

```
import numpy as np
import pandas as pd
from scipy.interpolate import make_interp_spline
import matplotlib.pyplot as plt
import seaborn as sns
import matplotlib.patches as mpatches
import zipfile
```

```
vestiaire_path =
'/Users/acadiagrenier/Desktop/FallFiles.2024/DNSC4211/vestiaire.csv.zip'
```

```
#-- Used to load zip onto local host: https://unc-libraries-
data.github.io/Python/Files_Packages/Files_Packages.html
```

```
with zipfile.ZipFile(vestiaire_path, 'r') as zip_ref:
    vestiaire_df = zip_ref.namelist()[0]
    with zip_ref.open(vestiaire_df) as vestiaire_df:
        vestiaire_data = pd.read_csv(vestiaire_df)
```

```
#-- I am trying to convey to Vestiaire Stakeholders that they need to
leverage two things:
```

```
# 1. What products are preferred by customers, that way they can
target specific brands/item types to increase revenue
```

```
# 2. And that by selling high quality products that match consumer
wants, Vestiaire can help reduce textile waste among the most wasteful
class, better achieving their goal of sustainable fashion
```

### *#1. Cleaning*

```
vestiaire_data.head(5)
```

	product_id	product_type \
0	43247626	Wool mini skirt
1	43247441	Jacket
2	43246517	Wool coat
3	43246507	Mini skirt
4	43246417	Vegan leather trousers

	product_name \
0	Wool mini skirt Miu Miu Grey size S Internatio...
1	Jacket Barbara Bui Navy size 42 FR in Cotton
2	Wool coat Comme Des Garcons White size S Inter...
3	Mini skirt MSGM Black size 38 IT in Polyester
4	Vegan leather trousers LVIR Black size 36 FR i...

	product_description \
0	Miu Miu – Pleated mini skirt Size: 36 (S) Wai...
1	For selling nice women's suit Barbara Bui size...
2	Magnificent boiled wool coat. I bought it in t...
3	MSGM Skirt Black Printed Raw-Edge & Embroidere...
4	LVIR black grained faux leather trousers size ...

	product_keywords	product_gender_target	product_category
\			
0	Miu Miu Wool Skirts	Women	Women Clothing
1	Barbara Bui Cotton Jackets	Women	Women Clothing
2	Comme Des Garcons Wool Coats	Women	Women Clothing
3	MSGM Polyester Skirts	Women	Women Clothing
4	LVIR Vegan leather Trousers	Women	Women Clothing

	product_season	product_condition	product_like_count	sold
reserved \				
0	Autumn / Winter	Never worn	34.0	True
False				
1	All seasons	Very good condition	1.0	False
False				
2	Autumn / Winter	Very good condition	2.0	False
False				
3	All seasons	Very good condition	0.0	False
False				
4	All seasons	Very good condition	1.0	False
False				

	available	in_stock	should_be_gone	brand_id	brand_name	\
0	True	False	False	117	Miu Miu	
1	True	False	False	161	Barbara Bui	
2	True	False	False	391	Comme Des Garcons	
3	True	False	False	2797	MSGM	
4	True	False	False	11956	LVIR	

	brand_url	product_material
\		
0	http://vestiairecollective.com/miu-miu/	Wool
1	http://vestiairecollective.com/barbara-bui/	Cotton
2	http://vestiairecollective.com/comme-des-garcons/	Wool
3	http://vestiairecollective.com/msgm/	Polyester
4	http://vestiairecollective.com/lvir/	Vegan leather

	product_color	price_usd	seller_price	seller_earning	seller_badge
\					
0	Grey	272.92	223.65	216.94	Common

1	Navy	127.80	106.50	106.50	Common
2	White	1278.00	1065.00	926.55	Expert
3	Black	163.90	149.00	126.65	Expert
4	Black	119.72	99.77	83.55	Common

	has_cross_border_fees	buyers_fees	warehouse_name	seller_id	\
0	NaN	NaN	Tourcoing	25775970	
1	True	21.30	Tourcoing	13698770	
2	True	213.00	Tourcoing	6042365	
3	True	14.90	Brooklyn	13172949	
4	True	19.95	Crawley	2578605	

	seller_username	usually_ships_within	seller_country	\
0	vitalii25775970	NaN	Germany	
1	olivia13698770	NaN	Belgium	
2	cecilia6042365	1-2 days	Spain	
3	gretchen13172949	1-2 days	United States	
4	crunchykat	3-5 days	United Kingdom	

	seller_products_sold	seller_num_products_listed
seller_community_rank \		
0	3.0	14.0
0.0		
1	0.0	0.0
0.0		
2	58.0	69.0
0.0		
3	63.0	274.0
126346.0		
4	19.0	14.0
102821.0		

	seller_num_followers	seller_pass_rate
0	13.0	0.0
1	8.0	0.0
2	62.0	96.0
3	131.0	96.0
4	40.0	89.0

*#Checked to see the data quality -- Missing data = 20.51%*  
(vestiaire\_data.isna().mean() \* 100).sum()

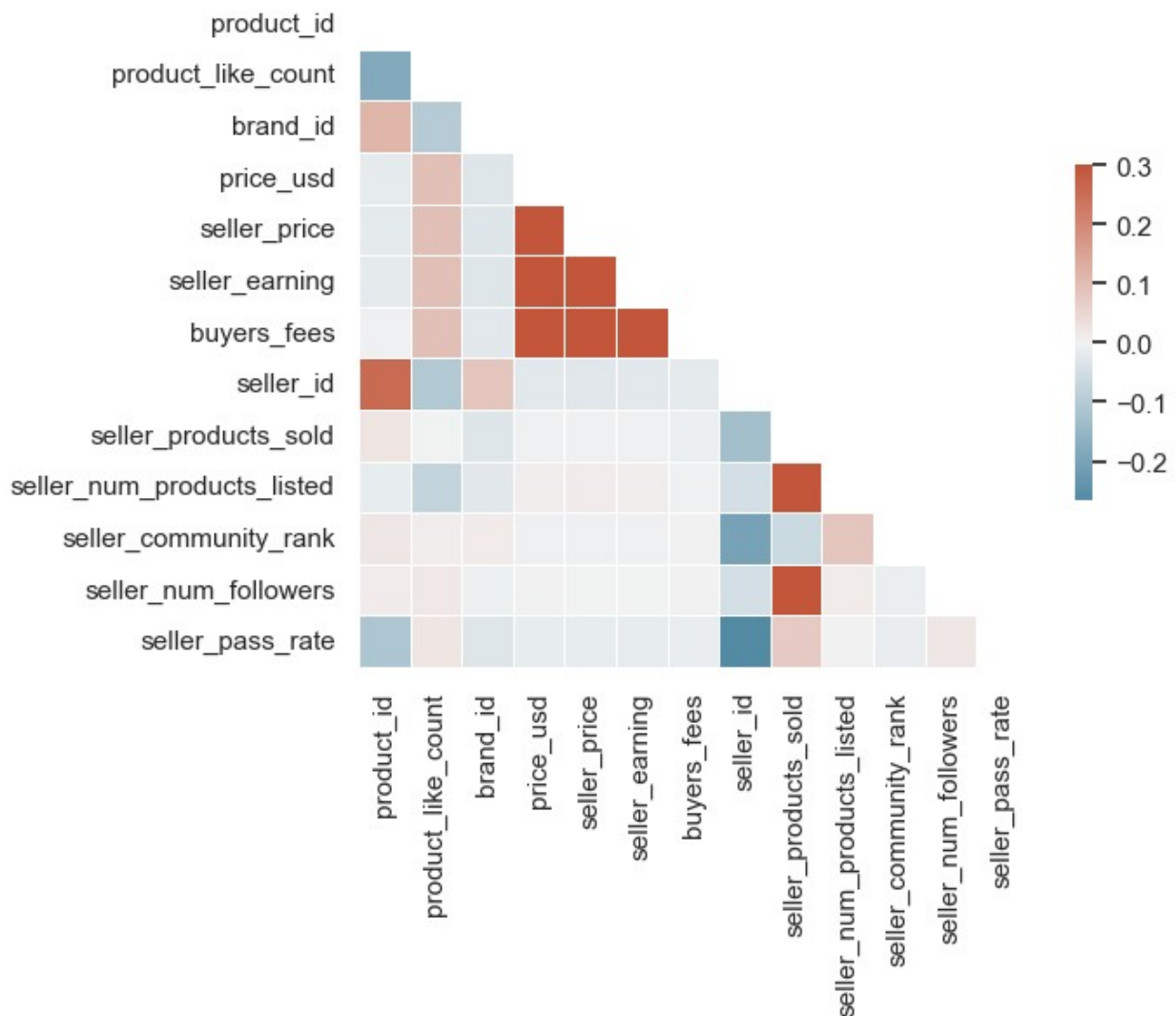
20.50850958452617

```
import pandas as pd
from string import ascii_letters
```

```

#--Only used numeric columns, structure from class 9
#-- corr. is as expected, positively crrelated items make sense,
#-- didn't flag anything
vest_num = vestiaire_data.select_dtypes(include=[float, int])
sns.set_theme(style="white")
corr = vest_num.corr()
mask = np.triu(np.ones_like(corr, dtype=bool))
f, ax = plt.subplots(figsize=(7, 5))
cmap = sns.diverging_palette(230, 20, as_cmap=True)
sns.heatmap(corr, mask=mask, cmap=cmap, vmax=.3, center=0,
            square=True, linewidths=.5, cbar_kws={"shrink": .5})
plt.show()

```



```

#900514 rows x 36 columns
pd.set_option('display.max_columns', None)
vestiaire_data

```

	product_id	product_type	\
0	43247626	Wool mini skirt	
1	43247441	Jacket	
2	43246517	Wool coat	
3	43246507	Mini skirt	
4	43246417	Vegan leather trousers	
...	...	...	
900509	41538360	Glitter trainers	
900510	41532271	Leather heels	
900511	41538140	Leather cowboy boots	
900512	41537603	Leather ballet flats	
900513	41534820	J'adior cloth sandal	
		product_name	\
0		Wool mini skirt Miu Miu Grey size S Internatio...	
1		Jacket Barbara Bui Navy size 42 FR in Cotton	
2		Wool coat Comme Des Garcons White size S Inter...	
3		Mini skirt MSGM Black size 38 IT in Polyester	
4		Vegan leather trousers LVIR Black size 36 FR i...	
...		...	
900509		Glitter trainers Bally Gold size 38 EU in Glit...	
900510		Leather heels Casadei Black size 38.5 EU in Le...	
900511		Leather cowboy boots Ash Black size 36 EU in L...	
900512		Leather ballet flats Lauren Ralph Lauren Black...	
900513		J'adior cloth sandal Dior Beige size 38 EU in ...	
		product_description	\
0		Miu Miu – Pleated mini skirt Size: 36 (S) Wai...	
1		For selling nice women's suit Barbara Bui size...	
2		Magnificent boiled wool coat. I bought it in t...	
3		MSGM Skirt Black Printed Raw-Edge & Embroidere...	
4		LVIR black grained faux leather trousers size ...	
...		...	
900509		Bally Vita Parours sneakers. PPleather, suede...	
900510		Trendy and classic Casadei high-heel pumps Mad...	
900511		Very good quality leather boots Worn once Elas...	
900512		Very beautiful ballet flats like new. I don't ...	
900513		Dior J'adior slingback sandals pumps New, nev...	
		product_keywords	product_gender_target
\			
0		Miu Miu Wool Skirts	Women
1		Barbara Bui Cotton Jackets	Women
2		Comme Des Garcons Wool Coats	Women
3		MSGM Polyester Skirts	Women
4		LVIR Vegan leather Trousers	Women

...	...	...
900509	Bally Glitter Trainers	Women
900510	Casadei Leather Heels	Women
900511	Ash Leather Boots	Women
900512	Lauren Ralph Lauren Leather Ballet flats	Women
900513	Dior J'adior Sandals	Women

	product_category	product_season	product_condition	\
0	Women Clothing	Autumn / Winter	Never worn	
1	Women Clothing	All seasons	Very good condition	
2	Women Clothing	Autumn / Winter	Very good condition	
3	Women Clothing	All seasons	Very good condition	
4	Women Clothing	All seasons	Very good condition	
...	...	...	...	
900509	Women Shoes	All seasons	Good condition	
900510	Women Shoes	All seasons	Good condition	
900511	Women Shoes	All seasons	Very good condition	
900512	Women Shoes	All seasons	Very good condition	
900513	Women Shoes	Spring / Summer	Never worn	

	product_like_count	sold	reserved	available	in_stock	\
0	34.0	True	False	True	False	
1	1.0	False	False	True	False	
2	2.0	False	False	True	False	
3	0.0	False	False	True	False	
4	1.0	False	False	True	False	
...	...	...	...	...	...	
900509	1.0	False	False	True	False	
900510	1.0	False	False	True	False	
900511	0.0	False	False	True	False	
900512	27.0	False	False	True	False	
900513	47.0	False	False	True	False	

	should_be_gone	brand_id	brand_name	\
0	False	117	Miu Miu	
1	False	161	Barbara Bui	
2	False	391	Comme Des Garcons	
3	False	2797	MSGM	
4	False	11956	LVIR	
...	...	...	...	
900509	False	290	Bally	
900510	False	1053	Casadei	
900511	False	206	Ash	
900512	False	5600	Lauren Ralph Lauren	

900513	False	10	Dior	
			brand_url	
product_material \				
0			http://vestiairecollective.com/miu-miu/	
Wool				
1			http://vestiairecollective.com/barbara-bui/	
Cotton				
2			http://vestiairecollective.com/comme-des-garcons/	
Wool				
3			http://vestiairecollective.com/msgm/	
Polyester				
4			http://vestiairecollective.com/lvir/	Vegan
leather				
...				...
...				
900509			http://vestiairecollective.com/bally/	
Glitter				
900510			http://vestiairecollective.com/casadei/	
Leather				
900511			http://vestiairecollective.com/ash/	
Leather				
900512			http://vestiairecollective.com/lauren-ralph-la...	
Leather				
900513			http://vestiairecollective.com/dior/	
Cloth				
	product_color	price_usd	seller_price	seller_earning
seller_badge \				
0	Grey	272.92	223.65	216.94
Common				
1	Navy	127.80	106.50	106.50
Common				
2	White	1278.00	1065.00	926.55
Expert				
3	Black	163.90	149.00	126.65
Expert				
4	Black	119.72	99.77	83.55
Common				
...	...	...	...	...
...				
900509	Gold	89.46	74.55	60.71
Expert				
900510	Black	153.36	127.80	108.63
Expert				
900511	Black	191.70	159.75	138.98
Common				
900512	Black	57.51	47.93	34.08
Trusted				
900513	Beige	958.50	798.75	654.98

## Common

	has_cross_border_fees	buyers_fees	warehouse_name	seller_id	\
0	NaN	NaN	Tourcoing	25775970	
1	True	21.30	Tourcoing	13698770	
2	True	213.00	Tourcoing	6042365	
3	True	14.90	Brooklyn	13172949	
4	True	19.95	Crawley	2578605	
...	...	...	...	...	
900509	True	14.91	Tourcoing	8849230	
900510	True	25.56	Tourcoing	5448248	
900511	True	31.95	Tourcoing	9347694	
900512	True	9.59	Tourcoing	24074881	
900513	True	159.75	Tourcoing	24557483	

	seller_username	usually_ships_within	seller_country	\
0	vitalii25775970	NaN	Germany	
1	olivia13698770	NaN	Belgium	
2	cecilia6042365	1-2 days	Spain	
3	gretchen13172949	1-2 days	United States	
4	crunchykat	3-5 days	United Kingdom	
...	...	...	...	
900509	lauragua	1-2 days	Italy	
900510	bettina5448248	1-2 days	Austria	
900511	sylvie9347694	NaN	France	
900512	marina24074881	1-2 days	Italy	
900513	shop24557483	1-2 days	Romania	

	seller_products_sold	seller_num_products_listed	\
0	3.0	14.0	
1	0.0	0.0	
2	58.0	69.0	
3	63.0	274.0	
4	19.0	14.0	
...	...	...	
900509	40.0	17.0	
900510	26.0	99.0	
900511	0.0	2.0	
900512	2.0	7.0	
900513	66.0	354.0	

	seller_community_rank	seller_num_followers	seller_pass_rate
0	0.0	13.0	0.0
1	0.0	8.0	0.0
2	0.0	62.0	96.0
3	126346.0	131.0	96.0



4	102821.0	40.0	89.0
...	...	...	...
900509	391778.0	104.0	100.0
900510	51408.0	75.0	89.0
900511	0.0	3.0	0.0
900512	0.0	11.0	100.0
900513	0.0	195.0	75.0

[900514 rows x 36 columns]

```
print(vestiaire_data.columns)
```

```
Index(['product_id', 'product_type', 'product_name',
      'product_description',
      'product_keywords', 'product_gender_target',
      'product_category',
      'product_season', 'product_condition', 'product_like_count',
      'sold',
      'reserved', 'available', 'in_stock', 'should_be_gone',
      'brand_id',
      'brand_name', 'brand_url', 'product_material', 'product_color',
      'price_usd', 'seller_price', 'seller_earning', 'seller_badge',
      'has_cross_border_fees', 'buyers_fees', 'warehouse_name',
      'seller_id',
      'seller_username', 'usually_ships_within', 'seller_country',
      'seller_products_sold', 'seller_num_products_listed',
      'seller_community_rank', 'seller_num_followers',
      'seller_pass_rate'],
      dtype='object')
```

*#Removing unnecessary variables that don't impact my analysis*

*#certain columns contain inconsistent data, the descriptive columns are inconsistent as the seller is coming up with them*

*#NOT a Vestiaire standardzied description*

```
vestiaire_data = vestiaire_data.drop(columns=['product_id',
      'product_description', 'product_name', 'product_keywords', 'product_gende
r_target', 'product_season', 'available', 'in_stock', 'should_be_gone', 'br
and_url', 'product_color', 'price_usd', 'seller_earning', 'seller_badge', '
has_cross_border_fees', 'warehouse_name', 'seller_id', 'seller_username',
      'usually_ships_within', 'seller_country', 'seller_products_sold', 'seller
_num_products_listed', 'seller_community_rank', 'seller_num_followers', '
reserved', 'seller_pass_rate'])
```

```
vestiaire_data.head()
```

	product_type	product_category	product_condition	\
0	Wool mini skirt	Women Clothing	Never worn	
1	Jacket	Women Clothing	Very good condition	
2	Wool coat	Women Clothing	Very good condition	
3	Mini skirt	Women Clothing	Very good condition	
4	Vegan leather trousers	Women Clothing	Very good condition	

	product_like_count	sold	brand_id	brand_name
product_material \				
0	34.0	True	117	Miu Miu
Wool				
1	1.0	False	161	Barbara Bui
Cotton				
2	2.0	False	391	Comme Des Garçons
Wool				
3	0.0	False	2797	MSGM
Polyester				
4	1.0	False	11956	LVIR
leather				Vegan

	seller_price	buyers_fees
0	223.65	NaN
1	106.50	21.30
2	1065.00	213.00
3	149.00	14.90
4	99.77	19.95

*#First I found most purchased brands, product types, quality, and materials*  
*#Goal is to find which ones generate the most sales and then find what brands sell the most inventory*  
*#Gives insight into preferences and products to increase inventory of*

```
vestiaire_data['sold'] = vestiaire_data['sold'].astype(int)
```

```
vestiaire_data.head()
```

	product_type	product_category	product_condition	\
0	Wool mini skirt	Women Clothing	Never worn	
1	Jacket	Women Clothing	Very good condition	
2	Wool coat	Women Clothing	Very good condition	
3	Mini skirt	Women Clothing	Very good condition	
4	Vegan leather trousers	Women Clothing	Very good condition	

	product_like_count	sold	brand_id	brand_name
product_material \				
0	34.0	1	117	Miu Miu
Wool				
1	1.0	0	161	Barbara Bui

Cotton					
2	2.0	0	391	Comme Des Garcons	
Wool					
3	0.0	0	2797	MSGM	
Polyester					
4	1.0	0	11956	LVIR	Vegan
leather					

	seller_price	buyers_fees
0	223.65	NaN
1	106.50	21.30
2	1065.00	213.00
3	149.00	14.90
4	99.77	19.95

```
total_brand_count =
vestiaire_data.groupby('brand_name').size().sort_values(ascending=False)
print(total_brand_count)
```

brand_name	
Gucci	41009
Burberry	24018
Dolce & Gabbana	22024
Prada	20972
Hermès	18711
...	
KANTIS	1
Sevan Bicakci	1
KLEINFELD	1
Kaaskas	1
Ølaf	1

Length: 8884, dtype: int64

```
sold_products = vestiaire_data[vestiaire_data['sold'] == 1]
brand_counts = sold_products['brand_name'].value_counts()
brand_counts
```

brand_name	
Gucci	853
Prada	527
Hermès	348
Burberry	338
Chanel	329
...	
Rozae Nichols	1
Wicked Weasel	1
Neve & Noor	1
Dodo Bar Or	1

```
Ninamounah      1
Name: count, Length: 1461, dtype: int64
```

```
#knowing Gucci is the most purchased brand, I wanted to find the %
sold of total inventory to see if that metric is from popularity, or
because gucci has the largest inventory
```

```
#Used the same strategy my group used in ASSN4
```

```
total_counts = vestiaire_data.groupby('brand_name').size()
```

```
brand_counts = sold_products['brand_name'].value_counts()
```

```
selling_rate = brand_counts / total_counts
```

```
selling_rate = selling_rate.fillna(0)
```

```
selling_rate = selling_rate.reset_index(name='Selling Rate')
```

```
selling_rate = selling_rate.sort_values(by='Selling Rate',
ascending=False)
```

```
selling_rate
```

	brand_name	Selling Rate
2895	Freda Banana	1.0
3749	It's All About Romance	1.0
8728	ZEUS+DIONE	1.0
8738	Zanini	1.0
3875	James Smith & Sons	1.0
...	...	...
3242	Griffin	0.0
3241	Greymer	0.0
3240	Grey Mer	0.0
3239	Grey Ant	0.0
8883	Ølaf	0.0

```
[8884 rows x 2 columns]
```

```
#I wanted to find the CI for each rate, but all the strategies I tried
wouldn't work--I think because there are too many brands with too
little data
```

```
#now i am going to only use the top 25 brands
```

```
#Most sold brands
```

```
sold_products = vestiaire_data[vestiaire_data['sold'] == 1]
```

```
brand_counts = sold_products['brand_name'].value_counts()
```

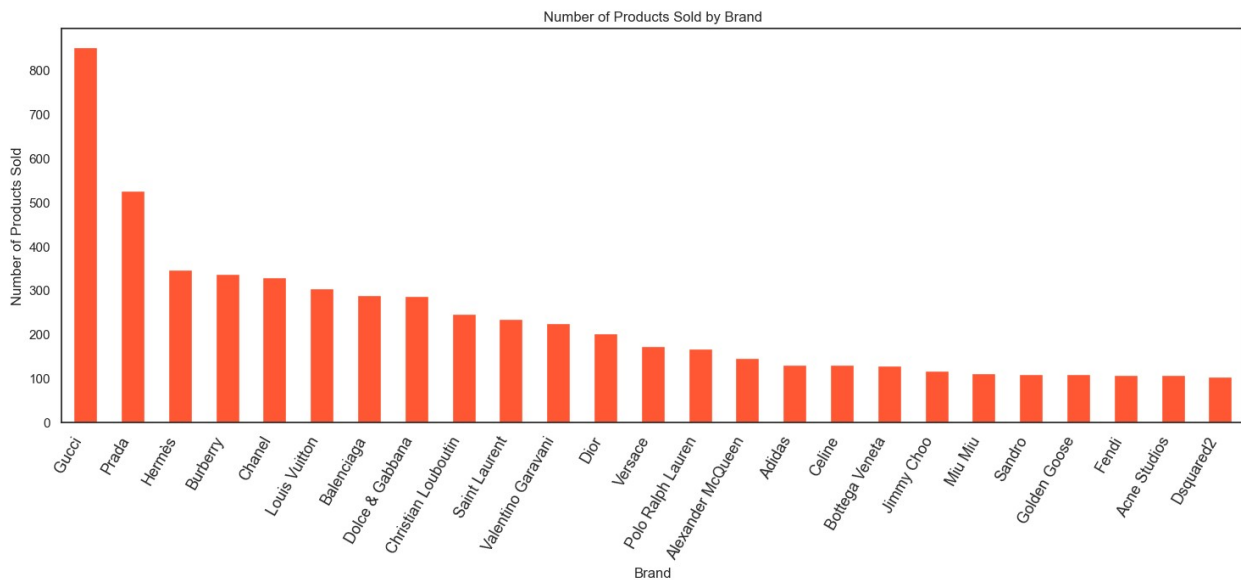
```
top_25_brands = brand_counts.nlargest(25)
```

```
print(top_25_brands.index)
```

```
Index(['Gucci', 'Prada', 'Hermès', 'Burberry', 'Chanel', 'Louis
Vuitton',
      'Balenciaga', 'Dolce & Gabbana', 'Christian Louboutin', 'Saint
Laurent',
      'Valentino Garavani', 'Dior', 'Versace', 'Polo Ralph Lauren',
      'Alexander McQueen', 'Adidas', 'Celine', 'Bottega Veneta',
```

```
'Jimmy Choo',
    'Miu Miu', 'Sandro', 'Golden Goose', 'Fendi', 'Acne Studios',
    'Dsquared2'],
    dtype='object', name='brand_name')
```

```
plt.figure(figsize=(18, 8))
plt.subplots_adjust(bottom=0.3)
top_25_brands = brand_counts.nlargest(25)
top_25_brands.plot(kind='bar', color='#FF5733')
plt.xlabel('Brand')
plt.ylabel('Number of Products Sold')
plt.title('Number of Products Sold by Brand')
plt.xticks(rotation=60, ha='right', fontsize=13)
plt.show()
```



*#Create a column that indicates top brands, allows me to clean out all the smaller brands with less data, makes my data less noisy*

```
top_25_brands = ['Gucci', 'Prada', 'Hermès', 'Burberry', 'Chanel',
    'Louis Vuitton',
    'Balenciaga', 'Dolce & Gabbana', 'Christian
    Louboutin', 'Saint Laurent',
    'Valentino Garavani', 'Dior', 'Versace', 'Polo Ralph
    Lauren',
    'Alexander McQueen', 'Adidas', 'Celine', 'Bottega
    Veneta', 'Jimmy Choo',
    'Miu Miu', 'Sandro', 'Golden Goose', 'Fendi', 'Acne
    Studios',
    'Dsquared2']
```

```
vestiaire_data['top_25_brand'] =
vestiaire_data['brand_name'].isin(top_25_brands).astype(int)
```

```
#Same steps but for product type
```

```
sold_products = vestiaire_data[vestiaire_data['sold'] == 1]
sold_item = sold_products['product_type'].value_counts()
sold_item
```

```
product_type
T-shirt                574
Leather flats          376
Leather heels          374
Shirt                  371
Jacket                 346
...
Daymaster leather high trainers    1
Track leather high trainers        1
SL/06 leather low trainers         1
Clipper leather low trainers       1
Shox leather trainers              1
Name: count, Length: 1646, dtype: int64
```

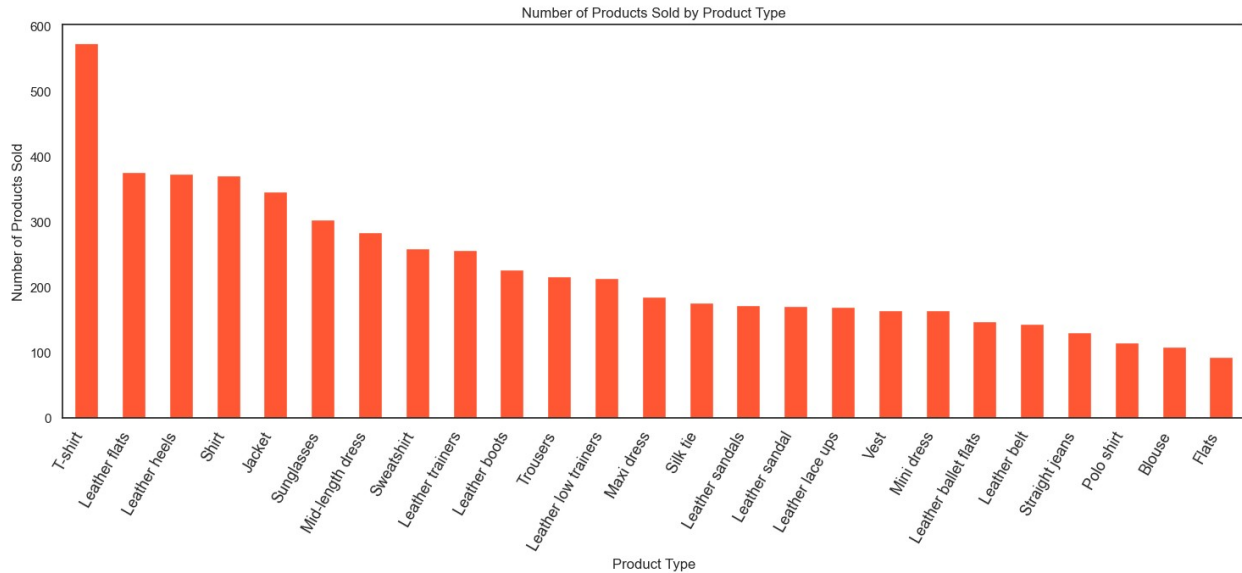
```
sold_products = vestiaire_data[vestiaire_data['sold'] == 1]
sold_item = sold_products['product_type'].value_counts()
sold_by_item = sold_item.nlargest(25)
```

```
print(sold_by_item.index)
```

```
Index(['T-shirt', 'Leather flats', 'Leather heels', 'Shirt', 'Jacket',
      'Sunglasses', 'Mid-length dress', 'Sweatshirt', 'Leather
trainers',
      'Leather boots', 'Trousers', 'Leather low trainers', 'Maxi
dress',
      'Silk tie', 'Leather sandals', 'Leather sandal', 'Leather lace
ups',
      'Vest', 'Mini dress', 'Leather ballet flats', 'Leather belt',
      'Straight jeans', 'Polo shirt', 'Blouse', 'Flats'],
      dtype='object', name='product_type')
```

```
#Top 25 helps remove noisy variables
```

```
plt.figure(figsize=(18, 8))
plt.subplots_adjust(bottom=0.3)
sold_by_item = sold_item.nlargest(25)
sold_by_item.plot(kind='bar', color='#FF5733')
plt.xlabel('Product Type')
plt.ylabel('Number of Products Sold')
plt.title('Number of Products Sold by Product Type')
plt.xticks(rotation=60, ha='right', fontsize=13)
plt.show()
```



```
sold_by_item.head(25)
```

```
product_type
T-shirt          574
Leather flats    376
Leather heels    374
Shirt            371
Jacket           346
Sunglasses       303
Mid-length dress 284
Sweatshirt       259
Leather trainers 256
Leather boots    227
Trousers         216
Leather low trainers 214
Maxi dress       185
Silk tie         176
Leather sandals  172
Leather sandal   171
Leather lace ups 169
Vest             165
Mini dress       164
Leather ballet flats 148
Leather belt     143
Straight jeans   130
Polo shirt       115
Blouse           108
Flats            93
```

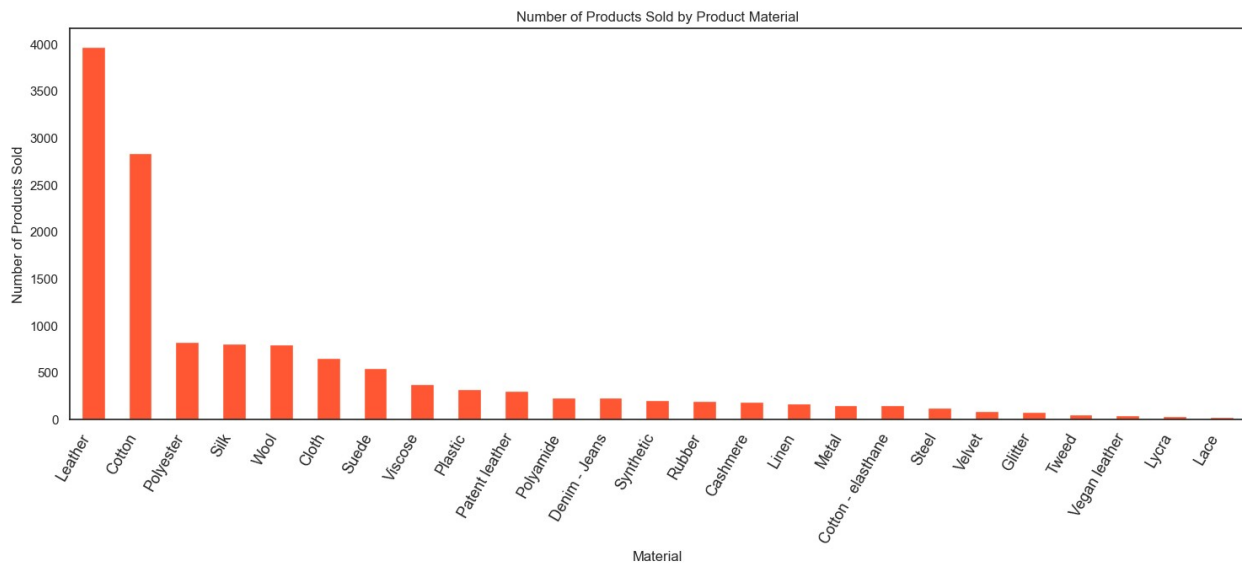
```
Name: count, dtype: int64
```

```
product_material = sold_products['product_material'].value_counts()
product_material
```

```
product_material
Leather      3971
Cotton       2841
Polyester    829
Silk         810
Wool         803
...
Silver Plated 1
Platinum      1
Raccoon       1
Sponge        1
Astrakhan     1
Name: count, Length: 61, dtype: int64
```

*#same process for sold materials*

```
plt.figure(figsize=(18, 8))
plt.subplots_adjust(bottom=0.3)
product_material = sold_products['product_material'].value_counts()
sold_by_material = product_material.nlargest(25)
sold_by_material.plot(kind='bar', color='#FF5733')
plt.xlabel('Material')
plt.ylabel('Number of Products Sold')
plt.title('Number of Products Sold by Product Material')
plt.xticks(rotation=60, ha='right', fontsize=13)
plt.show()
```

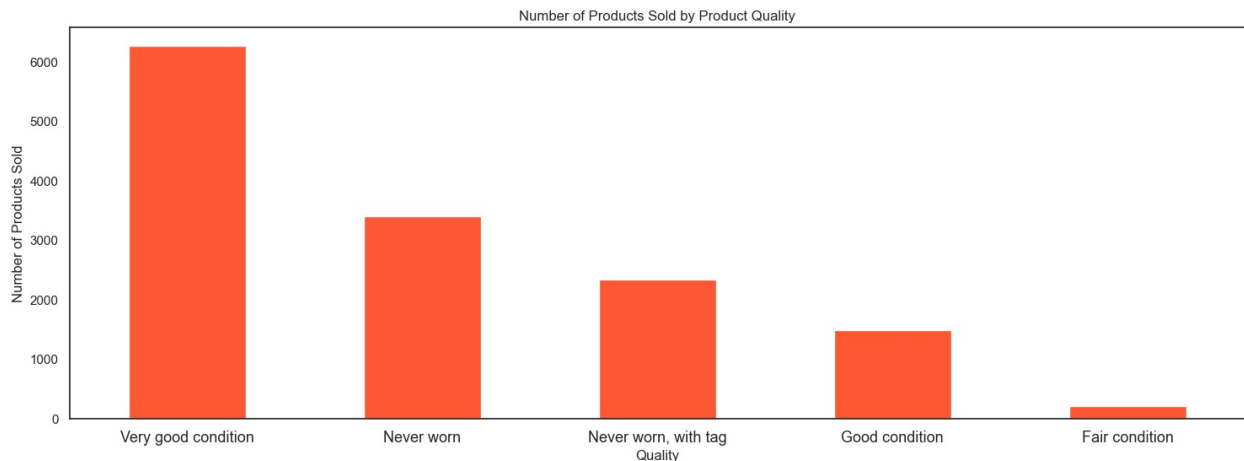


*#same process for item quality*

```
plt.figure(figsize=(18, 8))
plt.subplots_adjust(bottom=0.3)
product_condition = sold_products['product_condition'].value_counts()
sold_by_quality = product_condition.nlargest(25)
sold_by_quality.plot(kind='bar', color='#FF5733')
```



```
plt.xlabel('Quality')
plt.ylabel('Number of Products Sold')
plt.title('Number of Products Sold by Product Quality')
plt.xticks(rotation=360, ha='center', fontsize=13)
plt.show()
```



```
sold_by_quality.head()
```

```
product_condition
Very good condition    6268
Never worn             3413
Never worn, with tag   2339
Good condition         1498
Fair condition         218
Name: count, dtype: int64
```

```
top_25_products = ['T-shirt', 'Leather flats', 'Leather heels',
'Shirt', 'Jacket',
'Sunglasses', 'Mid-length dress', 'Sweatshirt', 'Leather
trainers',
'Leather boots', 'Trousers', 'Leather low trainers', 'Maxi
dress',
'Silk tie', 'Leather sandals', 'Leather sandal', 'Leather lace
ups',
'Vest', 'Mini dress', 'Leather ballet flats', 'Leather belt',
'Straight jeans', 'Polo shirt', 'Blouse', 'Flats']
```

```
vestiaire_data['top_25_products'] =
vestiaire_data['product_type'].isin(top_25_products).astype(int)
```

```
#creating a new data set with top brands, and top products
vestiaire_data.head()
```

	product_type	product_category	product_condition	\
0	Wool mini skirt	Women Clothing	Never worn	
1	Jacket	Women Clothing	Very good condition	
2	Wool coat	Women Clothing	Very good condition	
3	Mini skirt	Women Clothing	Very good condition	
4	Vegan leather trousers	Women Clothing	Very good condition	

	product_like_count	sold	brand_id	brand_name
product_material \				
0	34.0	1	117	Miu Miu
Wool				
1	1.0	0	161	Barbara Bui
Cotton				
2	2.0	0	391	Comme Des Garcons
Wool				
3	0.0	0	2797	MSGM
Polyester				
4	1.0	0	11956	LVIR Vegan
leather				

	seller_price	buyers_fees	top_25_brand	top_25_products
0	223.65	NaN	1	0
1	106.50	21.30	0	1
2	1065.00	213.00	0	0
3	149.00	14.90	0	0
4	99.77	19.95	0	0

```
vestiaire_data_bvp2 = vestiaire_data[~((vestiaire_data['top_25_brand']
== 0))]
```

```
vestiaire_data_bvp2.head()
```

	product_type	product_category	product_condition	\
0	Wool mini skirt	Women Clothing	Never worn	
9	Wool suit jacket	Women Clothing	Very good condition	
15	Top	Women Clothing	Very good condition	
19	Trousers	Women Clothing	Very good condition	
23	Wool skirt suit	Women Clothing	Very good condition	

	product_like_count	sold	brand_id	brand_name
product_material \				
0	34.0	1	117	Miu Miu
Wool				
9	2.0	1	10	Dior
Wool				
15	2.0	0	94	Burberry
Cotton				
19	4.0	1	2	Gucci
Cotton				
23	0.0	0	88	Valentino Garavani
Wool				

	seller_price	buyers_fees	top_25_brand	top_25_products
0	223.65	NaN	1	0
9	358.91	NaN	1	0
15	64.97	12.99	1	0
19	119.44	NaN	1	1
23	99.00	9.90	1	0

*#found strategy from: <https://sparkbyexamples.com/pandas/pandas-delete-rows-based-on-column-value/#:~:text=To%20delete%20rows%20based%20on%20specific%20column%20values%20in%20a,method%20to%20remove%20those%20rows.>*

*#This new dataset only includes the products that are of top popularity, sold, and from popular brands*

```
columns_to_clean = ['top_25_brand', 'top_25_products']
vestiaire_data_bvp1 =
vestiaire_data[~((vestiaire_data[columns_to_clean[0]] == 0) &
(vestiaire_data[columns_to_clean[1]] == 0))]
vestiaire_data_bvp1 =
vestiaire_data_bvp[~((vestiaire_data_bvp[columns_to_clean[0]] == 1) &
(vestiaire_data_bvp[columns_to_clean[1]] == 0))]
vestiaire_data_bvp1 =
vestiaire_data_bvp[~((vestiaire_data_bvp[columns_to_clean[0]] == 0) &
(vestiaire_data_bvp[columns_to_clean[1]] == 1))]
vestiaire_data_bvp1.head()
```

	product_type	product_category	product_condition
product_like_count \			
19	Trousers	Women Clothing	Very good condition
4.0			
337	T-shirt	Women Clothing	Good condition
7.0			
371	T-shirt	Women Clothing	Very good condition
5.0			
443	Shirt	Women Clothing	Very good condition
2.0			
735	Mini dress	Women Clothing	Never worn
8.0			

	sold	brand_id	brand_name	product_material	seller_price
\					
19	1	2	Gucci	Cotton	119.44
337	1	6	Celine	Cotton	139.00
371	1	47	Dolce & Gabbana	Cotton	58.33
443	1	2731	Polo Ralph Lauren	Cotton	19.91
735	1	50	Chanel	Cotton	3000.00

	buyers_fees	top_25_brand	top_25_products
19	NaN	1	1
337	NaN	1	1
371	NaN	1	1
443	NaN	1	1
735	NaN	1	1

*#Rates for top companies to find what is more likely to sell*

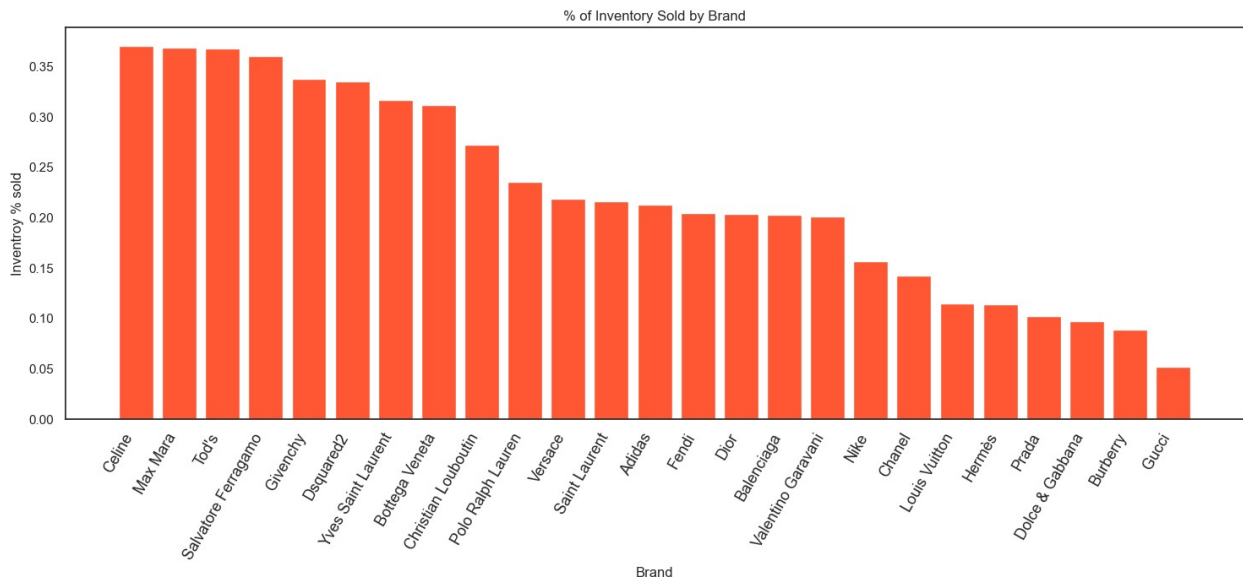
```
top_25_brands_inv =
vestiaire_data['brand_name'].value_counts().nlargest(25)
top_25_brands_bvp2 = vestiaire_data_bvp1['brand_name'].count()

selling_rate_bvp = top_25_brands_bvp2 / top_25_brands_inv
selling_rate_bvp = selling_rate_bvp.reset_index(name='Selling Rate')

selling_rate_bvp = selling_rate_bvp.sort_values(by='Selling Rate',
ascending=False)
selling_rate_bvp
```

	brand_name	Selling Rate
24	Celine	0.369967
23	Max Mara	0.368629
22	Tod's	0.367491
21	Salvatore Ferragamo	0.360438
20	Givenchy	0.337857
19	Dsquared2	0.335422
18	Yves Saint Laurent	0.316857
17	Bottega Veneta	0.311599
16	Christian Louboutin	0.272669
15	Polo Ralph Lauren	0.235326
14	Versace	0.218782
13	Saint Laurent	0.216547
12	Adidas	0.213353
11	Fendi	0.204685
10	Dior	0.204060
9	Balenciaga	0.202535
8	Valentino Garavani	0.201203
7	Nike	0.157138
6	Chanel	0.142638
5	Louis Vuitton	0.114658
4	Hermès	0.114425
3	Prada	0.102088
2	Dolce & Gabbana	0.097212
1	Burberry	0.089141
0	Gucci	0.052208

```
plt.figure(figsize=(18, 8))
plt.subplots_adjust(bottom=0.3)
selling_rate_bvp = selling_rate_bvp.sort_values(by='Selling Rate',
ascending=False)
plt.bar(selling_rate_bvp['brand_name'], selling_rate_bvp['Selling
Rate'], color='#FF5733')
plt.xlabel('Brand')
plt.ylabel('Inventory % sold')
plt.title('% of Inventory Sold by Brand')
plt.xticks(rotation=60, ha='right', fontsize=13)
plt.show()
```



```
#repeat with product type
top_25_product_inv =
vestiaire_data['product_type'].value_counts().nlargest(25)
top_25_product_bvp2 = vestiaire_data_bvp1['product_type'].count()

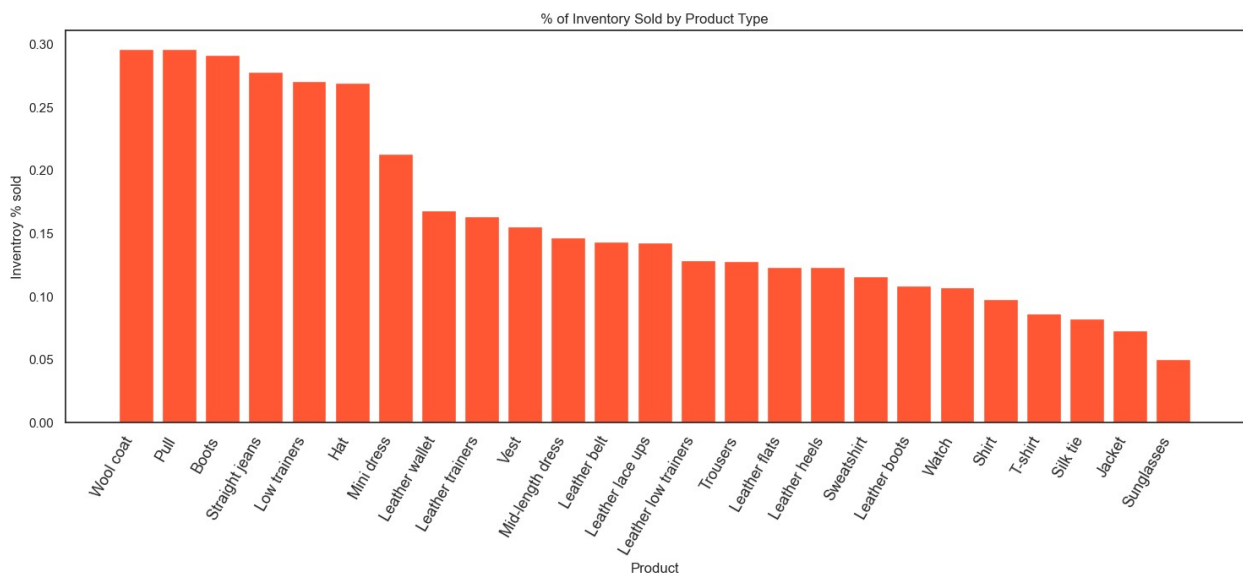
selling_rate_bvp = top_25_product_bvp2 / top_25_product_inv
selling_rate_bvp = selling_rate_bvp.reset_index(name='selling_rate')

selling_rate_bvp = selling_rate_bvp.sort_values(by='selling_rate',
ascending=False)
selling_rate_bvp
```

	product_type	selling_rate
24	Wool coat	0.296004
23	Pull	0.295882
22	Boots	0.291213
21	Straight jeans	0.277763
20	Low trainers	0.270260
19	Hat	0.268970

18	Mini dress	0.212675
17	Leather wallet	0.167882
16	Leather trainers	0.163410
15	Vest	0.155066
14	Mid-length dress	0.146273
13	Leather belt	0.143010
12	Leather lace ups	0.142420
11	Leather low trainers	0.128419
10	Trousers	0.127684
9	Leather flats	0.122996
8	Leather heels	0.122792
7	Sweatshirt	0.115842
6	Leather boots	0.108345
5	Watch	0.107281
4	Shirt	0.097504
3	T-shirt	0.085884
2	Silk tie	0.082021
1	Jacket	0.072579
0	Sunglasses	0.049952

```
plt.figure(figsize=(18, 8))
plt.subplots_adjust(bottom=0.3)
selling_rate_bvp = selling_rate_bvp.sort_values(by='selling_rate',
ascending=False)
plt.bar(selling_rate_bvp['product_type'],
selling_rate_bvp['selling_rate'], color='#FF5733')
plt.xlabel('Product')
plt.ylabel('Inventory % sold')
plt.title('% of Inventory Sold by Product Type')
plt.xticks(rotation=60, ha='right', fontsize=13)
plt.show()
```



```

#repeat with materials this time
top_25_materials_inv =
vestiaire_data['product_material'].value_counts().nlargest(25)
top_25_materials_bvp2 =
vestiaire_data_bvp1['product_material'].count()

selling_rate_bvp = top_25_materials_bvp2 / top_25_materials_inv
selling_rate_bvp = selling_rate_bvp.reset_index(name='selling_rate')

selling_rate_bvp = selling_rate_bvp.sort_values(by='selling_rate',
ascending=False)
selling_rate_bvp

```

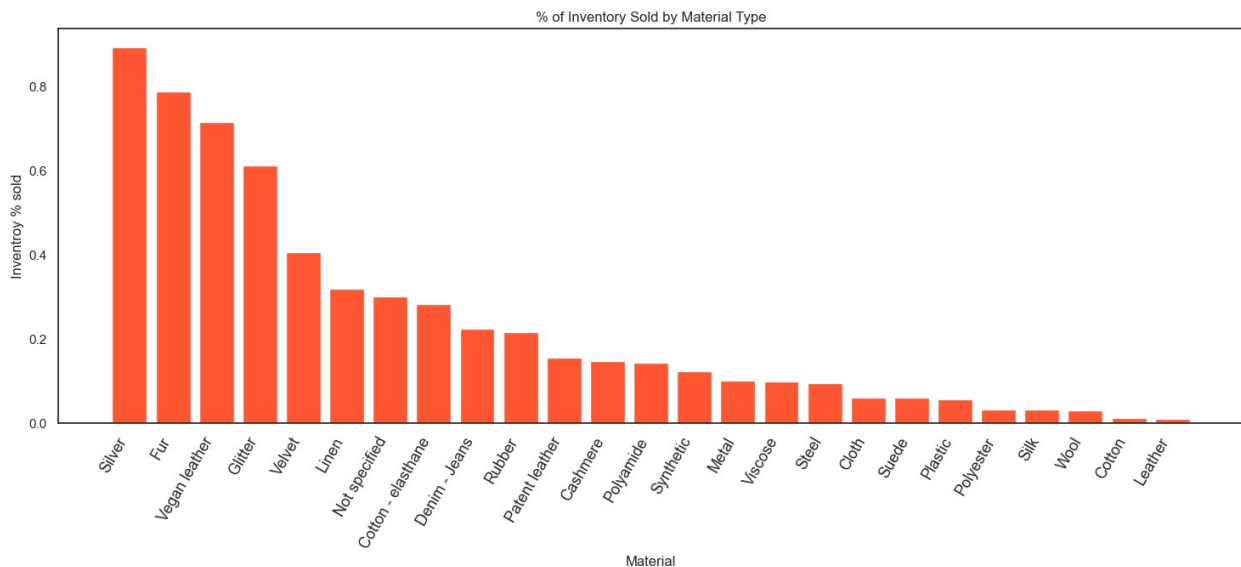
	product_material	selling_rate
24	Silver	0.893573
23	Fur	0.788001
22	Vegan leather	0.716533
21	Glitter	0.613291
20	Velvet	0.407034
19	Linen	0.319886
18	Not specified	0.300618
17	Cotton - elasthane	0.282417
16	Denim - Jeans	0.224683
15	Rubber	0.217316
14	Patent leather	0.155868
13	Cashmere	0.148454
12	Polyamide	0.144340
11	Synthetic	0.124159
10	Metal	0.100323
9	Viscose	0.098496
8	Steel	0.094238
7	Cloth	0.061245
6	Suede	0.061142
5	Plastic	0.057389
4	Polyester	0.033217
3	Silk	0.031813
2	Wool	0.030384
1	Cotton	0.012860
0	Leather	0.009874

```

plt.figure(figsize=(18, 8))
plt.subplots_adjust(bottom=0.3)
selling_rate_bvp = selling_rate_bvp.sort_values(by='selling_rate',
ascending=False)
plt.bar(selling_rate_bvp['product_material'],
selling_rate_bvp['selling_rate'], color='#FF5733')
plt.xlabel('Material')
plt.ylabel('Inventory % sold')
plt.title('% of Inventory Sold by Material Type')

```

```
plt.xticks(rotation=60, ha='right', fontsize=13)
plt.show()
```



*#Repeat last time with Quality*

```
condition_inv =
vestiaire_data['product_condition'].value_counts().nlargest(25)
contdition_bvp2 = vestiaire_data_bvp1['product_condition'].count()

selling_rate_bvp = contdition_bvp2 / condition_inv
selling_rate_bvp = selling_rate_bvp.reset_index(name='selling_rate')

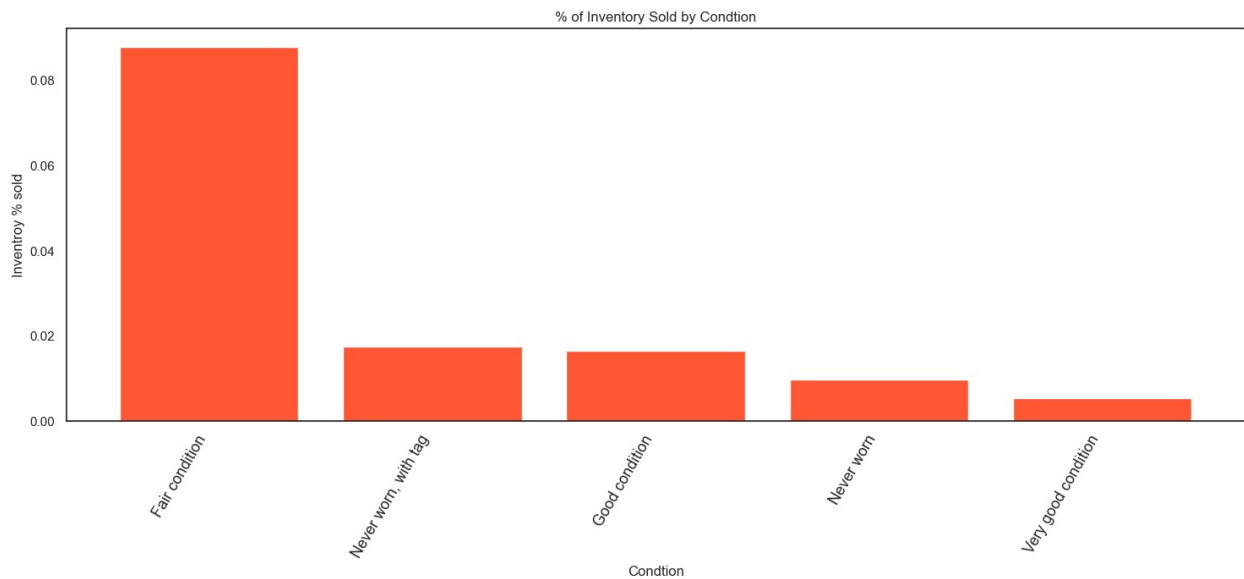
selling_rate_bvp = selling_rate_bvp.sort_values(by='selling_rate',
ascending=False)
selling_rate_bvp
```

	product_condition	selling_rate
4	Fair condition	0.087789
3	Never worn, with tag	0.017389
2	Good condition	0.016400
1	Never worn	0.009674
0	Very good condition	0.005337

```
plt.figure(figsize=(18, 8))
plt.subplots_adjust(bottom=0.3)
selling_rate_bvp = selling_rate_bvp.sort_values(by='selling_rate',
ascending=False)
plt.bar(selling_rate_bvp['product_condition'],
selling_rate_bvp['selling_rate'], color='#FF5733')
plt.xlabel('Condtion')
plt.ylabel('Inventory % sold')
plt.title('% of Inventory Sold by Condtion')
```



```
plt.xticks(rotation=60, ha='right', fontsize=13)
plt.show()
```



```
brand_product_pref =
vestiaire_data_bvp.groupby(['brand_name', 'product_type']).size()
table_bbyb = brand_product_pref.unstack(fill_value = 0)
```

table\_bbyb

product_type	Blouse	Flats	Jacket	Leather ballet flats	\
brand_name					
Acne Studios	1	0	6	0	
Adidas	0	0	4	0	
Alexander McQueen	0	1	1	1	
Balenciaga	0	0	6	2	
Bottega Veneta	0	2	2	1	
Burberry	1	1	25	1	
Celine	3	0	3	2	
Chanel	0	1	1	31	
Christian Louboutin	0	6	0	3	
Dior	1	0	3	1	
Dolce & Gabbana	0	0	5	1	
Dsquared2	0	1	2	0	
Fendi	1	1	1	3	
Golden Goose	0	0	0	0	
Gucci	4	6	10	4	
Hermès	0	3	1	0	
Jimmy Choo	0	1	0	2	
Louis Vuitton	0	5	4	5	
Miu Miu	1	0	1	3	
Polo Ralph Lauren	0	1	7	0	

Prada	2	5	11	11
Saint Laurent	0	0	3	1
Sandro	1	0	1	0
Valentino Garavani	0	0	1	1
Versace	0	1	0	0

product_type	Leather belt	Leather boots	Leather flats \
brand_name			
Acne Studios	0	1	2
Adidas	0	0	0
Alexander McQueen	1	7	3
Balenciaga	2	4	2
Bottega Veneta	3	4	3
Burberry	2	2	5
Celine	1	2	3
Chanel	1	6	18
Christian Louboutin	1	7	9
Dior	3	1	3
Dolce & Gabbana	4	6	4
Dsquared2	2	0	0
Fendi	4	1	1
Golden Goose	0	1	2
Gucci	20	12	49
Hermès	3	4	8
Jimmy Choo	0	2	4
Louis Vuitton	11	2	5
Miu Miu	0	2	3
Polo Ralph Lauren	0	0	0
Prada	6	12	33
Saint Laurent	2	5	10
Sandro	0	2	3
Valentino Garavani	6	1	4
Versace	2	2	4

product_type	Leather heels	Leather lace ups	Leather low
trainers \			
brand_name			
Acne Studios	0	0	
0			
Adidas	0	0	
1			
Alexander McQueen	3	4	
6			
Balenciaga	2	2	
1			
Bottega Veneta	5	1	
1			
Burberry	4	2	
3			

Celine	4	3	
2			
Chanel	26	1	
0			
Christian Louboutin	27	3	
3			
Dior	9	1	
0			
Dolce & Gabbana	13	3	
4			
Dsquared2	1	1	
2			
Fendi	3	0	
1			
Golden Goose	0	2	
0			
Gucci	26	11	
22			
Hermès	1	2	
1			
Jimmy Choo	10	2	
2			
Louis Vuitton	6	1	
7			
Miu Miu	12	0	
0			
Polo Ralph Lauren	0	0	
0			
Prada	26	24	
17			
Saint Laurent	14	2	
0			
Sandro	0	1	
0			
Valentino Garavani	5	1	
5			
Versace	7	2	
4			
product_type	Leather sandal	Leather sandals	Leather trainers
\			
brand_name			
Acne Studios	1	0	1
Adidas	0	0	9
Alexander McQueen	0	1	10
Balenciaga	1	4	0

Bottega Veneta	5	5	0
Burberry	1	1	2
Celine	4	2	2
Chanel	8	6	5
Christian Louboutin	5	4	7
Dior	5	2	2
Dolce & Gabbana	2	5	4
Dsquared2	0	1	0
Fendi	1	1	1
Golden Goose	0	0	6
Gucci	10	10	18
Hermès	4	5	6
Jimmy Choo	4	7	6
Louis Vuitton	4	6	4
Miu Miu	4	2	5
Polo Ralph Lauren	0	0	0
Prada	8	10	9
Saint Laurent	6	2	6
Sandro	0	0	1
Valentino Garavani	3	3	5
Versace	1	6	3
product_type shirt \ brand_name	Maxi dress	Mid-length dress	Mini dress Polo
Acne Studios	0	4	0
Adidas	0	0	0

0				
Alexander McQueen	1	3	2	
3				
Balenciaga	1	1	2	
0				
Bottega Veneta	0	1	0	
1				
Burberry	0	4	1	
8				
Celine	0	2	0	
0				
Chanel	0	2	2	
0				
Christian Louboutin	0	0	0	
0				
Dior	0	1	1	
1				
Dolce & Gabbana	1	6	10	
1				
Dsquared2	0	1	0	
0				
Fendi	0	2	1	
1				
Golden Goose	0	0	0	
0				
Gucci	0	4	2	
8				
Hermès	0	0	0	
2				
Jimmy Choo	0	0	0	
0				
Louis Vuitton	0	3	0	
3				
Miu Miu	0	2	3	
0				
Polo Ralph Lauren	1	2	0	
17				
Prada	0	5	1	
3				
Saint Laurent	0	1	1	
0				
Sandro	3	6	6	
0				
Valentino Garavani	1	1	2	
0				
Versace	0	1	0	
3				
product_type	Shirt	Silk tie	Straight jeans	Sunglasses

Sweatshirt \ brand_name				
Acne Studios 7	6	0	3	1
Adidas 3	0	0	0	0
Alexander McQueen 0	3	0	0	4
Balenciaga 9	8	2	4	6
Bottega Veneta 0	5	0	0	0
Burberry 8	29	2	0	2
Celine 3	7	0	1	3
Chanel 0	0	3	1	9
Christian Louboutin 0	0	0	0	0
Dior 0	2	2	1	5
Dolce & Gabbana 9	8	3	4	8
Dsquared2 6	2	0	8	1
Fendi 1	1	4	1	9
Golden Goose 1	0	0	0	0
Gucci 13	17	17	5	29
Hermès 0	4	49	1	0
Jimmy Choo 0	0	0	0	0
Louis Vuitton 1	3	9	0	7
Miu Miu 0	2	0	0	7
Polo Ralph Lauren 12	10	0	0	1
Prada 1	13	2	4	29
Saint Laurent 7	5	0	2	10
Sandro 2	3	0	2	0

Valentino Garavani	3	4	1	0
1				
Versace	6	2	0	7
1				

product_type	T-shirt	Trousers	Vest
brand_name			
Acne Studios	9	1	1
Adidas	7	4	2
Alexander McQueen	4	1	1
Balenciaga	21	5	1
Bottega Veneta	5	1	1
Burberry	12	7	7
Celine	8	0	0
Chanel	4	0	0
Christian Louboutin	0	0	0
Dior	6	2	1
Dolce & Gabbana	19	9	3
Dsquared2	20	4	0
Fendi	1	2	0
Golden Goose	0	0	0
Gucci	13	10	7
Hermès	5	1	2
Jimmy Choo	0	0	0
Louis Vuitton	10	3	1
Miu Miu	1	0	0
Polo Ralph Lauren	9	0	15
Prada	11	3	5
Saint Laurent	14	0	0
Sandro	1	0	1
Valentino Garavani	6	4	2
Versace	20	0	0

*#want the stacked bar chart to show the most popular items on the bottom, and least on top*

```
total_count_by_product_type = table_bbyyp.sum(axis=0)
sorted_columns =
total_count_by_product_type.sort_values(ascending=False).index
table_bbyyp.sort_values(by='T-shirt', ascending=False, inplace=True)
table_bbyyp = table_bbyyp[sorted_columns]
```

table\_bbyyp

product_type	T-shirt	Leather heels	Leather flats	Sunglasses
Shirt \				
brand_name				
Balenciaga	21	2	2	6
8				
Versace	20	7	4	7

6				
Dsquared2	20	1	0	1
2				
Dolce & Gabbana	19	13	4	8
8				
Saint Laurent	14	14	10	10
5				
Gucci	13	26	49	29
17				
Burberry	12	4	5	2
29				
Prada	11	26	33	29
13				
Louis Vuitton	10	6	5	7
3				
Polo Ralph Lauren	9	0	0	1
10				
Acne Studios	9	0	2	1
6				
Celine	8	4	3	3
7				
Adidas	7	0	0	0
0				
Dior	6	9	3	5
2				
Valentino Garavani	6	5	4	0
3				
Hermès	5	1	8	0
4				
Bottega Veneta	5	5	3	0
5				
Chanel	4	26	18	9
0				
Alexander McQueen	4	3	3	4
3				
Miu Miu	1	12	3	7
2				
Sandro	1	0	3	0
3				
Fendi	1	3	1	9
1				
Golden Goose	0	0	2	0
0				
Christian Louboutin	0	27	9	0
0				
Jimmy Choo	0	10	4	0
0				
product_type	Leather trainers	Silk tie	Jacket	Leather boots



\ brand_name				
Balenciaga	0	2	6	4
Versace	3	2	0	2
Dsquared2	0	0	2	0
Dolce & Gabbana	4	3	5	6
Saint Laurent	6	0	3	5
Gucci	18	17	10	12
Burberry	2	2	25	2
Prada	9	2	11	12
Louis Vuitton	4	9	4	2
Polo Ralph Lauren	0	0	7	0
Acne Studios	1	0	6	1
Celine	2	0	3	2
Adidas	9	0	4	0
Dior	2	2	3	1
Valentino Garavani	5	4	1	1
Hermès	6	49	1	4
Bottega Veneta	0	0	2	4
Chanel	5	3	1	6
Alexander McQueen	10	0	1	7
Miu Miu	5	0	1	2
Sandro	1	0	1	2
Fendi	1	4	1	1
Golden Goose	6	0	0	1
Christian Louboutin	7	0	0	7
Jimmy Choo	6	0	0	2

product_type \ brand_name	Sweatshirt	Leather sandals	Leather low trainers
Balenciaga	9	4	1
Versace	1	6	4
Dsquared2	6	1	2
Dolce & Gabbana	9	5	4
Saint Laurent	7	2	0
Gucci	13	10	22
Burberry	8	1	3
Prada	1	10	17
Louis Vuitton	1	6	7
Polo Ralph Lauren	12	0	0
Acne Studios	7	0	0
Celine	3	2	2
Adidas	3	0	1
Dior	0	2	0
Valentino Garavani	1	3	5
Hermès	0	5	1
Bottega Veneta	0	5	1
Chanel	0	6	0
Alexander McQueen	0	1	6
Miu Miu	0	2	0
Sandro	2	0	0
Fendi	1	1	1
Golden Goose	1	0	0

Christian Louboutin	0	4	3
Jimmy Choo	0	7	2
product_type flats \ brand_name	Leather sandal	Leather belt	Leather ballet
Balenciaga	1	2	
2			
Versace	1	2	
0			
Dsquared2	0	2	
0			
Dolce & Gabbana	2	4	
1			
Saint Laurent	6	2	
1			
Gucci	10	20	
4			
Burberry	1	2	
1			
Prada	8	6	
11			
Louis Vuitton	4	11	
5			
Polo Ralph Lauren	0	0	
0			
Acne Studios	1	0	
0			
Celine	4	1	
2			
Adidas	0	0	
0			
Dior	5	3	
1			
Valentino Garavani	3	6	
1			
Hermès	4	3	
0			
Bottega Veneta	5	3	
1			
Chanel	8	1	
31			
Alexander McQueen	0	1	
1			
Miu Miu	4	0	
3			
Sandro	0	0	

0			
Fendi	1	4	
3			
Golden Goose	0	0	
0			
Christian Louboutin	5	1	
3			
Jimmy Choo	4	0	
2			
product_type	Leather lace ups	Trousers	Mid-length dress
Polo shirt \			
brand_name			
Balenciaga	2	5	1
0			
Versace	2	0	1
3			
Dsquared2	1	4	1
0			
Dolce & Gabbana	3	9	6
1			
Saint Laurent	2	0	1
0			
Gucci	11	10	4
8			
Burberry	2	7	4
8			
Prada	24	3	5
3			
Louis Vuitton	1	3	3
3			
Polo Ralph Lauren	0	0	2
17			
Acne Studios	0	1	4
0			
Celine	3	0	2
0			
Adidas	0	4	0
0			
Dior	1	2	1
1			
Valentino Garavani	1	4	1
0			
Hermès	2	1	0
2			
Bottega Veneta	1	1	1
1			
Chanel	1	0	2

0						
Alexander McQueen	4	1		3		
3						
Miu Miu	0	0		2		
0						
Sandro	1	0		6		
0						
Fendi	0	2		2		
1						
Golden Goose	2	0		0		
0						
Christian Louboutin	3	0		0		
0						
Jimmy Choo	2	0		0		
0						
product_type	Vest	Straight jeans	Flats	Mini dress		
Blouse \						
brand_name						
Balenciaga	1	4	0	2	0	
Versace	0	0	1	0	0	
Dsquared2	0	8	1	0	0	
Dolce & Gabbana	3	4	0	10	0	
Saint Laurent	0	2	0	1	0	
Gucci	7	5	6	2	4	
Burberry	7	0	1	1	1	
Prada	5	4	5	1	2	
Louis Vuitton	1	0	5	0	0	
Polo Ralph Lauren	15	0	1	0	0	
Acne Studios	1	3	0	0	1	
Celine	0	1	0	0	3	
Adidas	2	0	0	0	0	
Dior	1	1	0	1	1	
Valentino Garavani	2	1	0	2	0	
Hermès	2	1	3	0	0	

Bottega Veneta	1	0	2	0	0
Chanel	0	1	1	2	0
Alexander McQueen	1	0	1	2	0
Miu Miu	0	0	0	3	1
Sandro	1	2	0	6	1
Fendi	0	1	1	1	1
Golden Goose	0	0	0	0	0
Christian Louboutin	0	0	6	0	0
Jimmy Choo	0	0	1	0	0

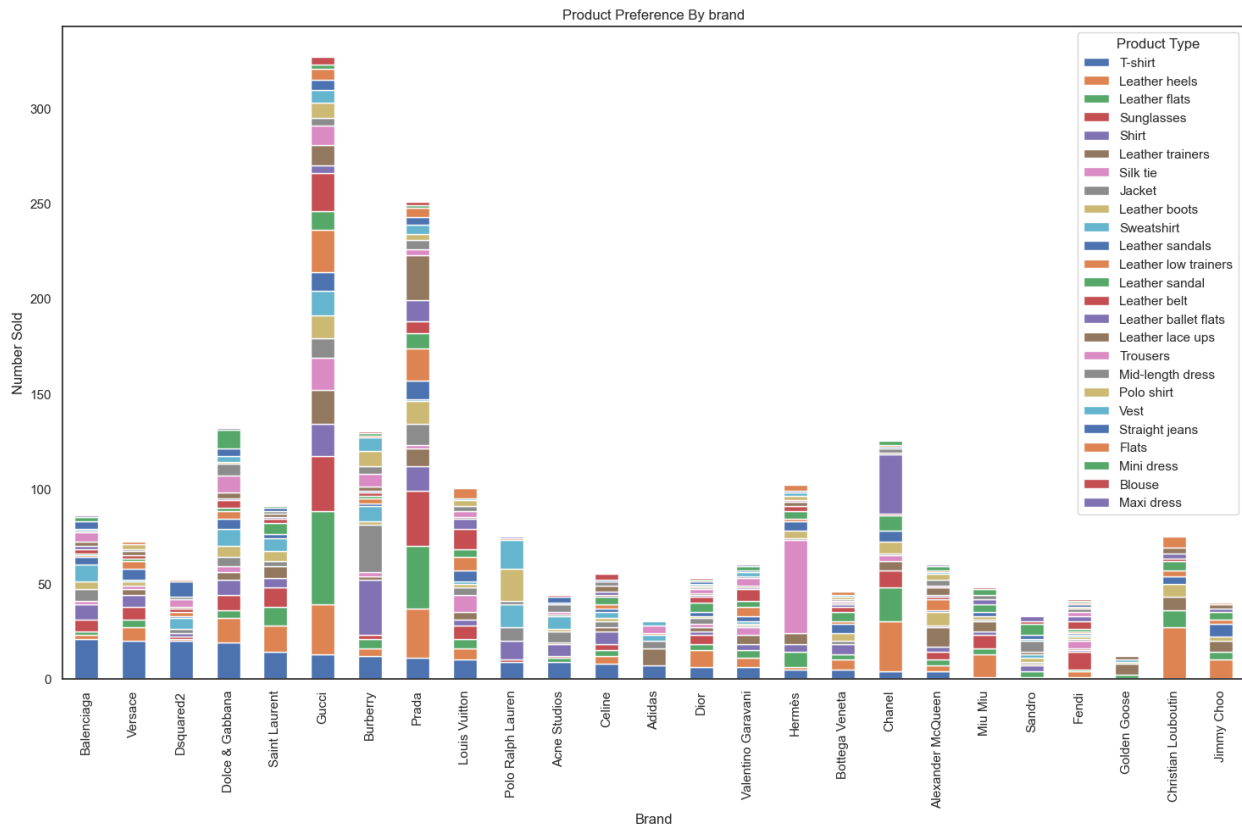
product_type	Maxi dress
brand_name	
Balenciaga	1
Versace	0
Dsquared2	0
Dolce & Gabbana	1
Saint Laurent	0
Gucci	0
Burberry	0
Prada	0
Louis Vuitton	0
Polo Ralph Lauren	1
Acne Studios	0
Celine	0
Adidas	0
Dior	0
Valentino Garavani	1
Hermès	0
Bottega Veneta	0
Chanel	0
Alexander McQueen	1
Miu Miu	0
Sandro	3
Fendi	0
Golden Goose	0
Christian Louboutin	0
Jimmy Choo	0

*#I wanted a visual to emphasize during my presentation how many factors there are to consider in fashion, which is why the bars are very busy*

```
fig, ax = plt.subplots(figsize=(18, 10))
table_bbyplot.plot(ax=ax, kind="bar", stacked=True)

plt.xlabel("Brand")
plt.ylabel("Number Sold")
plt.title("Product Preference By brand")
plt.legend(title="Product Type")

plt.show()
```

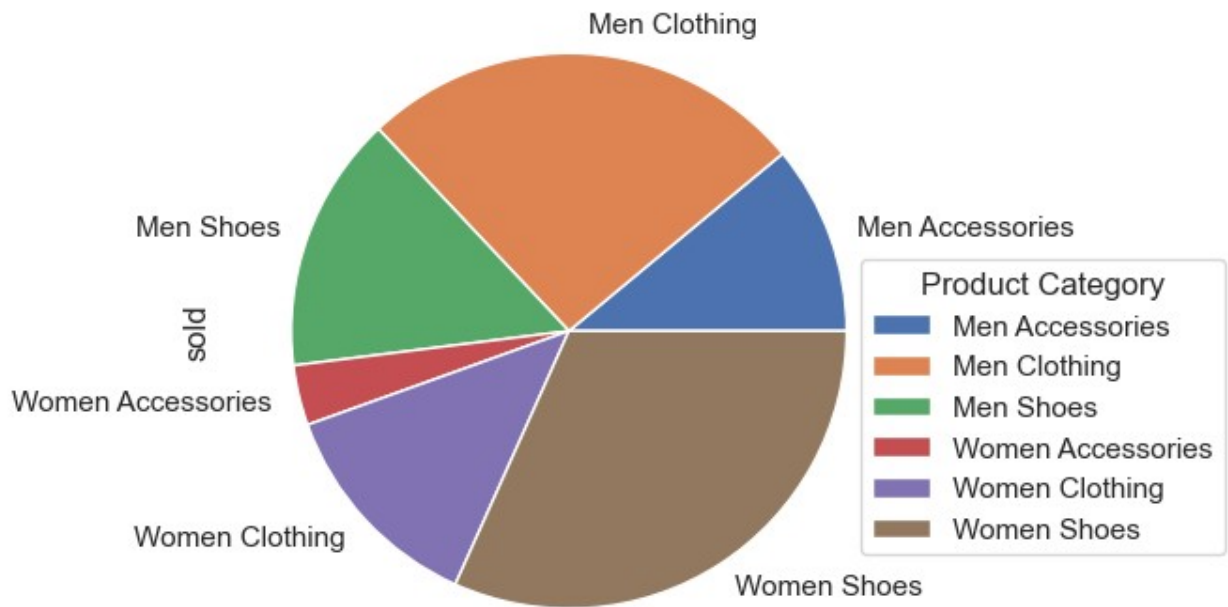


*#I wanted more variety in my graphing as i mostly have categorical or boolean data: <https://www.geeksforgeeks.org/how-to-create-pie-chart-from-pandas-dataframe/>*

*#legend: [https://matplotlib.org/stable/users/explain/axes/legend\\_guide.html](https://matplotlib.org/stable/users/explain/axes/legend_guide.html)*

```
vestiaire_data_bvp.groupby(['product_category']).sum().plot(kind='pie',
y='sold')
plt.legend(loc="center left", bbox_to_anchor=(0.9, .39),
title="Product Category")
```

<matplotlib.legend.Legend at 0x4e6dbd370>



## #2. Target pricing and Audience class

vestiaire\_data.head()

	product_type	product_category	product_condition \
0	Wool mini skirt	Women Clothing	Never worn
1	Jacket	Women Clothing	Very good condition
2	Wool coat	Women Clothing	Very good condition
3	Mini skirt	Women Clothing	Very good condition
4	Vegan leather trousers	Women Clothing	Very good condition

	product_like_count	sold	brand_id	brand_name
product_material \				
0	34.0	1	117	Miu Miu
Wool				
1	1.0	0	161	Barbara Bui
Cotton				
2	2.0	0	391	Comme Des Garcons
Wool				
3	0.0	0	2797	MSGM
Polyester				
4	1.0	0	11956	LVIR
leather				Vegan

	seller_price	buyers_fees	top_25_brand	top_25_products
0	223.65	NaN	1	0
1	106.50	21.30	0	1
2	1065.00	213.00	0	0



3	149.00	14.90	0	0
4	99.77	19.95	0	0

```

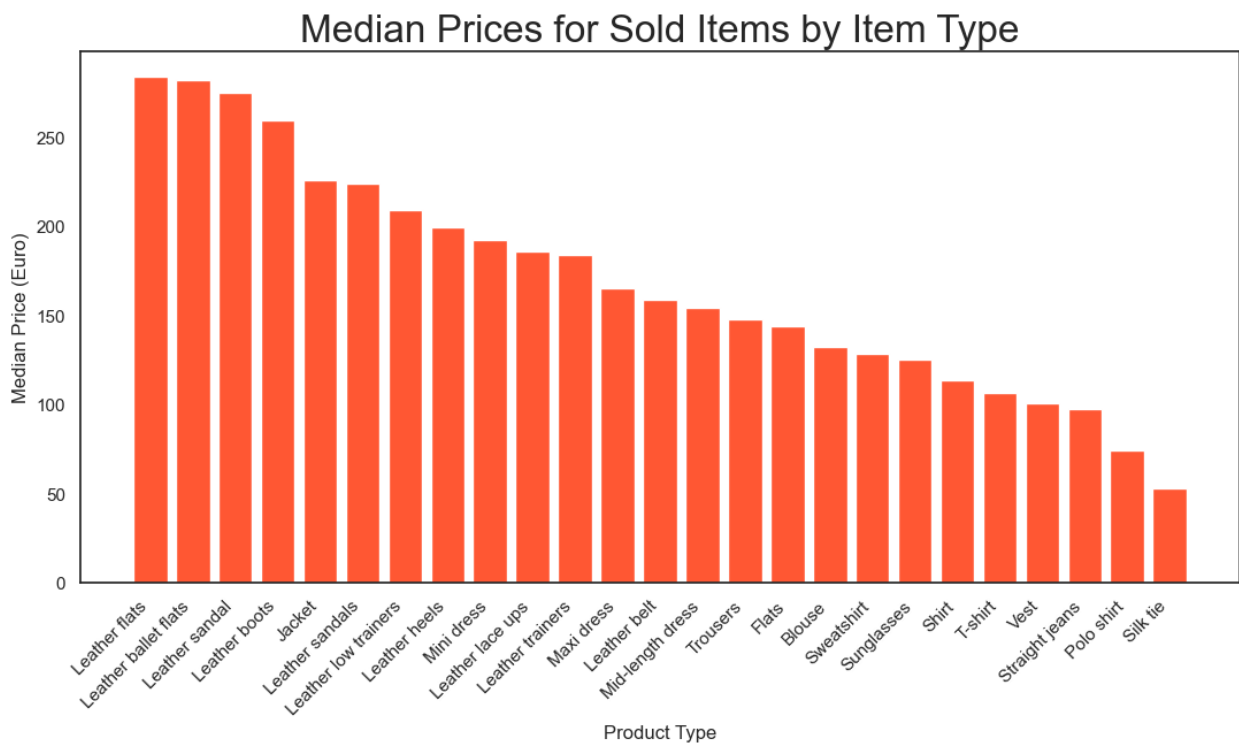
item_price = vestiaire_data_bvp.groupby(['product_type'])
['seller_price'].median().reset_index()
item_price = item_price.sort_values(by='seller_price',
ascending=False)

fig, ax = plt.subplots(figsize=(13, 6))
ax.bar(item_price['product_type'], item_price['seller_price'],
color='#FF5733')
ax.set_title('Median Prices for Sold Items by Item Type', fontsize=24)
ax.set_xlabel('Product Type')
ax.set_ylabel('Median Price (Euro)')

plt.xticks(rotation=45, ha='right')

plt.show()

```



```

item_price.head(25)

```

	product_type	seller_price
6	Leather flats	284.070
3	Leather ballet flats	282.230
10	Leather sandal	275.600
5	Leather boots	260.010
2	Jacket	226.335

11	Leather sandals	224.550
9	Leather low trainers	209.460
7	Leather heels	199.500
15	Mini dress	192.410
8	Leather lace ups	186.380
12	Leather trainers	184.195
13	Maxi dress	165.565
4	Leather belt	159.250
14	Mid-length dress	154.275
23	Trousers	148.040
1	Flats	144.320
0	Blouse	132.450
21	Sweatshirt	128.870
20	Sunglasses	125.710
17	Shirt	113.620
22	T-shirt	106.500
24	Vest	101.180
19	Straight jeans	98.085
16	Polo shirt	74.550
18	Silk tie	53.250

```
quality_price = vestiaire_data_bvp.groupby(['product_condition'])
['seller_price'].median().reset_index()
quality_price = quality_price.sort_values(by='seller_price',
ascending=False)
```

```
fig, ax = plt.subplots(figsize=(13, 6))
ax.bar(quality_price['product_condition'],
quality_price['seller_price'], color='#FF5733')
ax.set_title('Median Prices for Sold Items by Product Quality',
fontsize=24)
ax.set_xlabel('Product Quality')
ax.set_ylabel('Median Price (Euro)')

plt.xticks(rotation=45, ha='right')

plt.show()
```



```
quality_price.head()
```

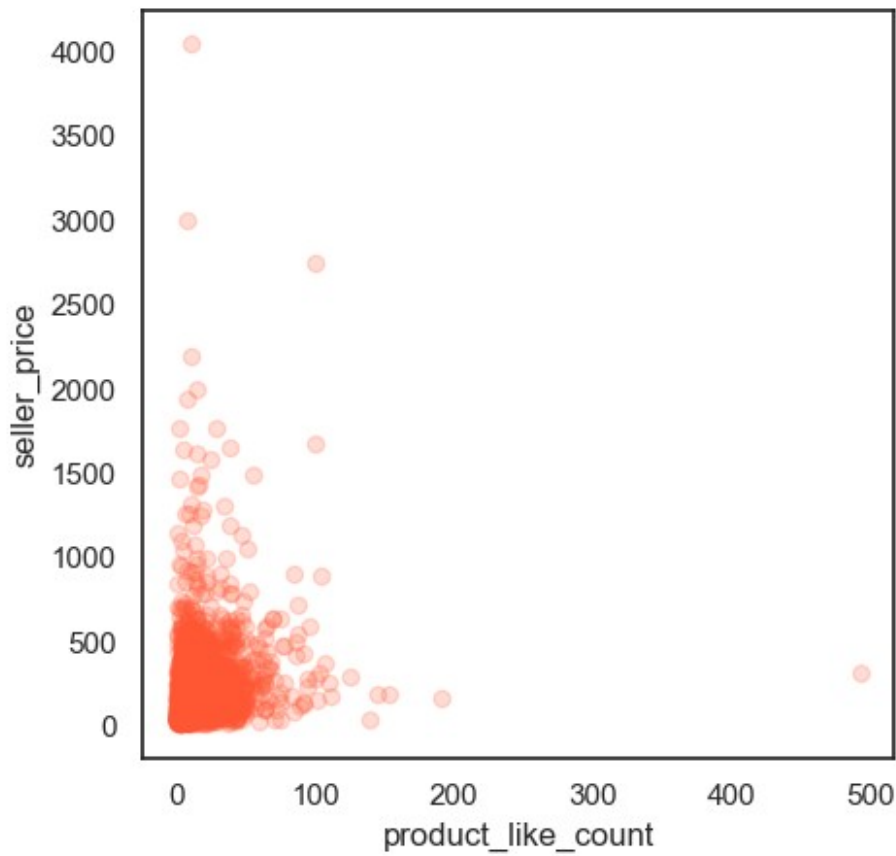
	product_condition	seller_price
3	Never worn, with tag	244.95
2	Never worn	220.73
4	Very good condition	134.37
1	Good condition	99.65
0	Fair condition	63.90

*#I wanted to see the like count to price -- to gauge customer interest, but the outliers disrupt the interpretation*

```
vc = vestiaire_data_bvp.loc[vestiaire_data_bvp["product_like_count"] != 0, :]
```

```
vc[["product_like_count", "seller_price"]].corr()
```

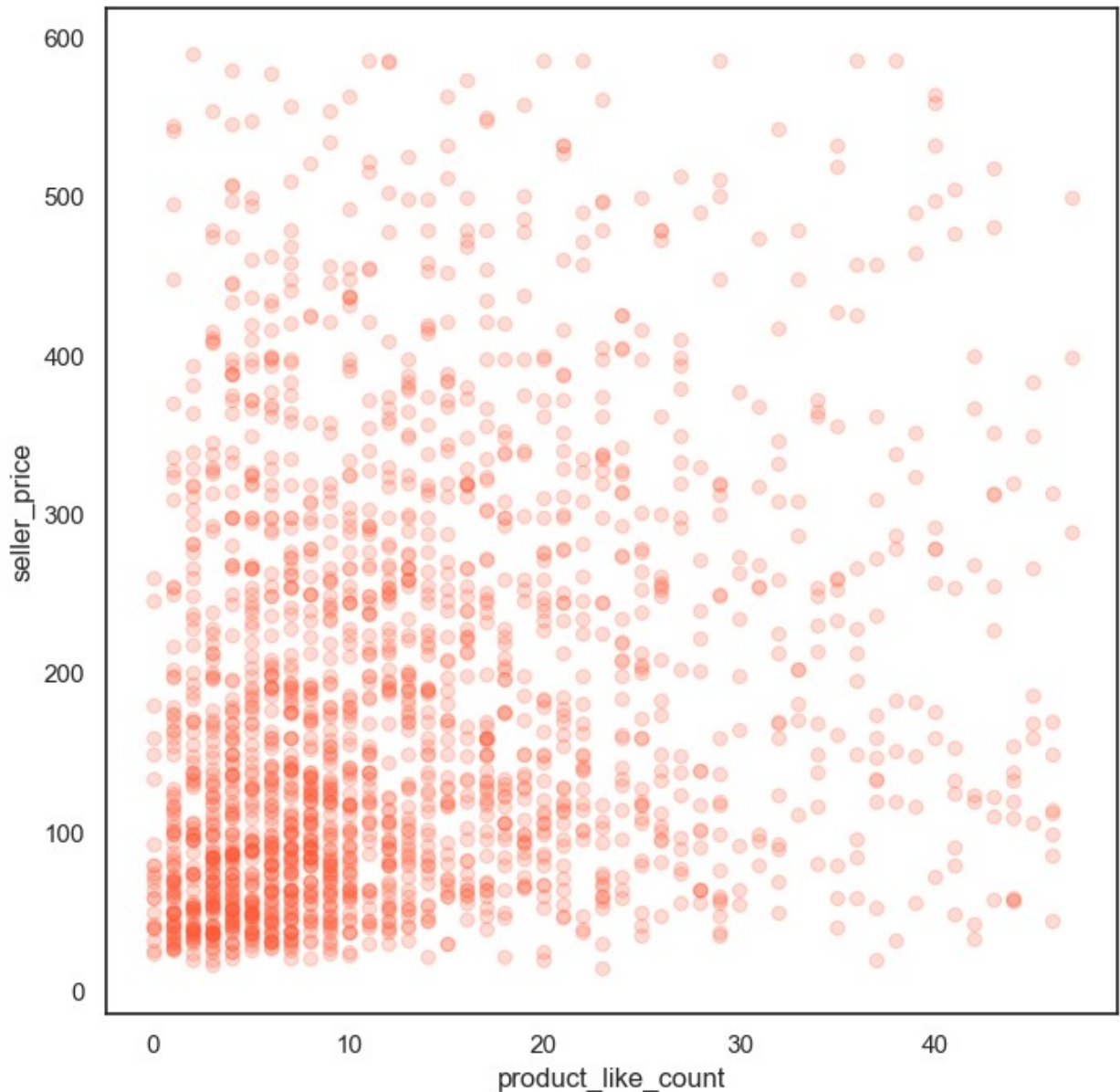
```
plt.figure(figsize=(5, 5))
ax = plt.axes()
ax.scatter(vestiaire_data_bvp["product_like_count"],
vestiaire_data_bvp["seller_price"], color='#FF5733', alpha=0.20)
ax.set_xlabel('product_like_count')
ax.set_ylabel('seller_price')
plt.show()
```



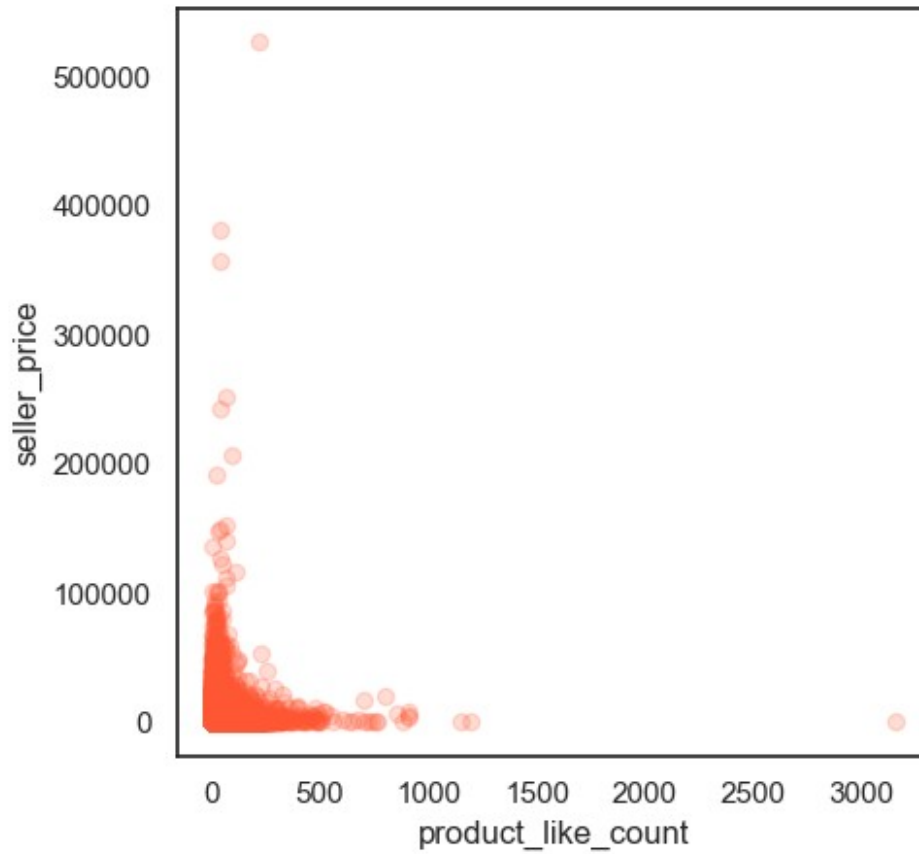
```
# used strategy from:
https://stackoverflow.com/questions/71106128/remove-outlier-using-quantile-python
like_count = vestiaire_data_bvp['product_like_count'].quantile(0.95)
price = vestiaire_data_bvp['seller_price'].quantile(0.95)

narrowed_data = vestiaire_data_bvp[
    (vestiaire_data_bvp['product_like_count'] <= like_count) &
    (vestiaire_data_bvp['seller_price'] <= price)
]

plt.figure(figsize=(8, 8))
ax = plt.axes()
ax.scatter(narrowed_data["product_like_count"],
narrowed_data["seller_price"], color='#FF5733', alpha=0.20)
ax.set_xlabel('product_like_count')
ax.set_ylabel('seller_price')
plt.show()
```



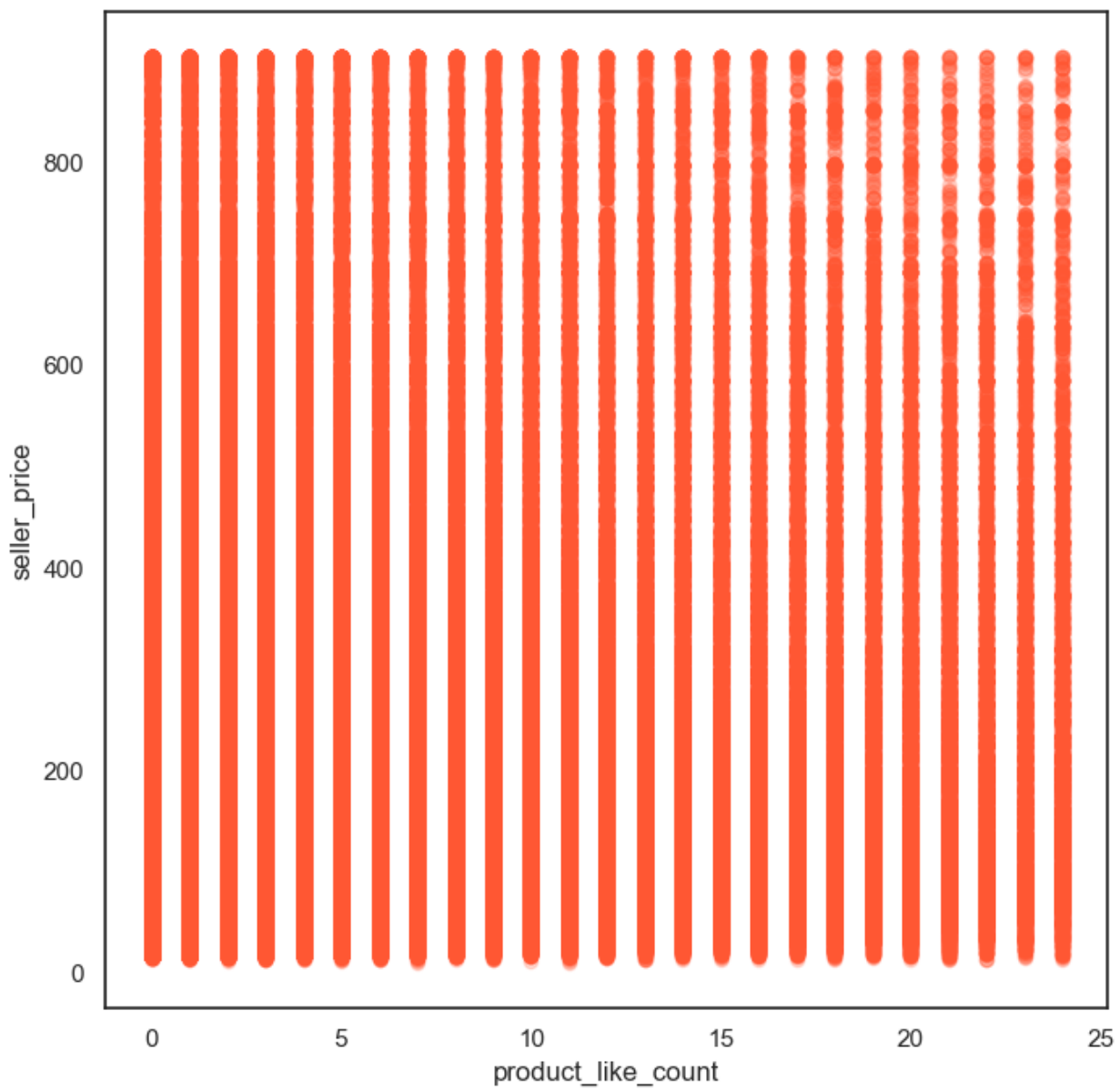
```
#This is of all products listed, mostly for visual emphasis -- to show  
what vestiaire offers vs what is actually bought  
vc = vestiaire_data.loc[vestiaire_data["product_like_count"] != 0, :]  
  
vc[["product_like_count", "seller_price"]].corr()  
  
plt.figure(figsize=(5, 5))  
ax = plt.axes()  
ax.scatter(vestiaire_data["product_like_count"],  
vestiaire_data["seller_price"], color='#FF5733', alpha=0.20)  
ax.set_xlabel('product_like_count')  
ax.set_ylabel('seller_price')  
plt.show()
```



```
like_count = vestiaire_data['product_like_count'].quantile(0.95)
price = vestiaire_data['seller_price'].quantile(0.95)

narrowed_data = vestiaire_data[
    (vestiaire_data['product_like_count'] <= like_count) &
    (vestiaire_data['seller_price'] <= price)
]

plt.figure(figsize=(8, 8))
ax = plt.axes()
ax.scatter(narrowed_data["product_like_count"],
narrowed_data["seller_price"], color='#FF5733', alpha=0.20)
ax.set_xlabel('product_like_count')
ax.set_ylabel('seller_price')
plt.show()
```



#End