expt-8

April 26, 2024

[ ]:
```
#exp_8
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#Roll No: A-43
```

[2]:
```
import seaborn as sns
import pandas as pd
titanic = sns.load_dataset("titanic")
titanic
```

[2]:
```
     survived  pclass     sex   age  sibsp  parch     fare embarked   class  \
0           0       3    male  22.0      1      0   7.2500        S   Third
1           1       1  female  38.0      1      0  71.2833        C   First
2           1       3  female  26.0      0      0   7.9250        S   Third
3           1       1  female  35.0      1      0  53.1000        S   First
4           0       3    male  35.0      0      0   8.0500        S   Third
..        ...     ...     ...   ...    ...    ...      ...      ...     ...
886         0       2    male  27.0      0      0  13.0000        S  Second
887         1       1  female  19.0      0      0  30.0000        S   First
888         0       3  female   NaN      1      2  23.4500        S   Third
889         1       1    male  26.0      0      0  30.0000        C   First
890         0       3    male  32.0      0      0   7.7500        Q   Third

       who  adult_male deck  embark_town alive  alone
0      man        True  NaN  Southampton    no  False
1    woman       False    C    Cherbourg   yes  False
2    woman       False  NaN  Southampton   yes   True
3    woman       False    C  Southampton   yes  False
4      man        True  NaN  Southampton    no   True
..     ...         ...  ...          ...   ...    ...
886    man        True  NaN  Southampton    no   True
887  woman       False    B  Southampton   yes   True
888  woman       False  NaN  Southampton    no  False
889    man        True    C    Cherbourg   yes   True
890    man        True  NaN   Queenstown    no   True

[891 rows x 15 columns]
```

[3]:
```
titanic.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 891 entries, 0 to 890
Data columns (total 15 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   survived     891 non-null    int64
 1   pclass       891 non-null    int64
 2   sex          891 non-null    object
 3   age          714 non-null    float64
 4   sibsp        891 non-null    int64
 5   parch        891 non-null    int64
 6   fare         891 non-null    float64
 7   embarked     889 non-null    object
 8   class        891 non-null    category
 9   who          891 non-null    object
 10  adult_male   891 non-null    bool
 11  deck         203 non-null    category
 12  embark_town  889 non-null    object
 13  alive        891 non-null    object
 14  alone        891 non-null    bool
dtypes: bool(2), category(2), float64(2), int64(4), object(5)
memory usage: 80.6+ KB
```

[4]:
```
x=titanic["fare"]
x
```

[4]:
```
0       7.2500
1      71.2833
2       7.9250
3      53.1000
4       8.0500
        …
886    13.0000
887    30.0000
888    23.4500
889    30.0000
890     7.7500
Name: fare, Length: 891, dtype: float64
```

[5]:
```
titanic.describe()
```

[5]:

	survived	pclass	age	sibsp	parch	fare
count	891.000000	891.000000	714.000000	891.000000	891.000000	891.000000
mean	0.383838	2.308642	29.699118	0.523008	0.381594	32.204208
std	0.486592	0.836071	14.526497	1.102743	0.806057	49.693429

```
min      0.000000    1.000000    0.420000    0.000000    0.000000    0.000000
25%      0.000000    2.000000   20.125000    0.000000    0.000000    7.910400
50%      0.000000    3.000000   28.000000    0.000000    0.000000   14.454200
75%      1.000000    3.000000   38.000000    1.000000    0.000000   31.000000
max      1.000000    3.000000   80.000000    8.000000    6.000000  512.329200
```

[6]:
```
titanic.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 891 entries, 0 to 890
Data columns (total 15 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   survived     891 non-null    int64
 1   pclass       891 non-null    int64
 2   sex          891 non-null    object
 3   age          714 non-null    float64
 4   sibsp        891 non-null    int64
 5   parch        891 non-null    int64
 6   fare         891 non-null    float64
 7   embarked     889 non-null    object
 8   class        891 non-null    category
 9   who          891 non-null    object
 10  adult_male   891 non-null    bool
 11  deck         203 non-null    category
 12  embark_town  889 non-null    object
 13  alive        891 non-null    object
 14  alone        891 non-null    bool
dtypes: bool(2), category(2), float64(2), int64(4), object(5)
memory usage: 80.6+ KB
```

[7]:
```
titanic_cleaned = titanic.
  ↪drop(['pclass','embarked','deck','embark_town'],axis=1)
titanic_cleaned.head(15)
```

[7]:

	survived	sex	age	sibsp	parch	fare	class	who	adult_male	\
0	0	male	22.0	1	0	7.2500	Third	man	True	
1	1	female	38.0	1	0	71.2833	First	woman	False	
2	1	female	26.0	0	0	7.9250	Third	woman	False	
3	1	female	35.0	1	0	53.1000	First	woman	False	
4	0	male	35.0	0	0	8.0500	Third	man	True	
5	0	male	NaN	0	0	8.4583	Third	man	True	
6	0	male	54.0	0	0	51.8625	First	man	True	
7	0	male	2.0	3	1	21.0750	Third	child	False	
8	1	female	27.0	0	2	11.1333	Third	woman	False	
9	1	female	14.0	1	0	30.0708	Second	child	False	
10	1	female	4.0	1	1	16.7000	Third	child	False	

```
11         1  female  58.0      0      0  26.5500   First  woman       False
12         0    male  20.0      0      0   8.0500   Third    man        True
13         0    male  39.0      1      5  31.2750   Third    man        True
14         0  female  14.0      0      0   7.8542   Third  child       False
```

```
   alive  alone
0     no  False
1    yes  False
2    yes   True
3    yes  False
4     no   True
5     no   True
6     no   True
7     no  False
8    yes  False
9    yes  False
10   yes  False
11   yes   True
12    no   True
13    no  False
14    no   True
```

[8]:
```
titanic_cleaned.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 891 entries, 0 to 890
Data columns (total 11 columns):
 #   Column      Non-Null Count  Dtype
---  ------      --------------  -----
 0   survived    891 non-null    int64
 1   sex         891 non-null    object
 2   age         714 non-null    float64
 3   sibsp       891 non-null    int64
 4   parch       891 non-null    int64
 5   fare        891 non-null    float64
 6   class       891 non-null    category
 7   who         891 non-null    object
 8   adult_male  891 non-null    bool
 9   alive       891 non-null    object
 10  alone       891 non-null    bool
dtypes: bool(2), category(1), float64(2), int64(3), object(3)
memory usage: 58.5+ KB
```

[9]:
```
titanic_cleaned.isnull().sum()
```

[9]:
```
survived       0
sex            0
```

```
age           177
sibsp           0
parch           0
fare            0
class           0
who             0
adult_male      0
alive           0
alone           0
dtype: int64
```

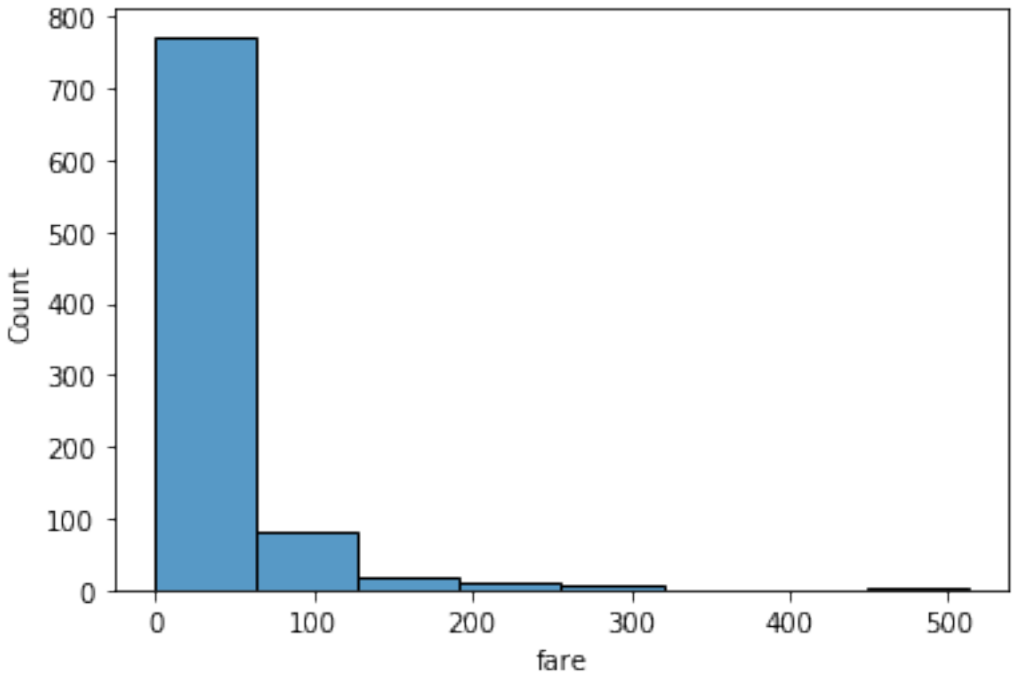
[10]:
```
titanic_cleaned.corr(method='pearson')
```

[10]:
```
             survived       age     sibsp     parch      fare  adult_male  \
survived     1.000000 -0.077221 -0.035322  0.081629  0.257307   -0.557080
age         -0.077221  1.000000 -0.308247 -0.189119  0.096067    0.280328
sibsp       -0.035322 -0.308247  1.000000  0.414838  0.159651   -0.253586
parch        0.081629 -0.189119  0.414838  1.000000  0.216225   -0.349943
fare         0.257307  0.096067  0.159651  0.216225  1.000000   -0.182024
adult_male  -0.557080  0.280328 -0.253586 -0.349943 -0.182024    1.000000
alone       -0.203367  0.198270 -0.584471 -0.583398 -0.271832    0.404744

                alone
survived    -0.203367
age          0.198270
sibsp       -0.584471
parch       -0.583398
fare        -0.271832
adult_male   0.404744
alone        1.000000
```

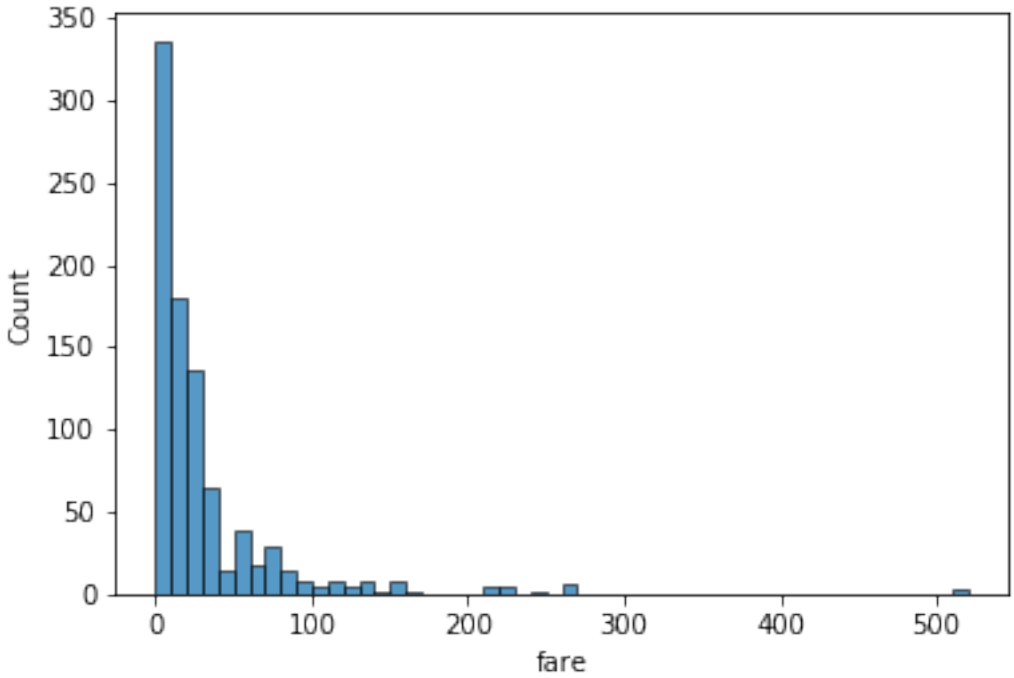
[12]:
```
sns.histplot(data=titanic,x="fare",bins=8)
```

[12]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x7effc7c26990>
```



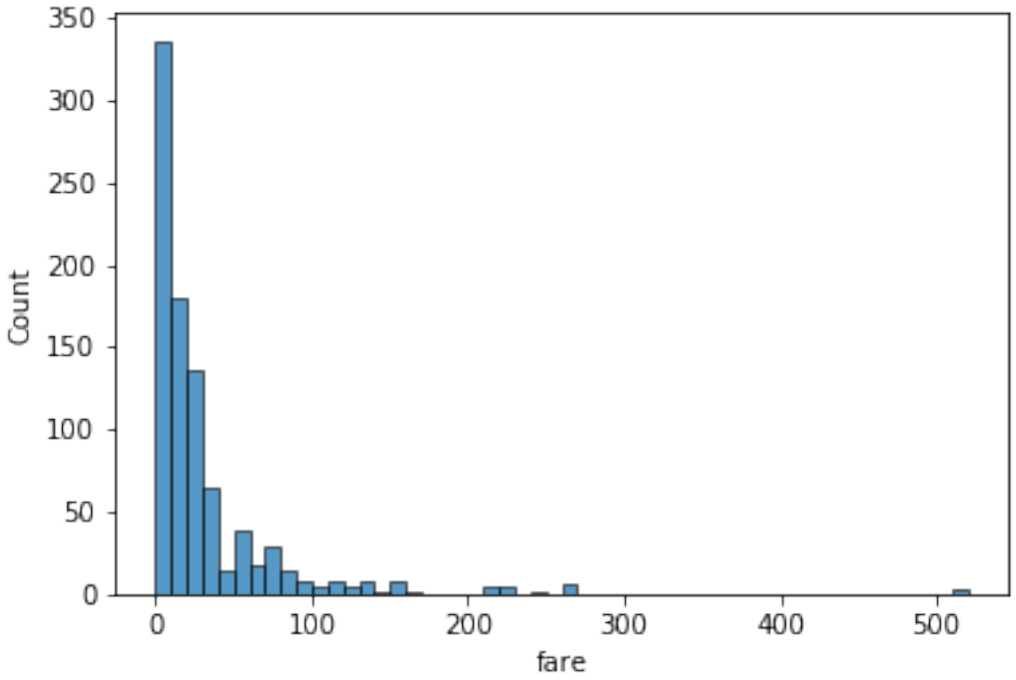
[13]:
```
sns.histplot(data=titanic,x="fare",binwidth=10)
```

[13]: <matplotlib.axes._subplots.AxesSubplot at 0x7effc622aa10>



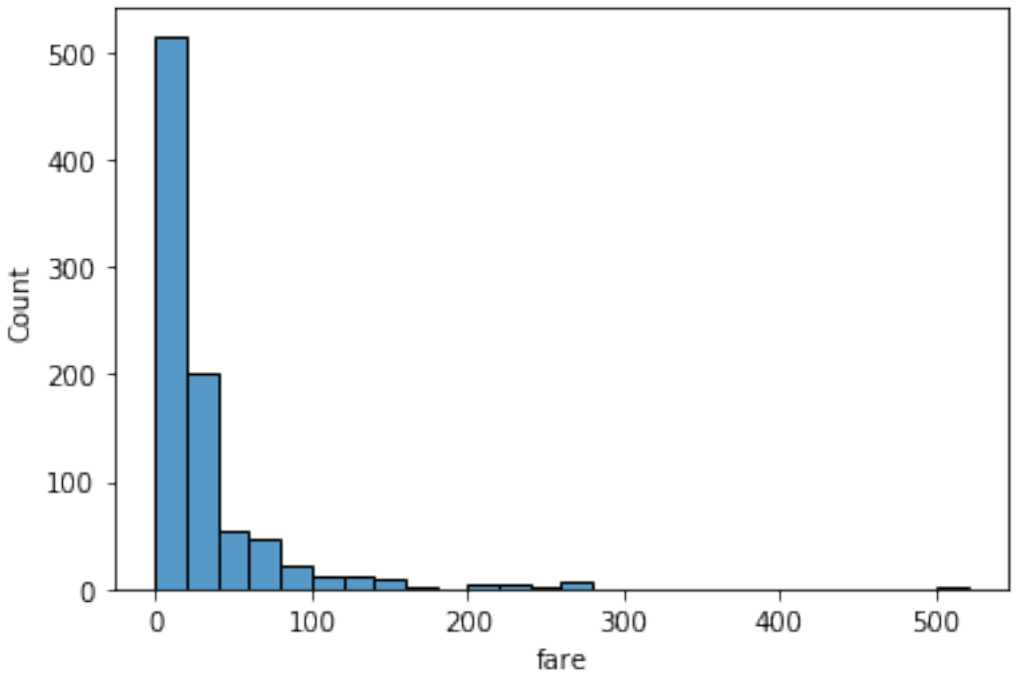
[14]:
```
sns.histplot(data=titanic,x="fare",bins=20,binwidth=10)
```

[14]: <matplotlib.axes._subplots.AxesSubplot at 0x7effc6176b50>



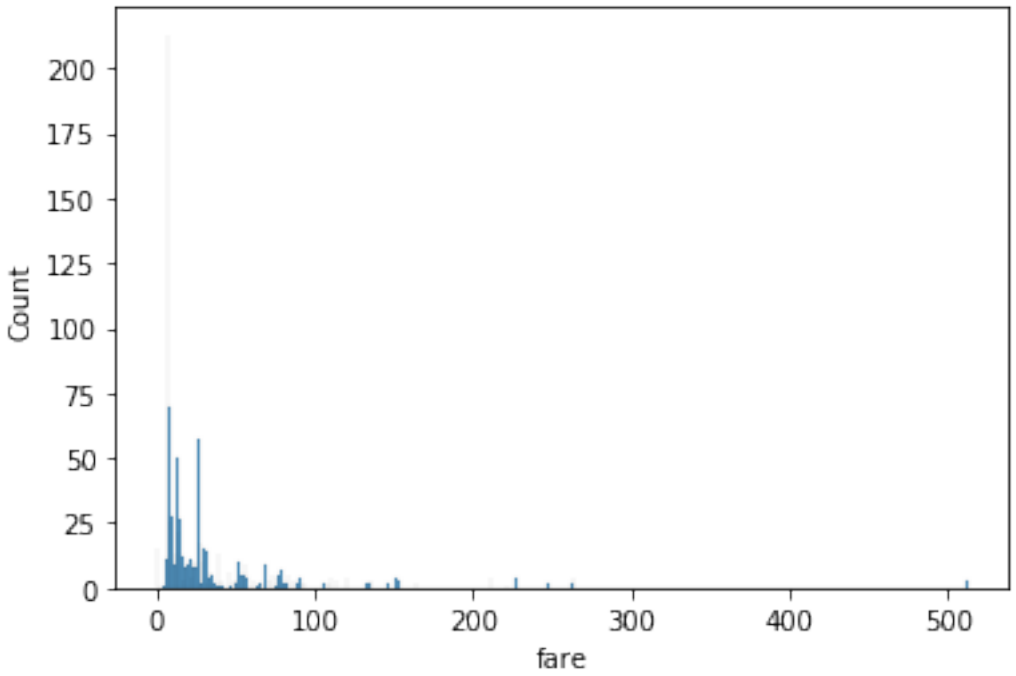
[15]:
```
sns.histplot(data=titanic,x="fare",binwidth=20)
```

[15]: <matplotlib.axes._subplots.AxesSubplot at 0x7effc607a9d0>



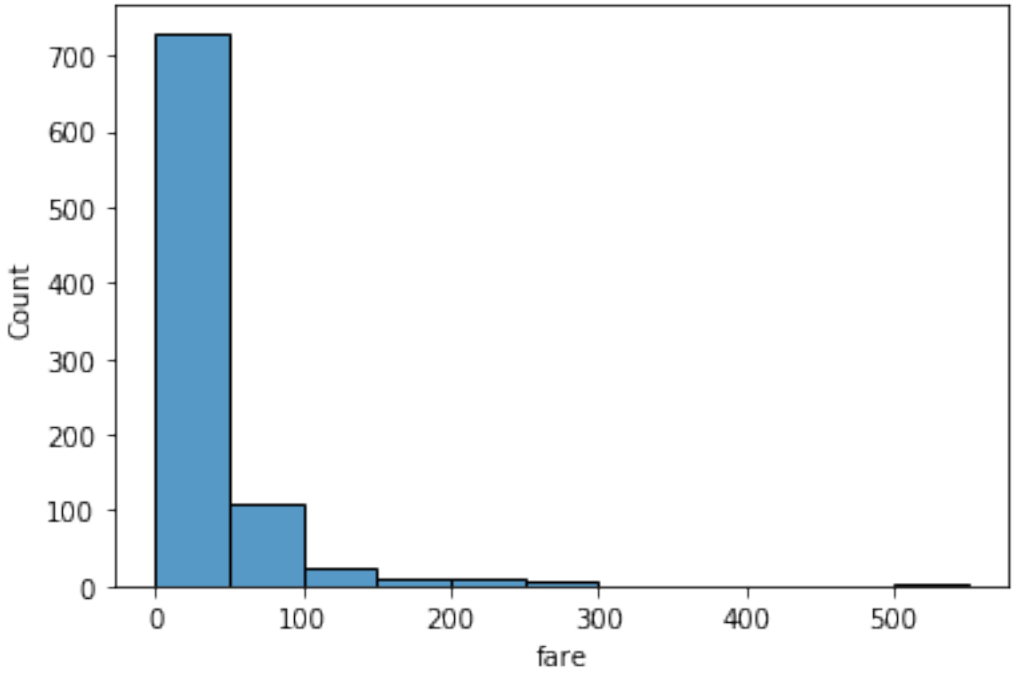
[16]:
```
sns.histplot(data=titanic,x="fare",binwidth=1)
```

[16]: <matplotlib.axes._subplots.AxesSubplot at 0x7effc5f6c490>



[17]:
```
sns.histplot(data=titanic,x="fare", bins=20,binwidth=50)
```

[17]: <matplotlib.axes._subplots.AxesSubplot at 0x7effc596e3d0>



[ ]: