newproject

September 19, 2024

[3]:
```
import numpy as np
import pandas as pd
import warnings
warnings.filterwarnings("ignore")
from sklearn.model_selection import train_test_split
import seaborn as sns
import matplotlib.pyplot as plt
```

[4]:
```
titanic = pd.read_csv(r"C:\Users\hp\Downloads\titanic.csv")
titanic
```

[4]:
```
     PassengerId  Survived  Pclass  \
0              1         0       3
1              2         1       1
2              3         1       3
3              4         1       1
4              5         0       3
..           …       …     …
886          887         0       2
887          888         1       1
888          889         0       3
889          890         1       1
890          891         0       3

                                                 Name     Sex   Age  SibSp  \
0                             Braund, Mr. Owen Harris    male  22.0      1
1    Cumings, Mrs. John Bradley (Florence Briggs Th…  female  38.0      1
2                                Heikkinen, Miss. Laina  female  26.0      0
3          Futrelle, Mrs. Jacques Heath (Lily May Peel)  female  35.0      1
4                               Allen, Mr. William Henry    male  35.0      0
..                                                   …     …   …    …
886                              Montvila, Rev. Juozas    male  27.0      0
887                       Graham, Miss. Margaret Edith  female  19.0      0
888           Johnston, Miss. Catherine Helen "Carrie"  female   NaN      1
889                              Behr, Mr. Karl Howell    male  26.0      0
890                                Dooley, Mr. Patrick    male  32.0      0

     Parch            Ticket     Fare Cabin Embarked
```

```
0        0         A/5 21171   7.2500   NaN        S
1        0          PC 17599  71.2833   C85        C
2        0  STON/O2. 3101282   7.9250   NaN        S
3        0            113803  53.1000  C123        S
4        0            373450   8.0500   NaN        S
..     …               …       …   …      …
886      0            211536  13.0000   NaN        S
887      0            112053  30.0000   B42        S
888      2        W./C. 6607  23.4500   NaN        S
889      0            111369  30.0000  C148        C
890      0            370376   7.7500   NaN        Q

[891 rows x 12 columns]
```

[14]:
```
titanic = titanic.drop(['PassengerId',␣
↪'SibSp','Parch','Ticket','Name','Cabin','Embarked'],axis='columns')
titanic
```

[14]:
```
     Survived  Pclass     Sex   Age     Fare
0           0       3    male  22.0   7.2500
1           1       1  female  38.0  71.2833
2           1       3  female  26.0   7.9250
3           1       1  female  35.0  53.1000
4           0       3    male  35.0   8.0500
..        …     …      …   …      …
886         0       2    male  27.0  13.0000
887         1       1  female  19.0  30.0000
888         0       3  female   NaN  23.4500
889         1       1    male  26.0  30.0000
890         0       3    male  32.0   7.7500

[891 rows x 5 columns]
```

[15]:
```
titanic.isnull().sum()
```

[15]:
```
Survived      0
Pclass        0
Sex           0
Age         177
Fare          0
dtype: int64
```

[18]:
```
new_age = titanic.Age.median()
```

[20]:
```
titanic['Age'] = titanic['Age'].fillna(new_age)
titanic
```

[20]:

	Survived	Pclass	Sex	Age	Fare
0	0	3	male	22.0	7.2500
1	1	1	female	38.0	71.2833
2	1	3	female	26.0	7.9250
3	1	1	female	35.0	53.1000
4	0	3	male	35.0	8.0500
..	…	…	…	…	…
886	0	2	male	27.0	13.0000
887	1	1	female	19.0	30.0000
888	0	3	female	28.0	23.4500
889	1	1	male	26.0	30.0000
890	0	3	male	32.0	7.7500

[891 rows x 5 columns]

[21]:
```
titanic.isnull().sum()
```

[21]:
```
Survived    0
Pclass      0
Sex         0
Age         0
Fare        0
dtype: int64
```

[23]:
```
from sklearn.preprocessing import LabelEncoder
```

[27]:
```
new = LabelEncoder()
```

[30]:
```
titanic['Sex_n'] = new.fit_transform(titanic['Sex'])
titanic
```

[30]:

	Survived	Pclass	Sex	Age	Fare	Sex_n
0	0	3	male	22.0	7.2500	1
1	1	1	female	38.0	71.2833	0
2	1	3	female	26.0	7.9250	0
3	1	1	female	35.0	53.1000	0
4	0	3	male	35.0	8.0500	1
..	…	…	…	…	…	…
886	0	2	male	27.0	13.0000	1
887	1	1	female	19.0	30.0000	0
888	0	3	female	28.0	23.4500	0
889	1	1	male	26.0	30.0000	1
890	0	3	male	32.0	7.7500	1

[891 rows x 6 columns]

[33]:
```
titanic = titanic.drop(['Sex'],axis ='columns')
```

[34]:
```
titanic
```

[34]:

	Survived	Pclass	Age	Fare	Sex_n
0	0	3	22.0	7.2500	1
1	1	1	38.0	71.2833	0
2	1	3	26.0	7.9250	0
3	1	1	35.0	53.1000	0
4	0	3	35.0	8.0500	1
..	…	…	…	…	…
886	0	2	27.0	13.0000	1
887	1	1	19.0	30.0000	0
888	0	3	28.0	23.4500	0
889	1	1	26.0	30.0000	1
890	0	3	32.0	7.7500	1

[891 rows x 5 columns]

[38]:
```
from sklearn.tree import DecisionTreeClassifier
```

[41]:
```
model = DecisionTreeClassifier()
model
```

[41]:
```
DecisionTreeClassifier()
```

[42]:
```
X = titanic.drop(['Survived'],axis ='columns')
X
```

[42]:

	Pclass	Age	Fare	Sex_n
0	3	22.0	7.2500	1
1	1	38.0	71.2833	0
2	3	26.0	7.9250	0
3	1	35.0	53.1000	0
4	3	35.0	8.0500	1
..	…	…	…	…
886	2	27.0	13.0000	1
887	1	19.0	30.0000	0
888	3	28.0	23.4500	0
889	1	26.0	30.0000	1
890	3	32.0	7.7500	1

[891 rows x 4 columns]

[45]:
```
Y = titanic.Survived
Y
```

[45]:
```
0      0
1      1
2      1
```

```
3      1
4      0
      ..
886    0
887    1
888    0
889    1
890    0
Name: Survived, Length: 891, dtype: int64
```

[46]:
```
X_train, X_test, y_train, y_test = train_test_split(X,Y, test_size = 0.3,␣
↪random_state = 200)
```

[47]:
```
X_train
```

[47]:
```
     Pclass   Age     Fare  Sex_n
46        3  28.0  15.5000      1
245       1  44.0  90.0000      1
86        3  16.0  34.3750      1
176       3  28.0  25.4667      1
183       2   1.0  39.0000      1
..      …   …       …    …
810       3  26.0   7.8875      1
836       3  21.0   8.6625      1
784       3  25.0   7.0500      1
617       3  26.0  16.1000      0
794       3  25.0   7.8958      1

[623 rows x 4 columns]
```

[48]:
```
X_test
```

[48]:
```
     Pclass   Age      Fare  Sex_n
659       1  58.0  113.2750      1
525       3  40.5    7.7500      1
828       3  28.0    7.7500      1
753       3  23.0    7.8958      1
518       2  36.0   26.0000      0
..      …   …        …    …
4         3  35.0    8.0500      1
610       3  39.0   31.2750      0
689       1  15.0  211.3375      0
849       1  28.0   89.1042      0
887       1  19.0   30.0000      0

[268 rows x 4 columns]
```

[49]:
```
model.fit(X_train,y_train)
```

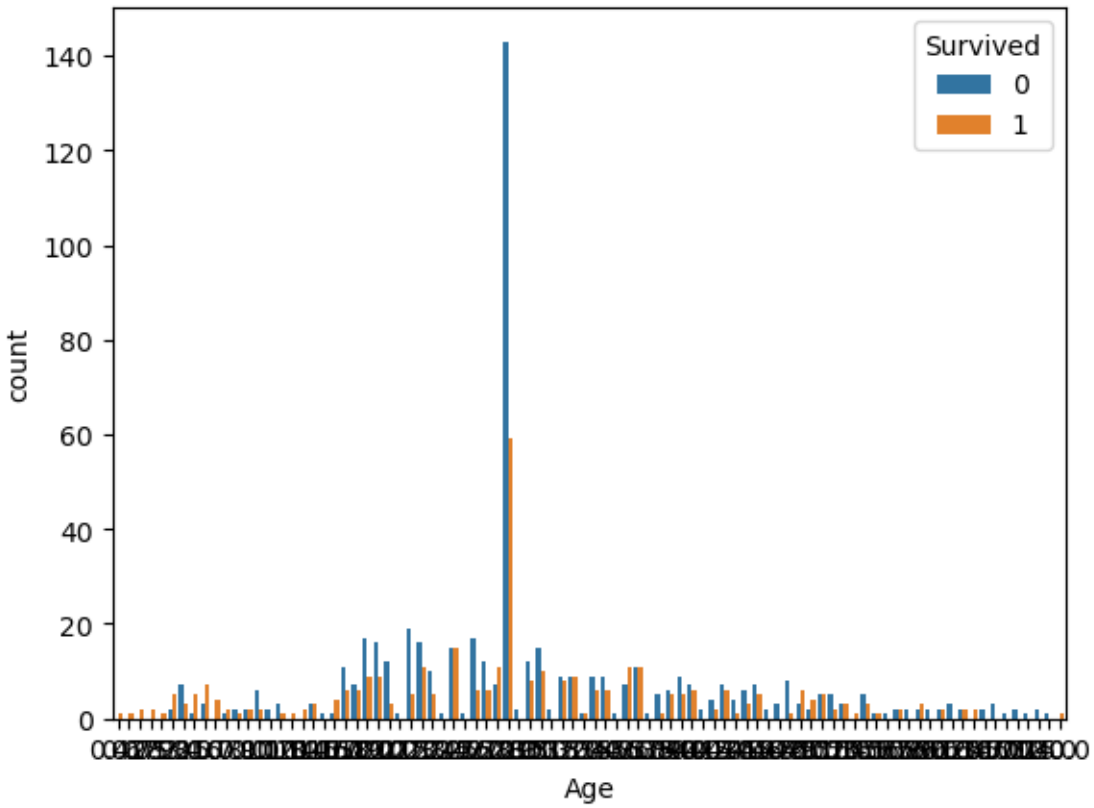
[49]:
```
DecisionTreeClassifier()
```

[56]:
```
model.predict([[1,20.0,113.2750,1]])
```

[56]:
```
array([0], dtype=int64)
```

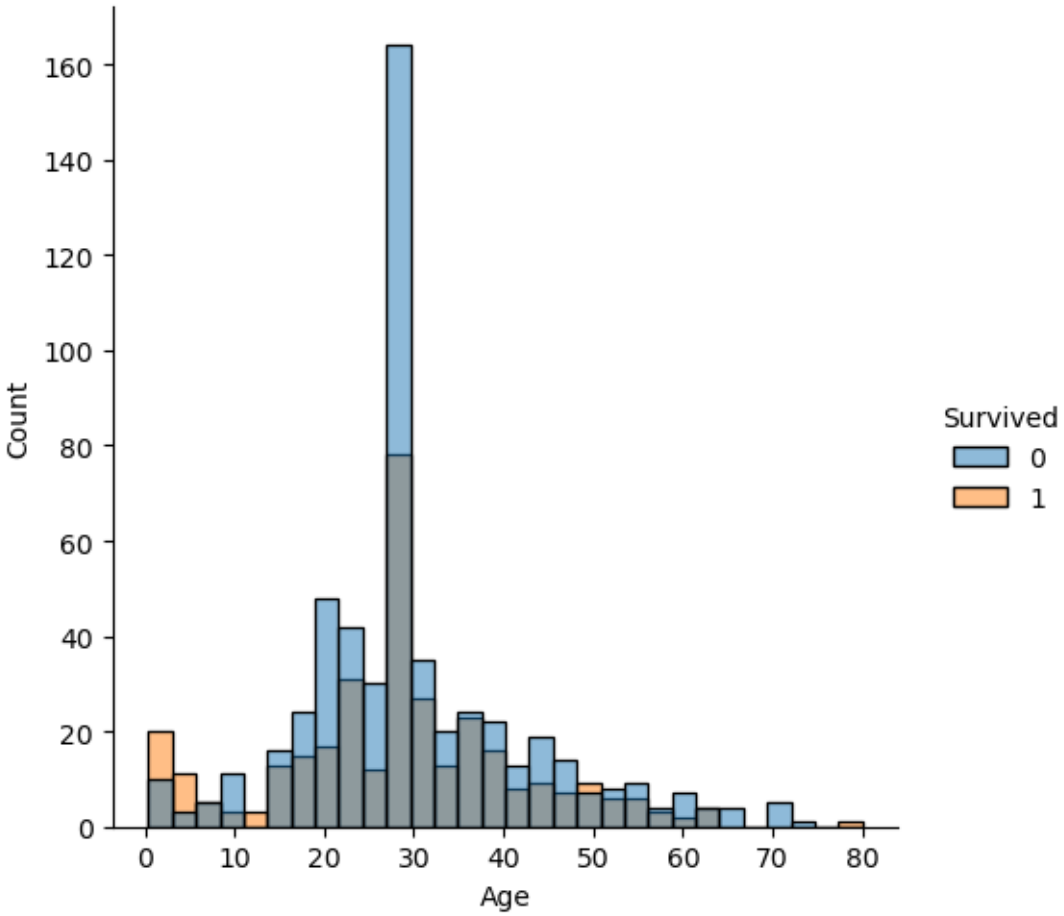
[72]:
```
sns.countplot(x='Age', hue = 'Survived', data = titanic)
```

[72]:
```
<Axes: xlabel='Age', ylabel='count'>
```



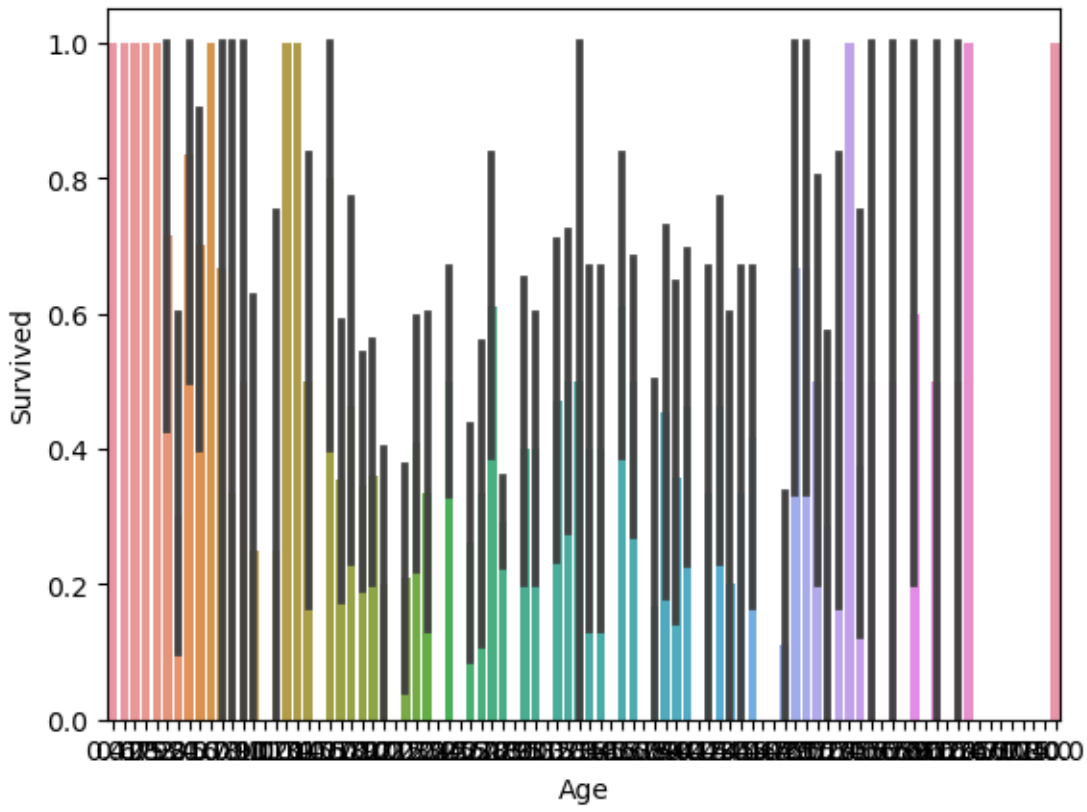
[66]:
```
sns.displot(data=titanic, x='Age',hue ='Survived')
```

[66]:
```
<seaborn.axisgrid.FacetGrid at 0x23bd15b3910>
```



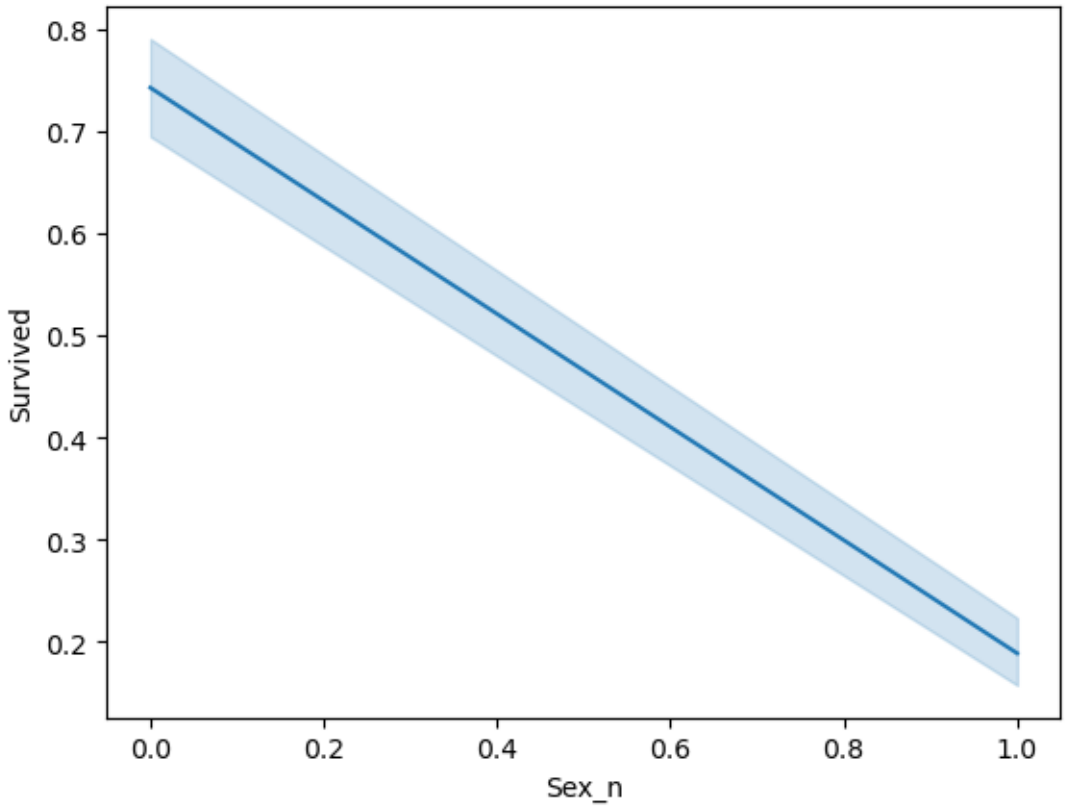
[70]:
```
sns.barplot(x='Age',y='Survived',data = titanic)
```

[70]: <Axes: xlabel='Age', ylabel='Survived'>



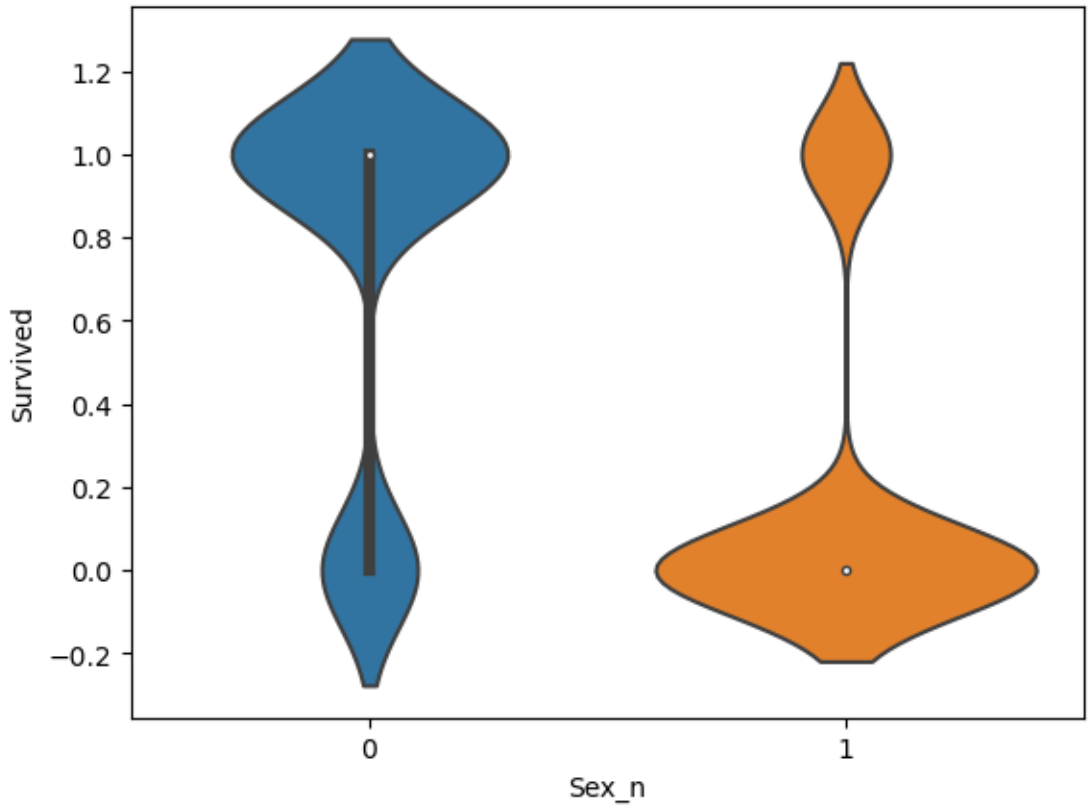
[75]:
```
sns.lineplot(x='Sex_n', y ='Survived',data = titanic)
```

[75]: <Axes: xlabel='Sex_n', ylabel='Survived'>



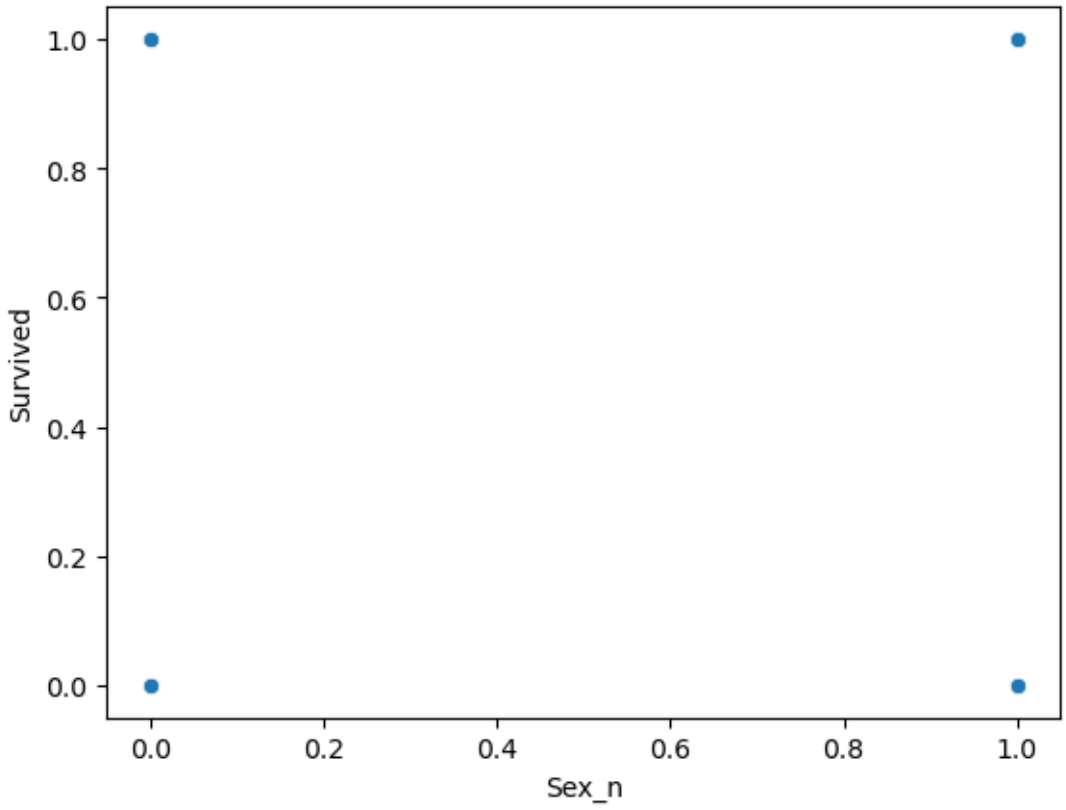
[78]:
```
sns.violinplot(x='Sex_n', y ='Survived',data = titanic)
```

[78]:
```
<Axes: xlabel='Sex_n', ylabel='Survived'>
```



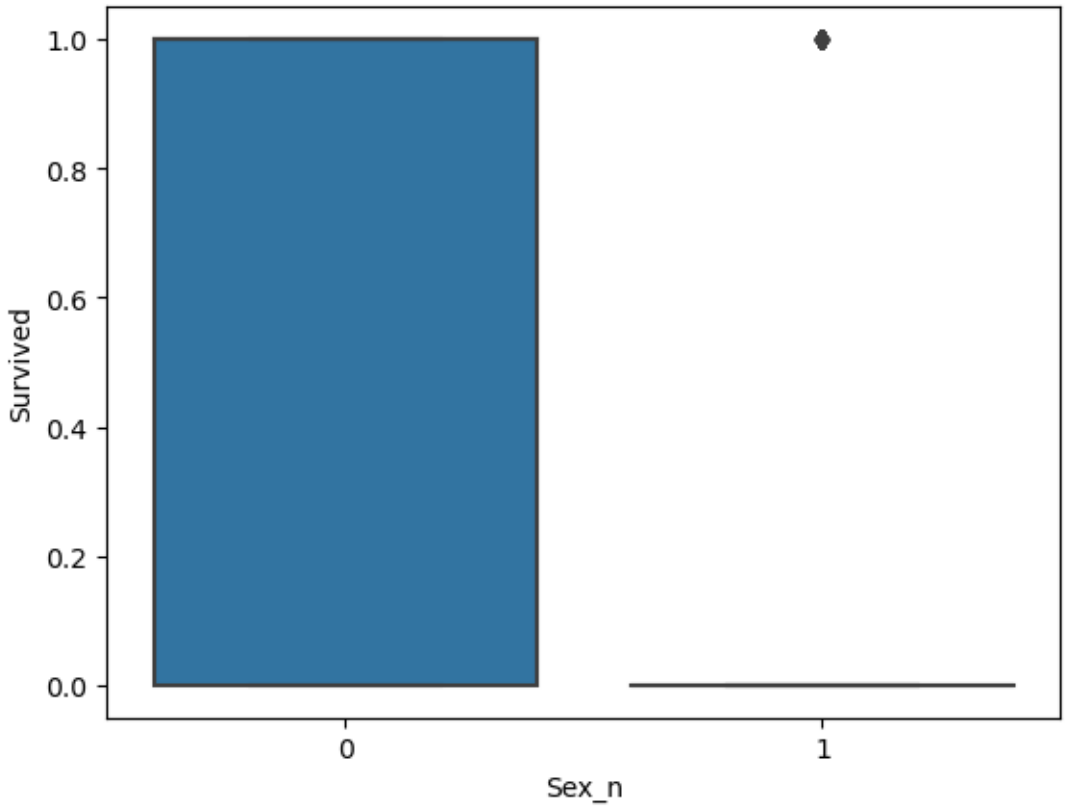
[79]:
```
sns.scatterplot(x='Sex_n', y ='Survived',data = titanic)
```

[79]: <Axes: xlabel='Sex_n', ylabel='Survived'>



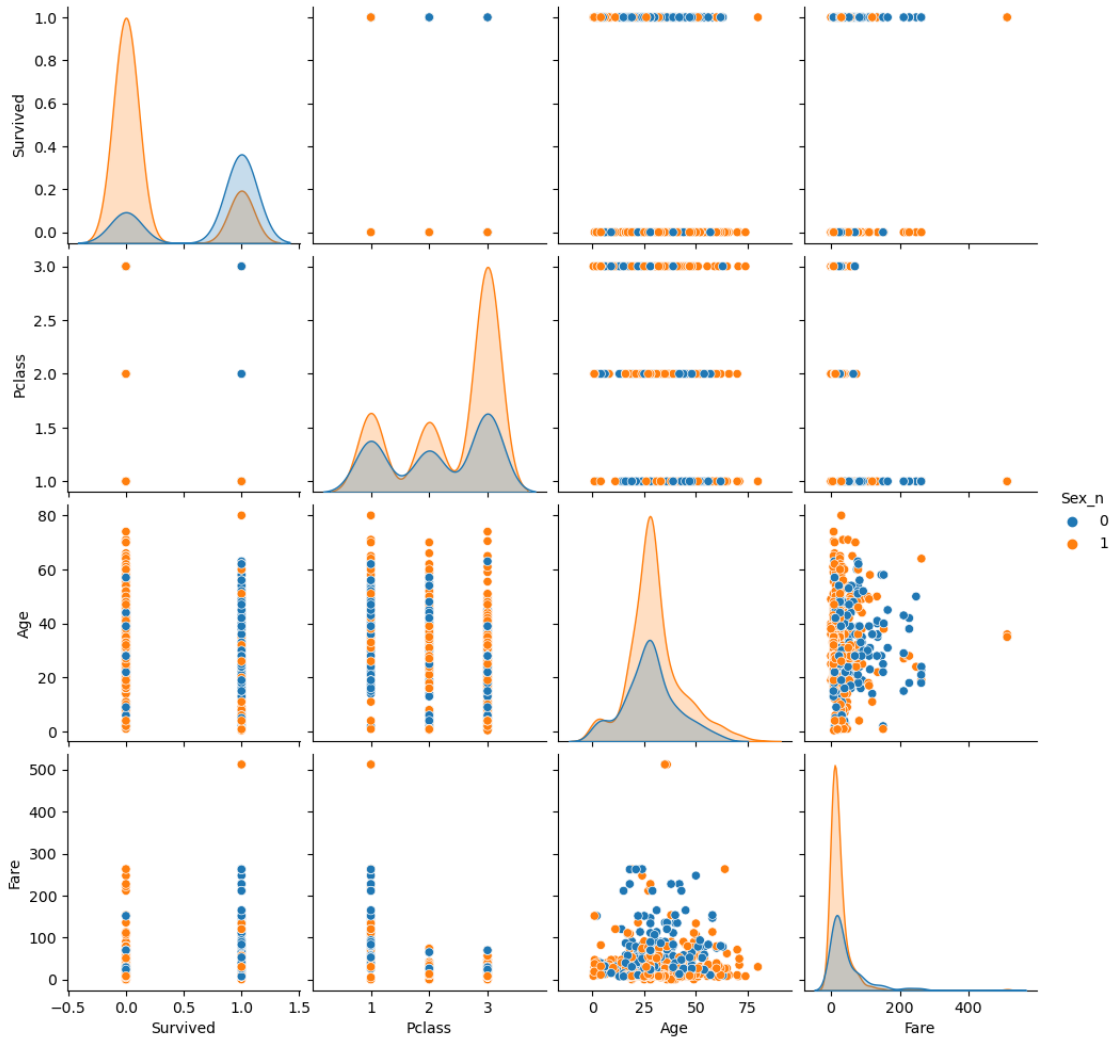
[80]:
```
sns.boxplot(x='Sex_n', y ='Survived',data = titanic)
```

[80]: <Axes: xlabel='Sex_n', ylabel='Survived'>



[83]:
```
sns.pairplot(hue='Sex_n', data = titanic)
```

[83]: <seaborn.axisgrid.PairGrid at 0x23bd9fd21d0>



[84]:
```
import joblib
```

[101]:
```
joblib.dump(model,'model_s')
```

[101]:
```
['model_s']
```

[102]:
```
import pickle as pkl
```

[103]:
```
f = joblib.load('model_s')
f
```

[103]:
```
DecisionTreeClassifier()
```

[104]:
```
 f.predict([[1,36,89.999,1]])
```

[104]:
```
array([1], dtype=int64)
```

[ ]:
```

```