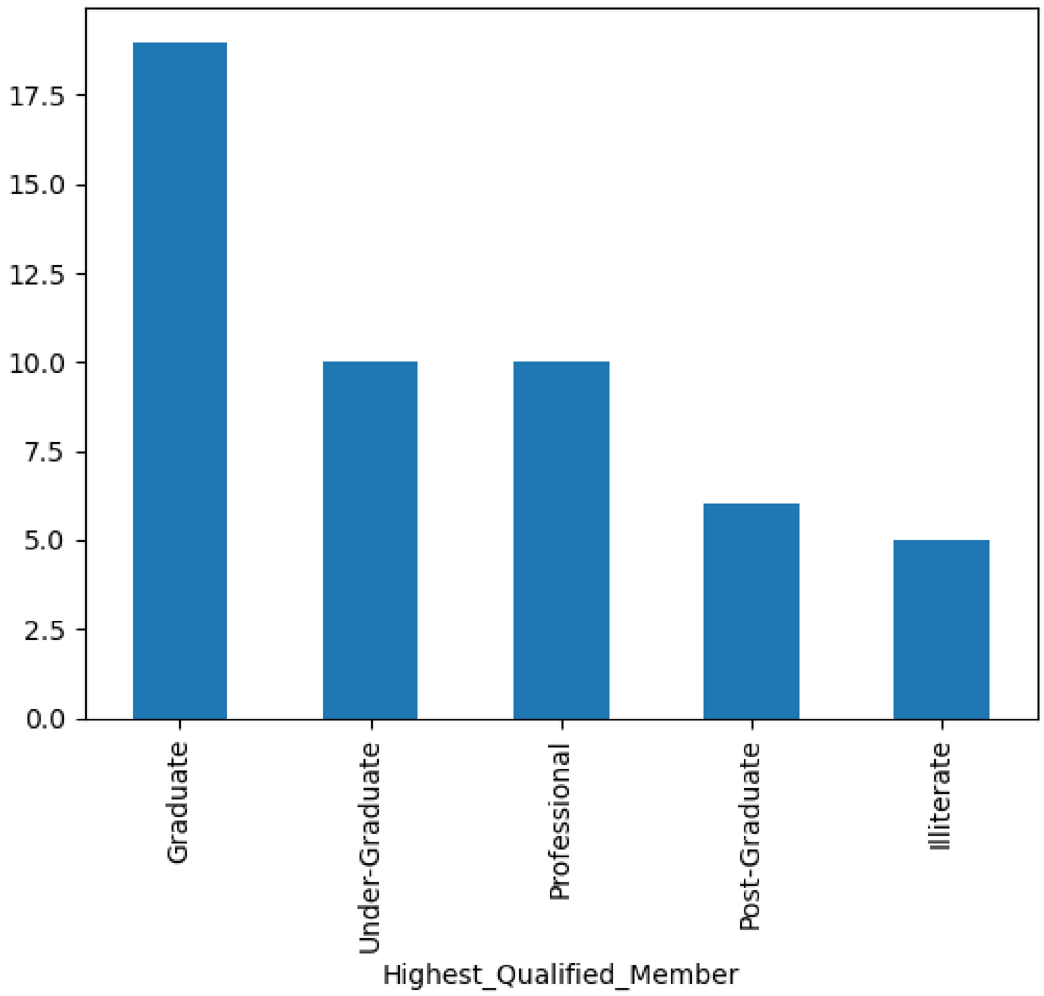
[36]:
```
mth_exp_tmp=pd.crosstab(index=income_df['Mthly_HH_Expense'],columns='count')
mth_exp_tmp.reset_index(inplace=True)
mth_exp_tmp[mth_exp_tmp['count']==income_df.Mthly_HH_Expense.value_counts().
 ↪max()]
```

[36]:
```
col_0  Mthly_HH_Expense  count
18                25000      8
```

3 PLOT the histogram to count the highest qualified member

[39]:
```
income_df["Highest_Qualified_Member"].value_counts().plot(kind='bar')
```

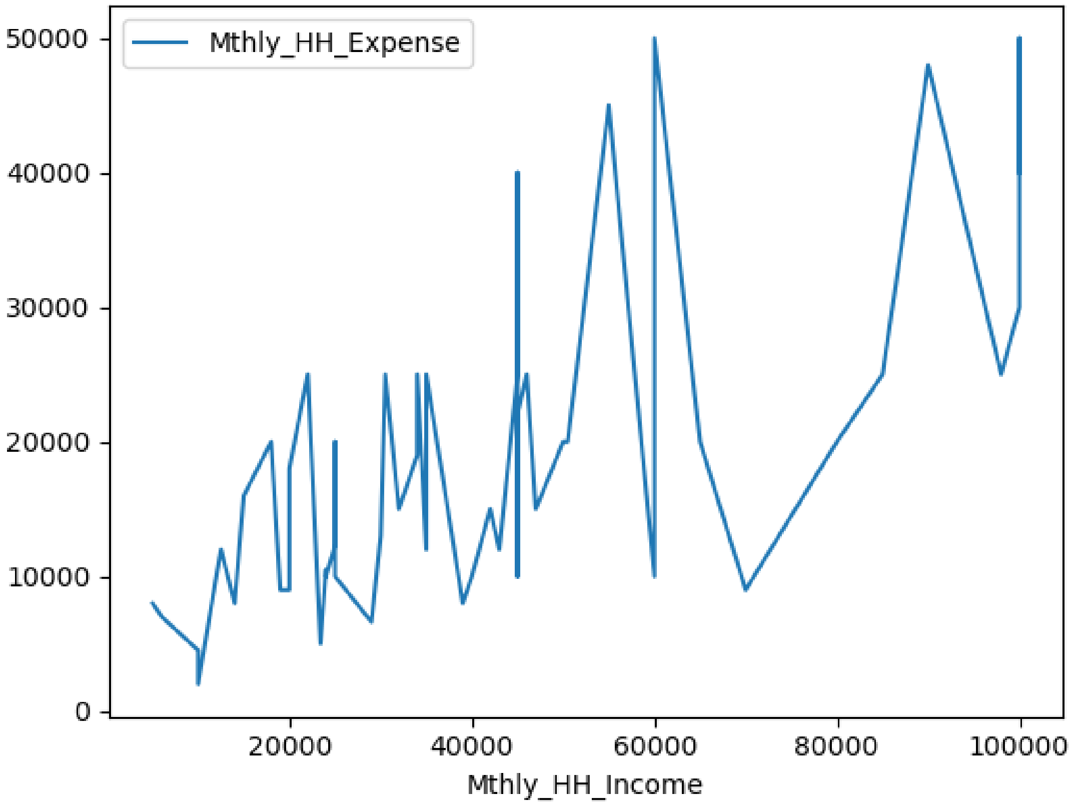
[39]:
```
<Axes: xlabel='Highest_Qualified_Member'>
```



4 CALCULATE IQR (diff /w 75% ans 25 % quartile)

[44]:
```
income_df.plot(x="Mthly_HH_Income",y="Mthly_HH_Expense")
IQR=income_df["Mthly_HH_Expense"].quantile(0.75)-income_df["Mthly_HH_Expense"].
  ↪quantile(0.25)
IQR
```

[44]:
```
15000.0
```



5 CALCULATE STANDARD DEVIATION OF THE 1ST 4 COLUMNS

```
[47]: pd.DataFrame(income_df.iloc[:,0:5].std().to_frame()).T
```

```
[47]:    Mthly_HH_Income  Mthly_HH_Expense  No_of_Fly_Members  Emi_or_Rent_Amt  \
      0     26097.908979      12090.216824           1.517382      6241.434948

         Annual_HH_Income
      0     320135.792123
```

```
[49]: pd.DataFrame(income_df.iloc[:,0:5].var().to_frame()).T
```

```
[49]:    Mthly_HH_Income  Mthly_HH_Expense  No_of_Fly_Members  Emi_or_Rent_Amt  \
      0     6.811009e+08      1.461733e+08           2.302449     3.895551e+07

         Annual_HH_Income
      0      1.024869e+11
```

6 variance of 1st 3 columns

```
[51]: pd.DataFrame(income_df.iloc[:,0:4].var().to_frame()).T
```

```
[51]:    Mthly_HH_Income  Mthly_HH_Expense  No_of_Fly_Members  Emi_or_Rent_Amt
      0     6.811009e+08      1.461733e+08           2.302449     3.895551e+07
```

7 calculate count of highest qualified member

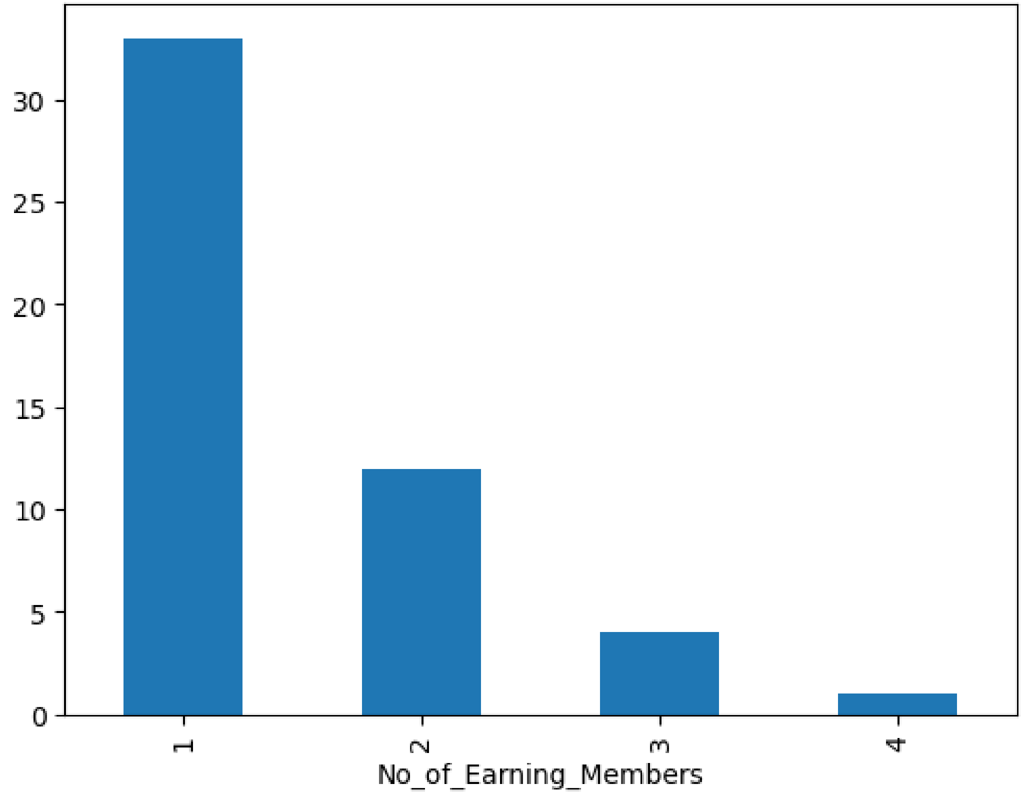
```
[55]: income_df["Highest_Qualified_Member"].value_counts().to_frame().T
```

```
[55]: Highest_Qualified_Member  Graduate  Under-Graduate  Professional  \
      count                           19              10            10

      Highest_Qualified_Member  Post-Graduate  Illiterate
      count                                 6           5
```

```
[57]: income_df["No_of_Earning_Members"].value_counts().plot(kind="bar")
```

```
[57]: <Axes: xlabel='No_of_Earning_Members'>
```



[59]:

```
#Here we need to calculate the coeff of variation

Coeff_of_var_StockA=10/15
print(Coeff_of_var_StockA)
Coeff_of_var_StockB=5/10
print(Coeff_of_var_StockB)
```

```
0.6666666666666666
0.5
```

[ ]:

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