In [1]:

```
# Importing relevent libraries:

import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt

pd.set_option('display.max_columns', None)

path = './supply_chain_data.csv'
data = pd.read_csv(path)
data.head()
```

Out[1]:

	Product type	SKU	Price	Availability	Number of products sold	Revenue generated	Customer demographics	Stock levels	Lead times	Order quantities	Shipping times	Shipping carriers
0	haircare	SKU0	69.808006	55	802	8661.996792	Non-binary	58	7	96	4	Carrier B
1	skincare	SKU1	14.843523	95	736	7460.900065	Female	53	30	37	2	Carrier A
2	haircare	SKU2	11.319683	34	8	9577.749626	Unknown	1	10	88	2	Carrier B
3	skincare	SKU3	61.163343	68	83	7766.836426	Non-binary	23	13	59	6	Carrier C
4	skincare	SKU4	4.805496	26	871	2686.505152	Non-binary	5	3	56	8	Carrier A

In [2]:

```
data.shape
```

Out[2]:

```
(100, 24)
```

In [3]:

```
data.dtypes
```

Out[3]:

```
Product type                 object
SKU                          object
Price                       float64
Availability                  int64
Number of products sold       int64
Revenue generated           float64
Customer demographics        object
Stock levels                  int64
Lead times                    int64
Order quantities              int64
Shipping times                int64
Shipping carriers            object
Shipping costs              float64
Supplier name                object
Location                     object
Lead time                     int64
Production volumes            int64
Manufacturing lead time       int64
Manufacturing costs         float64
Inspection results           object
```

```
Inspection results          object
Defect rates               float64
Transportation modes        object
Routes                      object
Costs                      float64
dtype: object
```

In [4]:

```
data.isnull().sum()
```

Out[4]:

```
Product type               0
SKU                        0
Price                      0
Availability               0
Number of products sold    0
Revenue generated          0
Customer demographics      0
Stock levels               0
Lead times                 0
Order quantities           0
Shipping times             0
Shipping carriers          0
Shipping costs             0
Supplier name              0
Location                   0
Lead time                  0
Production volumes         0
Manufacturing lead time    0
Manufacturing costs        0
Inspection results         0
Defect rates               0
Transportation modes       0
Routes                     0
Costs                      0
dtype: int64
```

In [5]:

```
data['Product type'].unique()
```

Out[5]:

```
array(['haircare', 'skincare', 'cosmetics'], dtype=object)
```

In [6]:

```
data['Customer demographics'].unique()
```

Out[6]:

```
array(['Non-binary', 'Female', 'Unknown', 'Male'], dtype=object)
```

In [7]:

```
data['Location'].unique()
```

Out[7]:

```
array(['Mumbai', 'Kolkata', 'Delhi', 'Bangalore', 'Chennai'], dtype=object)
```

In [8]:

```
data['Transportation modes'].unique()
```

Out[8]:

```
array(['Road', 'Air', 'Rail', 'Sea'], dtype=object)
```

In [9]:

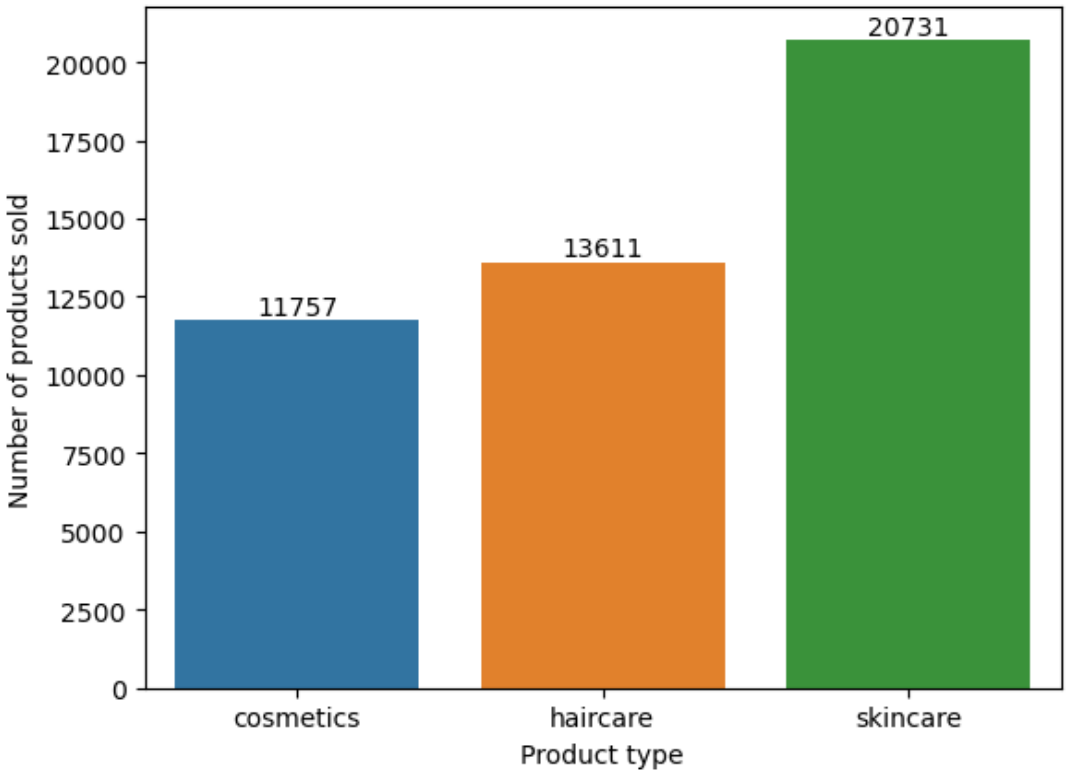
```
data['Routes'].unique()
```

Out[9]:

```
array(['Route B', 'Route C', 'Route A'], dtype=object)
```

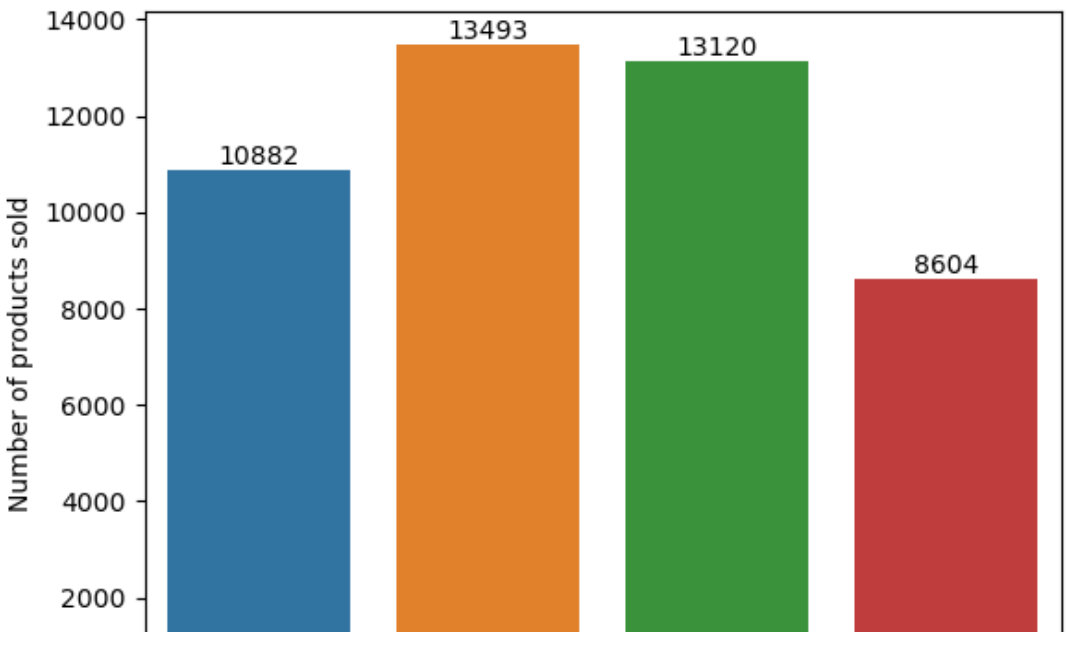
In [10]:

```
sales = data.groupby('Product type')['Number of products sold'].sum().reset_index()

plot = sns.barplot(data = sales, y = 'Number of products sold', x ='Product type')
for var in plot.containers:
    plot.bar_label(var)
plt.show()
```



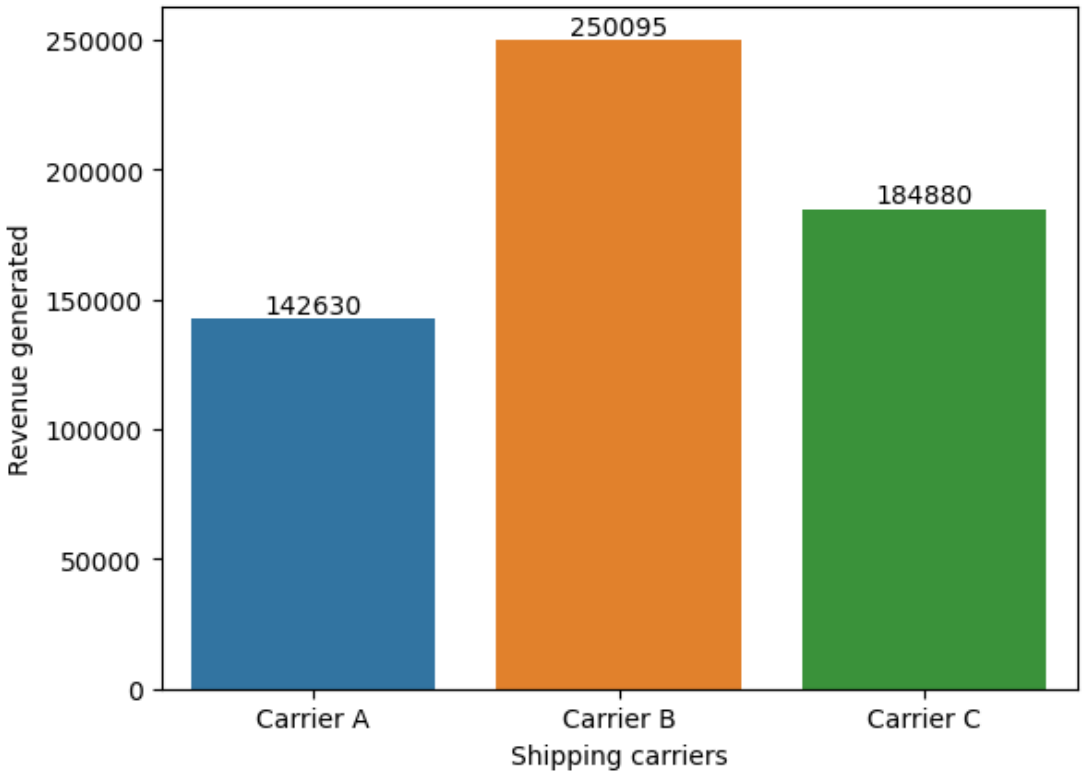
In [11]:

```
transportation = data.groupby('Transportation modes')['Number of products sold'].sum().r
eset_index()

plot = sns.barplot(data = transportation, y = 'Number of products sold', x ='Transportat
ion modes')
for var in plot.containers:
    plot.bar_label(var)
plt.show()
```



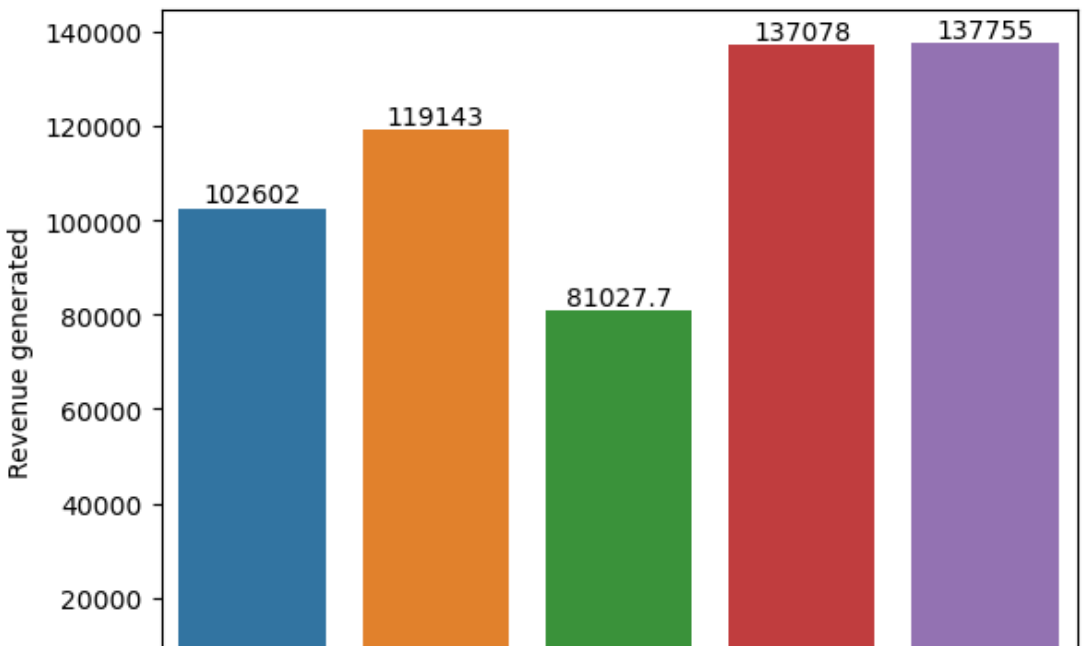
In [12]:

```
revenue = data.groupby('Shipping carriers')['Revenue generated'].sum().reset_index()

plot = sns.barplot(data = revenue, y = 'Revenue generated', x ='Shipping carriers')
for var in plot.containers:
    plot.bar_label(var)
plt.show()
```



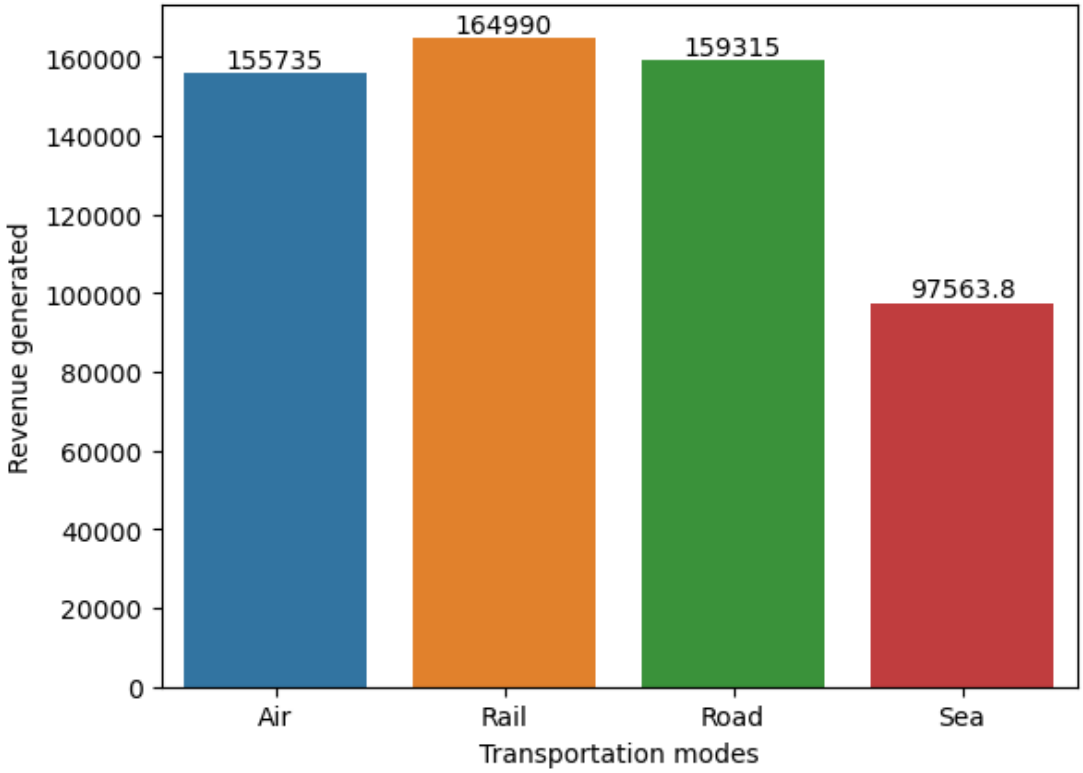
In [13]:

```
revenue_location = data.groupby('Location')['Revenue generated'].sum().reset_index()

plot = sns.barplot(data = revenue_location, y = 'Revenue generated', x ='Location')
for var in plot.containers:
    plot.bar_label(var)
plt.show()
```



In [14]:

```
revenue_modes = data.groupby('Transportation modes')['Revenue generated'].sum().reset_ind
ex()

plot = sns.barplot(data = revenue_modes, y = 'Revenue generated', x ='Transportation mod
es')
for var in plot.containers:
    plot.bar_label(var)
plt.show()
```



In [ ]: