In [1]:
```
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt

df = pd.read_csv('../transactions_train.csv')
```

In [2]:
```
df.head()
```

Out[2]:

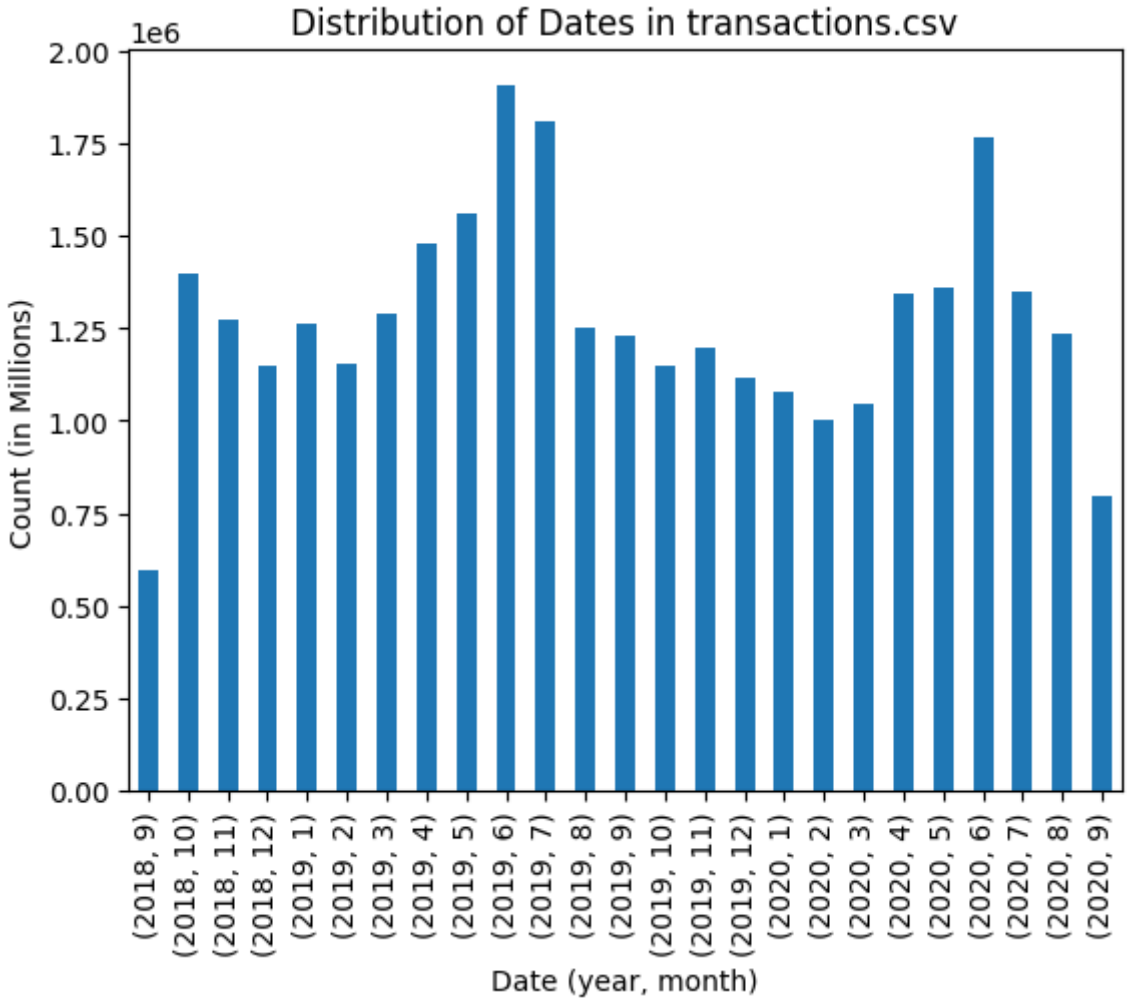
	t_dat	customer_id	article_id	price	sales_channel_id
0	2018-09-20	000058a12d5b43e67d225668fa1f8d618c13dc232df0ca...	663713001	0.050831	2
1	2018-09-20	000058a12d5b43e67d225668fa1f8d618c13dc232df0ca...	541518023	0.030492	2
2	2018-09-20	00007d2de826758b65a93dd24ce629ed66842531df6699...	505221004	0.015237	2
3	2018-09-20	00007d2de826758b65a93dd24ce629ed66842531df6699...	685687003	0.016932	2
4	2018-09-20	00007d2de826758b65a93dd24ce629ed66842531df6699...	685687004	0.016932	2

In [3]:
```
print('Number of rows:', len(df))
```

```
Number of rows: 31788324
```

In [4]:
```
# Distribution of t_dat
date_df = df['t_dat'].astype('datetime64')
data_to_show = date_df.groupby([date_df.dt.year, date_df.dt.month]).count()
ax = data_to_show.plot(kind='bar', title='Distribution of Dates in transactions.csv', )
ax.set_xlabel('Date (year, month)')
ax.set_ylabel('Count (in Millions)')
```

Out[4]:
```
Text(0, 0.5, 'Count (in Millions)')
```



In [5]:
```
# Unique customers
unique_cus = df['customer_id'].nunique()
print('Number of unique customers:', unique_cus)
print('Average number of transactions per customer:', len(df)/unique_cus)
```

```
Number of unique customers: 1362281
Average number of transactions per customer: 23.334630667241193
```

In [6]:
```
# Distribution of customers vs. transactions

temp = df.groupby(df['customer_id']).count()
```

```
temp = temp.rename_axis("c_id").reset_index()
temp = temp[['c_id', 't_dat']]
temp = temp.groupby(temp['t_dat']).count()
temp = temp.rename_axis("x").reset_index()

bins = list(range(0, 160, 5))
bins.append(1000000)
t = temp.groupby(pd.cut(temp['x'], bins=bins)).sum().rename_axis("range").reset_index()

sns.barplot(x='range', y='c_id', data=t)
plt.title('Number of customer vs. number of transaction')
plt.xlabel('Number of total transactions per customer')
plt.ylabel('Number of customer')
plt.xticks(rotation=-90)
plt.plot()

print('What does this chart mean?\n E.g., about 500000 customers in transactions.csv has 0-5 orders in total.')
```

```
What does this chart mean?
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```
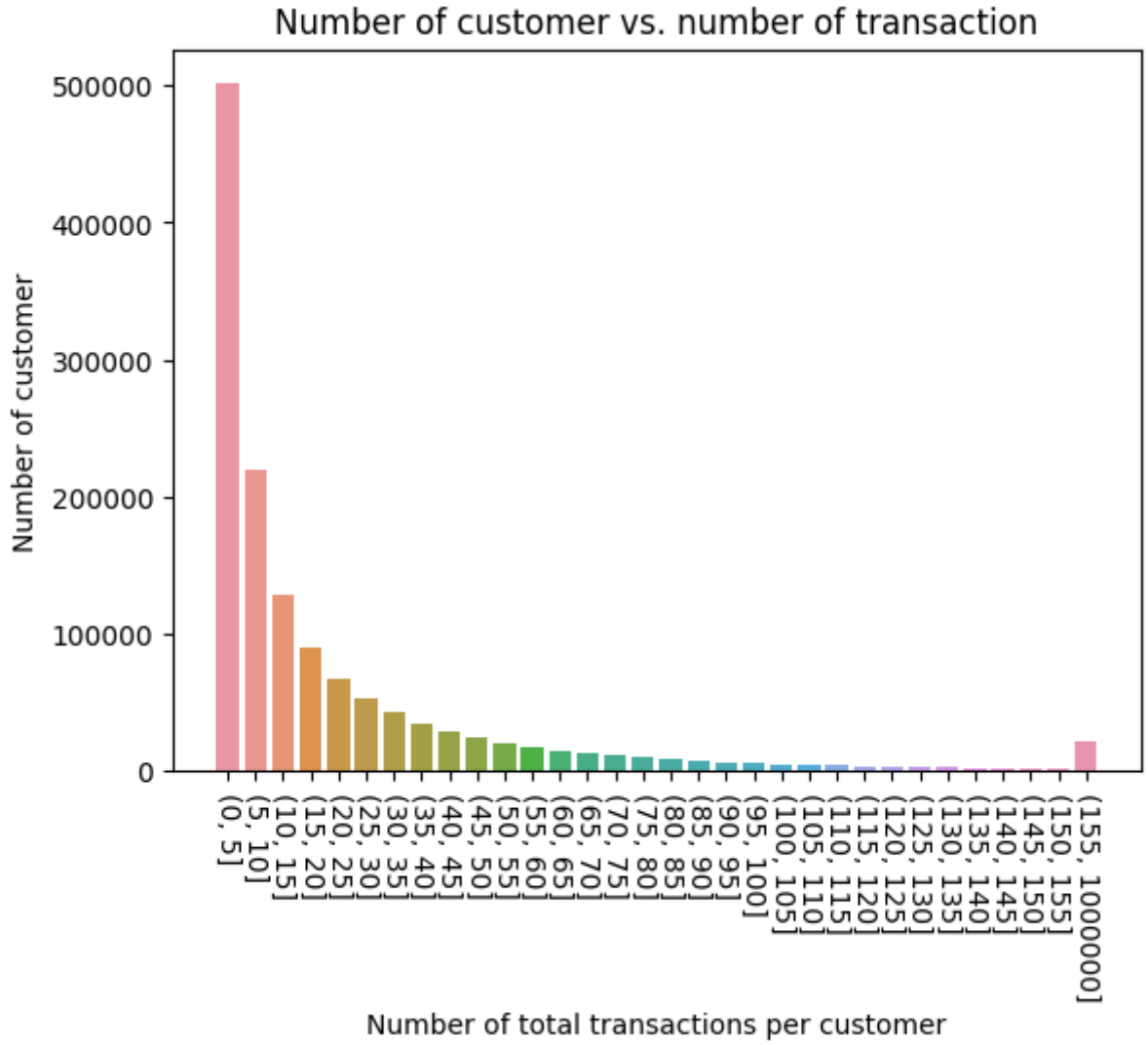
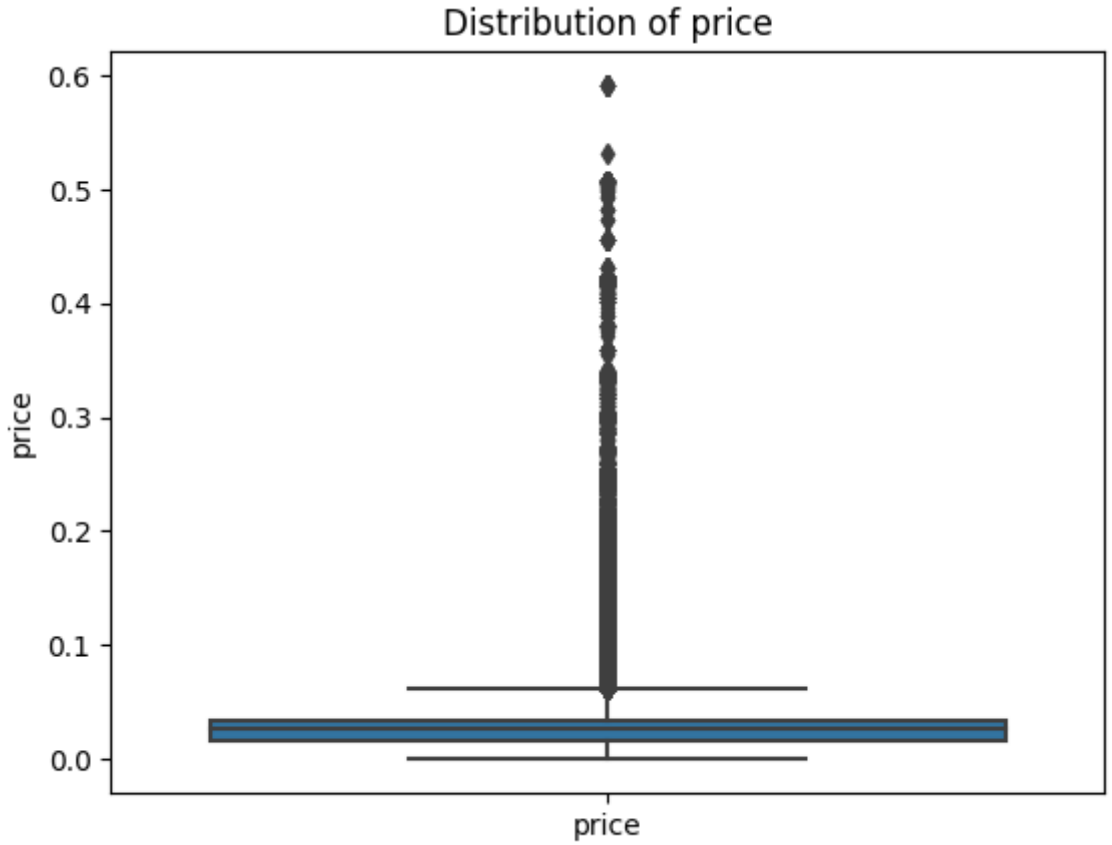



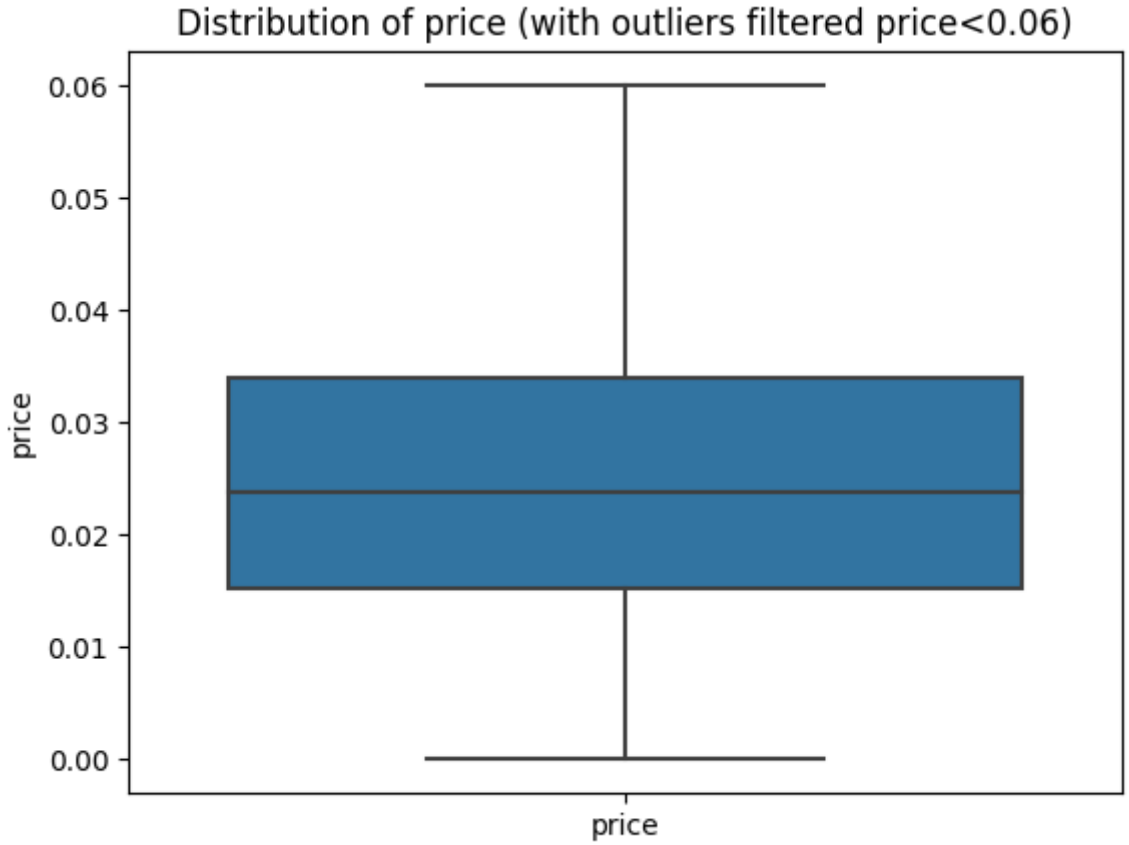
In [7]:
```
price_df = df['price'].to_frame()
sns.boxplot(data=price_df)
plt.xlabel(' ')
plt.ylabel('price')
plt.title('Distribution of price')
plt.plot()
```

Out[7]:
```
[]
```



In [8]:
```
price_df = price_df.loc[price_df['price'] <= 0.06]
sns.boxplot(data=price_df)
plt.xlabel(' ')
plt.ylabel('price')
plt.title('Distribution of price (with outliers filtered price<0.06)')
plt.plot()
```

Out[8]: []

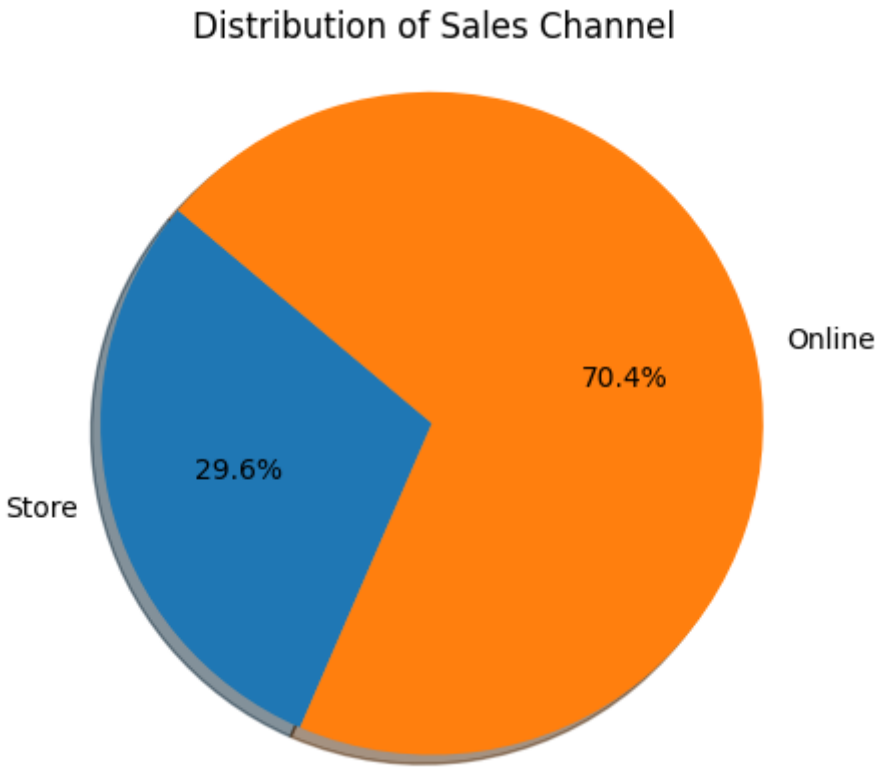


In [9]:
```
channel_df = df[['sales_channel_id', 'customer_id']]
channel_df = channel_df.groupby(['sales_channel_id']).count()

channel_df['customer_id']
```

Out[9]:
```
sales_channel_id
1     9408462
2    22379862
Name: customer_id, dtype: int64
```

In [10]:
```
labels = 'Store', 'Online'
sizes = channel_df['customer_id']

plt.pie(sizes, labels=labels,
```

```
        autopct='%1.1f%%', shadow=True, startangle=140)

plt.title('Distribution of Sales Channel')
plt.axis('equal')
plt.show()
```



In [ ]: