



SECOND HAND LUXURY MARKET ANALYSIS :

*Vestiaire Collective
Case*

To Van CAO

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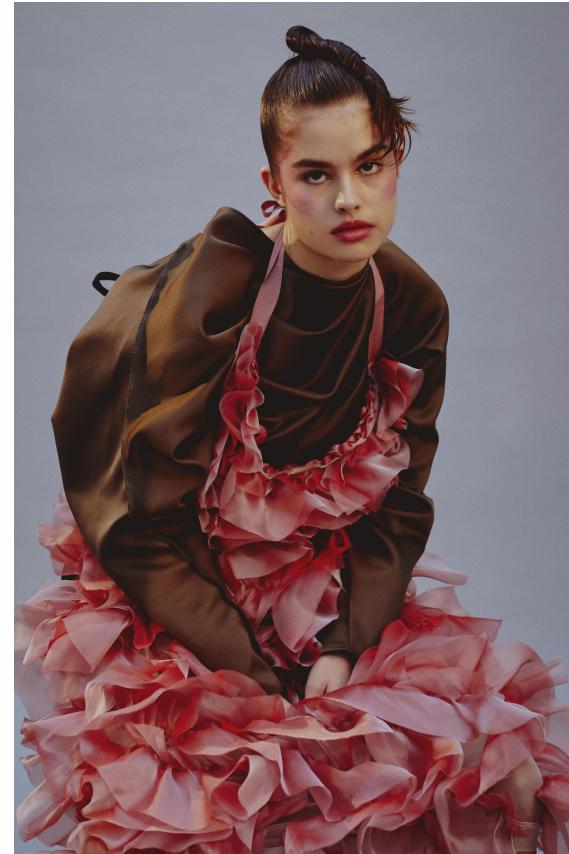
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BUSINESS RECOMMENDATIONS



MARKET OVERVIEW

01



What is Vestiaire Collective ?

- Founded: 2009 by six entrepreneurs in Paris, France
- Business Model: Online marketplace for pre-owned luxury fashion
 - Commissions on successful sales
 - Unique Selling Proposition
- Market Position:
 - Valued at \$1.7 billion (unicorn status)
 - 23 million members across 78 countries
- Sustainability Impact:
 - B Corp certified, promoting circular fashion economy
 - Banning fast fashion brands to focus on quality, sustainable items

The screenshot shows the homepage of Vestiaire Collective. At the top, there is a search bar with the placeholder "Search by brand, article...". To the right of the search bar are links for "Sell an item", "Sign in", "Sign up", and a user icon. Below the header, there is a navigation menu with categories: "New In", "Designers", "Women", "Men", "We Love", "Vintage", "Bags", "Watches & Jewellery", "Children", "Express Delivery", "Direct Shipping", and "Inside Vestiaire". A red horizontal bar runs across the page. Below the menu, there are several promotional sections: "48h Only Flash Deals", "Official Partners Official Partnerships", "Exceptional Pieces", "Men's Essentials", and "Gift Ideas". The main visual features a woman sitting on the floor, wearing a white top and jeans, with the text "Chloé x Vestiaire Collective" overlaid. Below this, a button says "Chloé x Vestiaire Collective Discover more →". To the right, there is a close-up image of blue and pink handbags with the brand name "JACQUEMUS" visible, with a button below it saying "The Weekly Drop Shop now →". The background of the page has a subtle pattern of fashion items.

Planning



Screenshot of a Trello board titled "Second Hand Luxury Project" showing a project timeline from Day 1 to Day 7.

Day 1 : Brainstorm & Data Searching

- Kaggle research
- Business insights research

+ Ajouter une carte

Day 2 : Data Cleaning & Data Wrangling

- Product type cleaning
- Nan values replacement
- Transforming Boolean columns to integer

+ Ajouter une carte

Day 3 & 4 : SQL

- Table 1 : Availability
- Table 2 : Special Edition
- Table 3 : Info
- Table 4 : Watches
- ERD
- Query 1 : Price Mean
- Query 2 : Number of special edition
- Query 3 : List of Cartier watches
- Query 4 : Mean price of Piaget Watches
- Query 5 : count of available watches and ratio of stock

+ Ajouter une carte

Day 5 : EDA & API

- Tableau Vizualizations
- Hypothesis Testing

+ Ajouter une carte

Day 6 : ML & GDPR

- Machine Learning Test
- GDPR check

+ Ajouter une carte

Day 7 : Presentation

- Slides to do

+ Ajouter une carte

Data collection

Kaggle Data Set on Vestiaire

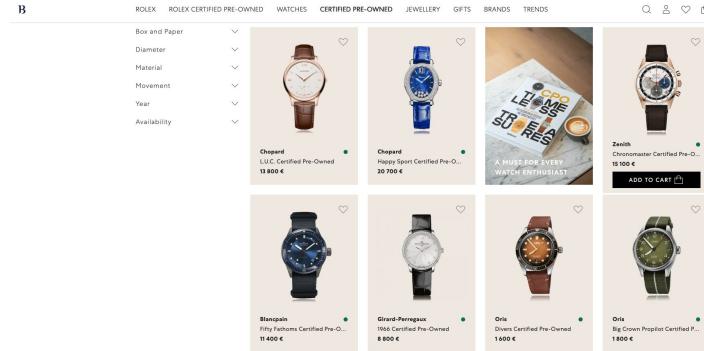
Collective: 900 K rows, 35 columns

The screenshot shows the Kaggle Collective Dataset page for Vestiaire Collective. At the top, there's a navigation bar with 'New Notebook' and 'Download (129 MB)'. Below it is a red button labeled 'Vestiaire Collective'. The main section is titled 'Vestiaire Collective Dataset' and describes it as 'Second Hand Luxury Fashion Data'. It includes a 'Data Card', 'Code (3)', 'Discussion (0)', and 'Suggestions (0)'. A sidebar on the left contains sections for 'About Dataset', 'Context' (with a note about the dataset being scraped from Vestiaire), 'Inspiration' (with 'Trend Analysis', 'Geographical Analysis', and 'Item Price Prediction' notes), and 'Usability' (with 'License' set to 'CC0 Public Domain').

Web scraped images from reports



Web scraped data set from
Bucherer.com : 70 rows, 7 columns



Big Query

The screenshot shows the Big Query interface. The 'Explorateur' tab is active, showing a query for 'watches full'. The results pane displays a table with columns: Nom du champ (Name of the field), Type (Type), Mode (Mode), Clé (Key), Classement (Classification), and Valeur par défaut (Default value). The table includes fields for Brand, Model, Price, Availability, Special Edition, Model_Name, and Certified_Pre_Owned.

Data cleaning

```
[99]: df1.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 900514 entries, 0 to 900513
Data columns (total 36 columns):
 #   Column           Non-Null Count  Dtype  
--- 
 0   product_id       900514 non-null   int64  
 1   product_type     900514 non-null   object  
 2   product_name     900514 non-null   object  
 3   product_description 900507 non-null   object  
 4   product_keywords  899331 non-null   object  
 5   product_gender_target 900514 non-null   object  
 6   product_category  899331 non-null   object  
 7   product_season    900512 non-null   object  
 8   product_condition 900514 non-null   object  
 9   product_like_count 900514 non-null   float64 
 10  sold             900514 non-null   bool    
 11  reserved          900514 non-null   bool    
 12  available         900514 non-null   bool    
 13  in_stock          900514 non-null   bool    
 14  should_be_gone    900514 non-null   bool    
 15  brand_id          900514 non-null   int64  
 16  brand_name        900514 non-null   object  
 17  brand_url         900514 non-null   object  
 18  product_material  900510 non-null   object  
 19  product_color      900513 non-null   object  
 20  price_usd         900514 non-null   float64 
 21  seller_price      900514 non-null   float64 
 22  seller_earning    900514 non-null   float64 
 23  seller_badge      900514 non-null   object  
 24  has_cross_border_fees 886778 non-null   object  
 25  buyers_fees       886778 non-null   float64 
 26  warehouse_name    900514 non-null   object  
 27  seller_id          900514 non-null   int64  
 28  seller_username    900475 non-null   object  
 29  usually_ships_within 745723 non-null   object  
 30  seller_country     900514 non-null   object  
 31  seller_products_sold 900514 non-null   float64 
 32  seller_num_products_listed 900514 non-null   float64 
 33  seller_community_rank 900514 non-null   float64 
 34  seller_num_followers 900514 non-null   float64 
 35  seller_pass_rate    900514 non-null   float64 
dtypes: bool(5), float64(10), int64(3), object(18)
memory usage: 217.3+ MB
```

```
[100]: (df1.isna().mean() * 100).sum()
```

```
[100]: 20.50850958452617
```

20.5% of data is missing from the dataset.

```
[102]: df1.isna().mean() * 100
```

```
product_id           0.000000
product_type          0.000000
product_name          0.000000
product_description    0.000777
product_keywords        0.131369
product_gender_target  0.000000
product_category        0.131369
product_season          0.000222
product_condition        0.000000
product_like_count      0.000000
sold                  0.000000
reserved              0.000000
available              0.000000
in_stock                0.000000
should_be_gone          0.000000
brand_id                0.000000
brand_name              0.000000
brand_url                0.000000
product_material        0.000444
product_color              0.000111
price_usd                0.000000
seller_price              0.000000
seller_earning             0.000000
seller_badge              0.000000
has_cross_border_fees     1.525351
buyers_fees                1.525351
warehouse_name              0.000000
seller_id                  0.000000
seller_username            0.004331
usually_ships_within      17.189183
seller_country              0.000000
seller_products_sold        0.000000
seller_num_products_listed  0.000000
seller_community_rank        0.000000
seller_num_followers        0.000000
seller_pass_rate              0.000000
dtype: float64
```

The column usually_ships_within has the highest number of missing values (17.2%).

Given that this column is of type object, we will replace these missing values with the most common one using the mode.

As for the remaining 3.3% missing values, we will identify columns with categorical data and replace them using the mode or median for numerical columns.

Data cleaning



```
: df1.head()
```

	product_id	product_type	product_name	product_description	product_keywords	product_gender_target
0	43247626	Wool mini skirt	Wool mini skirt Miu Miu Grey size S Internatio...	Miu Miu – Pleated mini skirt Size: 36 (S) Wai...	Miu Miu Wool Skirts	Women
1	43247441	Jacket	Jacket Barbara Bui Navy size 42 FR in Cotton	For selling nice women's suit Barbara Bui size...	Barbara Bui Cotton Jackets	
2	43246517	Wool coat	Wool coat Comme Des Garcons White size S Inter...	Magnificent boiled wool coat. I bought it in t...	Comme Des Garcons Wool Coats	
3	43246507	Mini skirt	Mini skirt MSGM Black size 38 IT in Polyester	MSGM Skirt Black Printed Raw-Edge & Embroidere...	MSGM Polyester Skirts	
4	43246417	Vegan leather trousers	Vegan leather trousers LVIR Black size 36 FR i...	LVIR black grained faux leather trousers size ...	LVIR Vegan leather Trousers	

```
: #creating new columns to have a more precise product type
```

```
# Split the column by whitespace and keep only the last word
```

```
df1['last_word_product_type'] = df1['product_type'].apply(lambda x: x.split()[-1])
```

Product_type from 11K values to 100

```
: df1['last_word_product_type'].unique()
```

```
: array(['skirt', 'jacket', 'coat', 'trousers', 'dress', 'top', 'swimsuit', 'blazer', 'suit', 'shirt', 'jeans', 'blouse', 'shorts', 'set', 'vest', 'pants', 'tunic', 't-shirt', 'jumper', 'caban', 'bermuda', 'corset', 'knitwear', 'jumpsuit', 'tight', 'polo', 'short', 'sweatshirt', 'lingerie', 'bra', 'parka', 'cardigan', 'peacoat', 'slip', 'leggings', 'camisole', 'twin-set', 'harem', 'puffer', 'cape', 'dufflecoat', 'combishort', 'swimwear', 'pareo', 'poncho', 'string', 'bustier', 'overall', 'accessory', 'pull', 'trench', 'trenchcoat', 'jean', 'laine', 'sunglasses', 'tie', 'watch', 'hat', 'square', 'jewellery', 'belt', 'cufflinks', 'gloves', 'lifestyle', 'neckerchief', 'scarf', 'beanie', 'wallet', 'handkerchief', 'cap', 'purse', 'stole', 'clutch', 'glasses', 'ring', 'mittens', 'panama', 'beret', 'choker', 'cheche', 'diary', 'case', 'accessories', 'embellishments', 'trainers', 'flats', 'ups', 'sandals', 'boots', 'espadrilles', 'page/nom_singulier/31', 'leather', 'heels', 'clogs', 'sandal', 'mules', 'heel', 'flops', 'flat', 'paillettes'], dtype=object)
```

```
: df1['last_word_product_type'].nunique()
```

: 100



Data cleaning

- After web scraping with Beautiful soup :

df						
	Brand	Model	Price	Availability	Special Edition	
0	Chopard	L.U.C. Certified Pre-Owned	13 800 €	In Stock	Not Special Edition	
1	Chopard	Happy Sport Certified Pre-Owned	20 700 €	In Stock	Not Special Edition	
2	Zenith	Chronomaster Certified Pre-Owned	15 100 €	In Stock	Not Special Edition	
3	Blancpain	Fifty Fathoms Certified Pre-Owned	11 400 €	In Stock	Not Special Edition	
4	Girard-Perregaux	1966 Certified Pre-Owned	8 800 €	In Stock	Not Special Edition	
...
65	Breguet	Héritage Certified Pre Owned	29 700 €	In Stock	Not Special Edition	
66	Breguet	Type XXII Certified Pre-Owned	10 500 €	In Stock	Special Edition	
67	IWC Schaffhausen	Ingenieur Ingenieur Certified Pre-Owned	35 000 €	In Stock	Not Special Edition	
68	IWC Schaffhausen	Pilot Certified Pre-Owned	11 200 €	In Stock	Not Special Edition	
69	Cartier	Ballon Bleu de Cartier Certified Pre-Owned	18 000 €	In Stock	Not Special Edition	

70 rows × 5 columns

Data cleaning



```
# Create a copy of the original DataFrame
df_transformed = df.copy()

# Transform the 'Certified_Pre_Owned' column
df_transformed['Certified_Pre_Owned'] = np.where(df_transformed['Certified_Pre_Owned'] == 'Certified Pre-Owned', 1, 0)

# Transform the 'Special Edition' column
df_transformed['Special Edition'] = np.where(df_transformed['Special Edition'] == 'Special Edition', 1, 0)

# Transform the 'Availability' column
df_transformed['Availability'] = np.where(df_transformed['Availability'] == 'In Stock', 1, 0)
```

```
: df_transformed
```

	Brand	Model	Price	Availability	Special Edition	Model_Name	Certified_Pre_Owned
0	Chopard	L.U.C. Certified Pre-Owned	13 800 €	1	0	L.U.C.	1
1	Chopard	Happy Sport Certified Pre-Owned	20 700 €	1	0	Happy Sport	1
2	Zenith	Chronomaster Certified Pre-Owned	15 100 €	1	0	Chronomaster	1
3	Blancpain	Fifty Fathoms Certified Pre-Owned	11 400 €	1	0	Fifty Fathoms	1
4	Girard-Perregaux	1966 Certified Pre-Owned	8 800 €	1	0	1966	1
...
65	Breguet	Héritage Certified Pre Owned	29 700 €	1	0	Héritage Certified Pre Owned	0
66	Breguet	Type XXII Certified Pre-Owned	10 500 €	1	1	Type XXII	1
67	IWC Schaffhausen	Ingenieur Ingenieur Certified Pre-Owned	35 000 €	1	0	Ingenieur Ingenieur	1
68	IWC Schaffhausen	Pilot Certified Pre-Owned	11 200 €	1	0	Pilot	1
69	Cartier	Ballon Bleu de Cartier Certified Pre-Owned	18 000 €	1	0	Ballon Bleu de Cartier	1

70 rows × 7 columns



Data cleaning

```
: df_transformed.dtypes
:
: Brand          object
Model          object
Price          object
Availability_ID    int64
Special_Edition_ID  int64
Model_Name        object
Certified_Pre_Owned_ID int64
dtype: object

: # Remove non-numeric characters and convert to float
df_transformed['Price'] = df_transformed['Price'].replace({'€': '', ',': ''}, regex=True).astype(float)

# Verify the conversion
print(df_transformed['Price'].head())
0    13800.0
1    20700.0
2    15100.0
3    11400.0
4     8800.0
Name: Price, dtype: float64
```

Second hand luxury market is a promising market

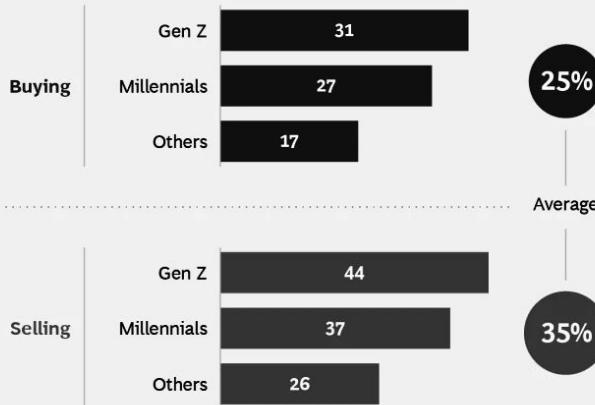


The secondhand apparel, footwear, and accessories market is estimated to be worth \$100 to \$120 billion

We estimate that the global secondhand market accounts for 3% to 5% of the broader market

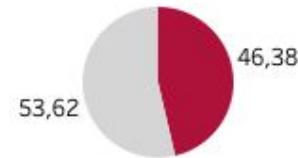
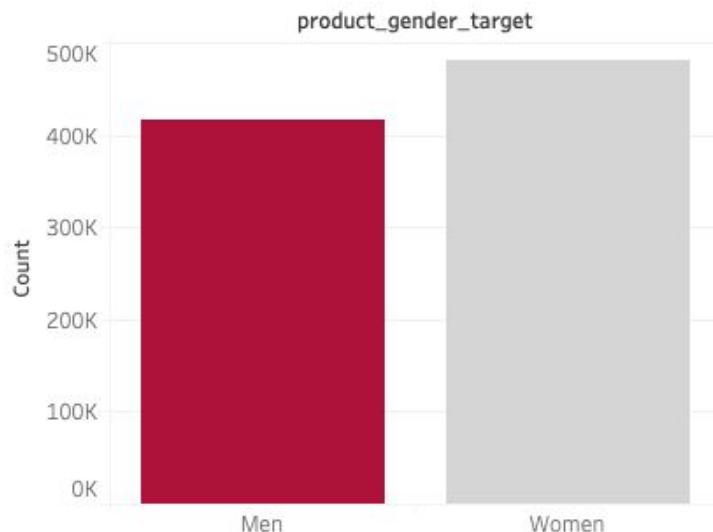


Gen Z consumers are the most likely to buy and sell secondhand
(% of luxury consumers who have bought or sold secondhand goods in the past 12 months)



Sources: Euromonitor and BCG (2022 market sizing); Altagamma; BCG-Altagamma True Luxury Global Consumer Insight Survey, 2021; BCG analysis.

Gender product offer overview

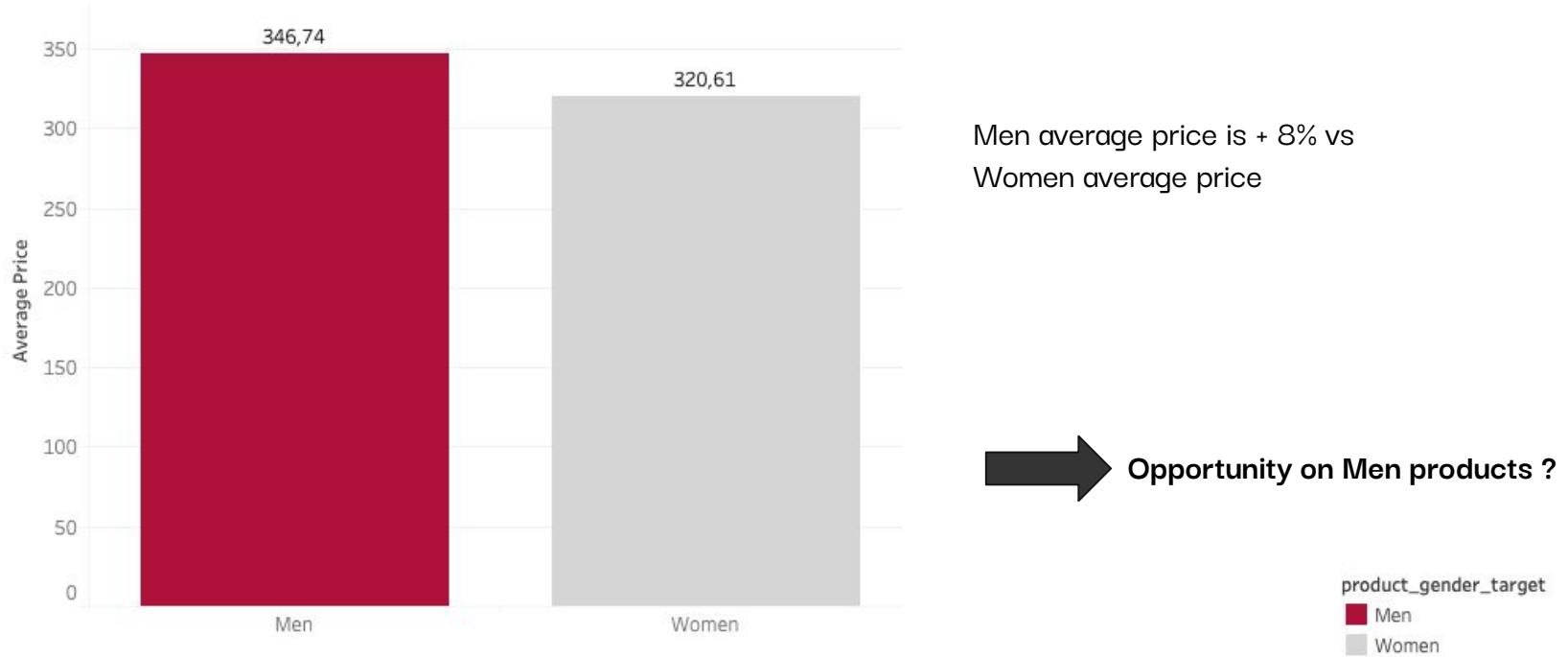


Men product share is almost
the same as women

product_gender_target

- Men
- Women

Average price between genders

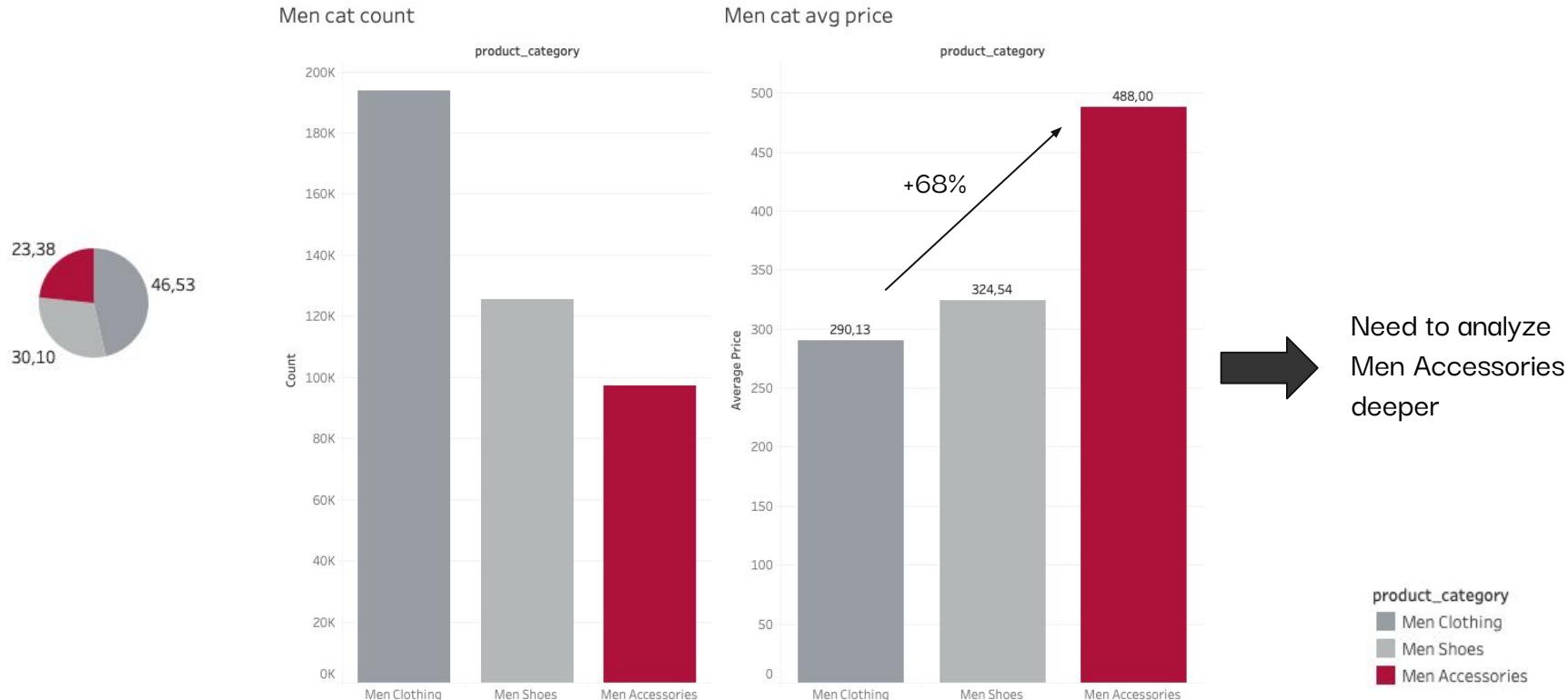




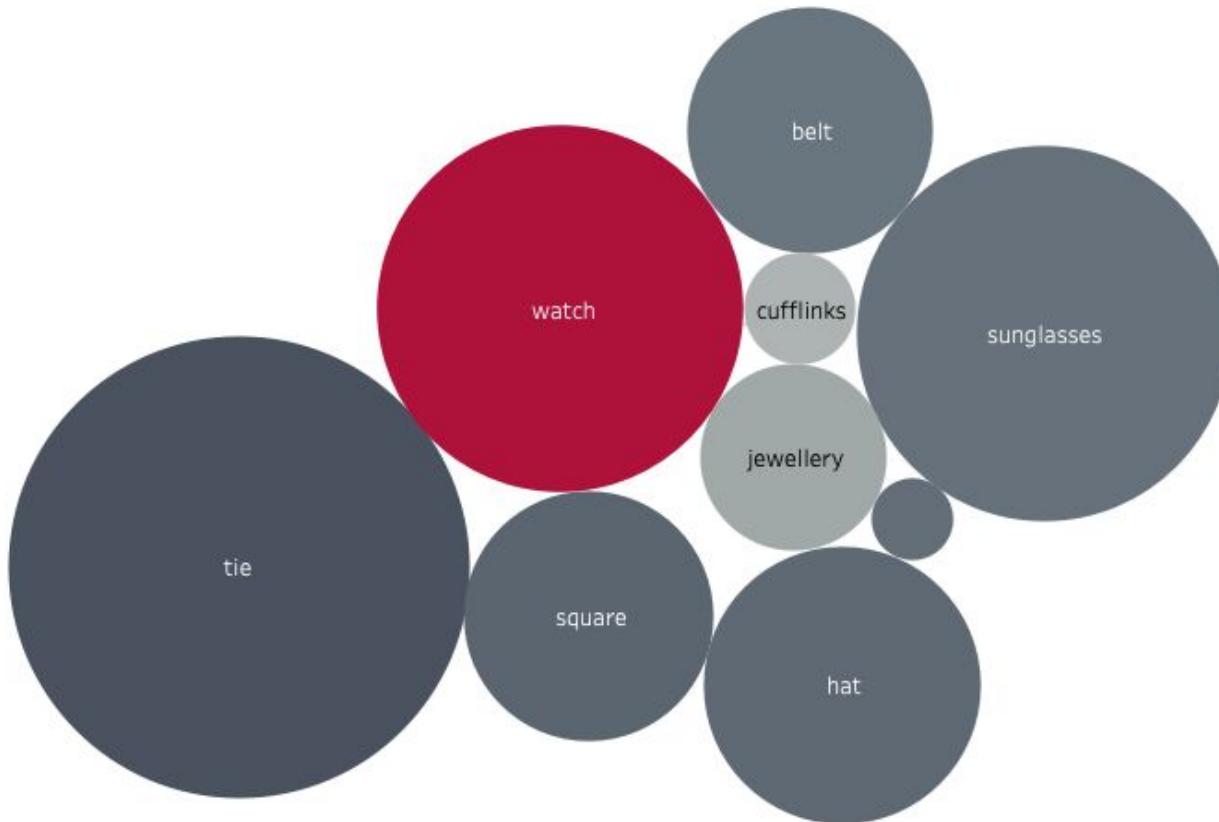
02

MEN SECOND HAND MARKET FOCUS

Men accessories have the smallest share but has bigger average price



Deep dive in Men accessories



ANOVA

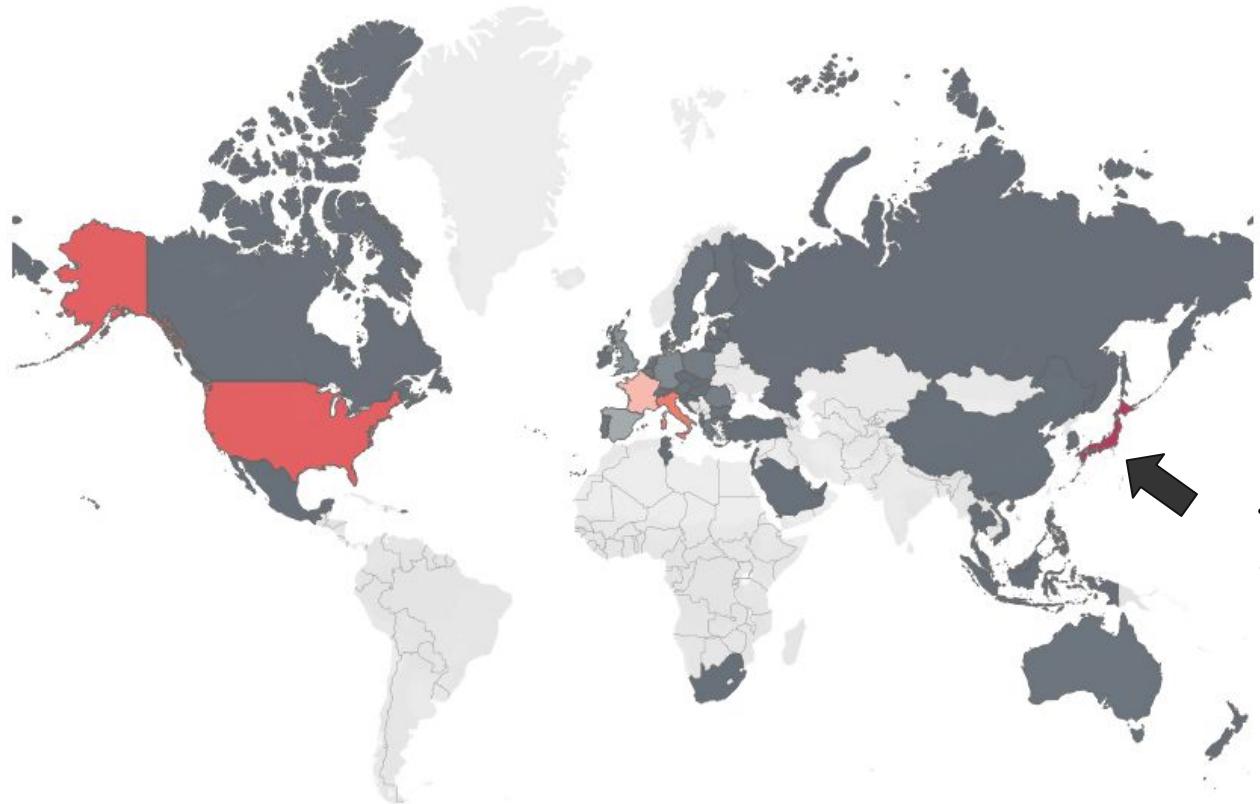
H0 : Watch and non watch
product price are independent
statistic= 128 562.54
p-value= 0.00

→ Watches seems
to be a category
to develop in the
offer

Average Price

83 1779

Focus on watches and countries



Japan is the top watch sellers on the platform



Japanese watch market

- Market Size:

While Japan has a significant luxury watch market, it is not the largest globally.

The Japanese luxury watch market was valued at approximately USD 1.76 billion in 2023 and is expected to grow to USD 2.4 billion by 2030.

- Domestic Brands:

Japan is home to several renowned watch brands like Seiko, Citizen, and Casio.

- Second-hand Market:

Japan has a well-developed second-hand luxury goods market, including watches.

This could explain the high number of Japanese sellers on Vestiaire Collective.

- Authenticity Guarantee:

Japan is known for its strict policies against counterfeit goods.

- Cultural Factors:

Japanese consumers often take excellent care of their possessions, which could result in a higher number of well-maintained luxury watches available for resale.

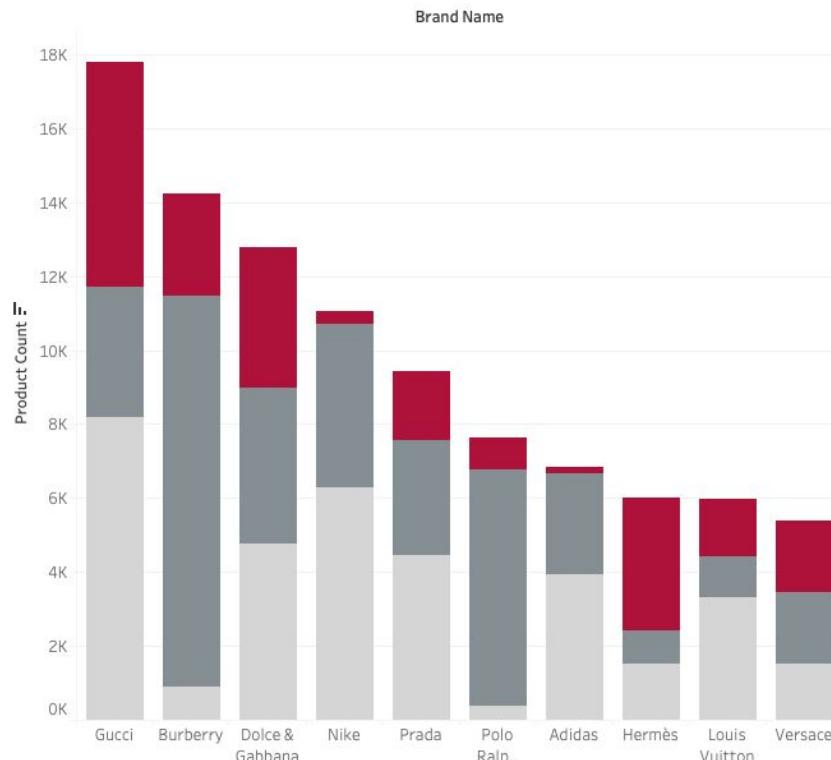
03

MEN BRANDS FOCUS



Top brands globally are apparel brands

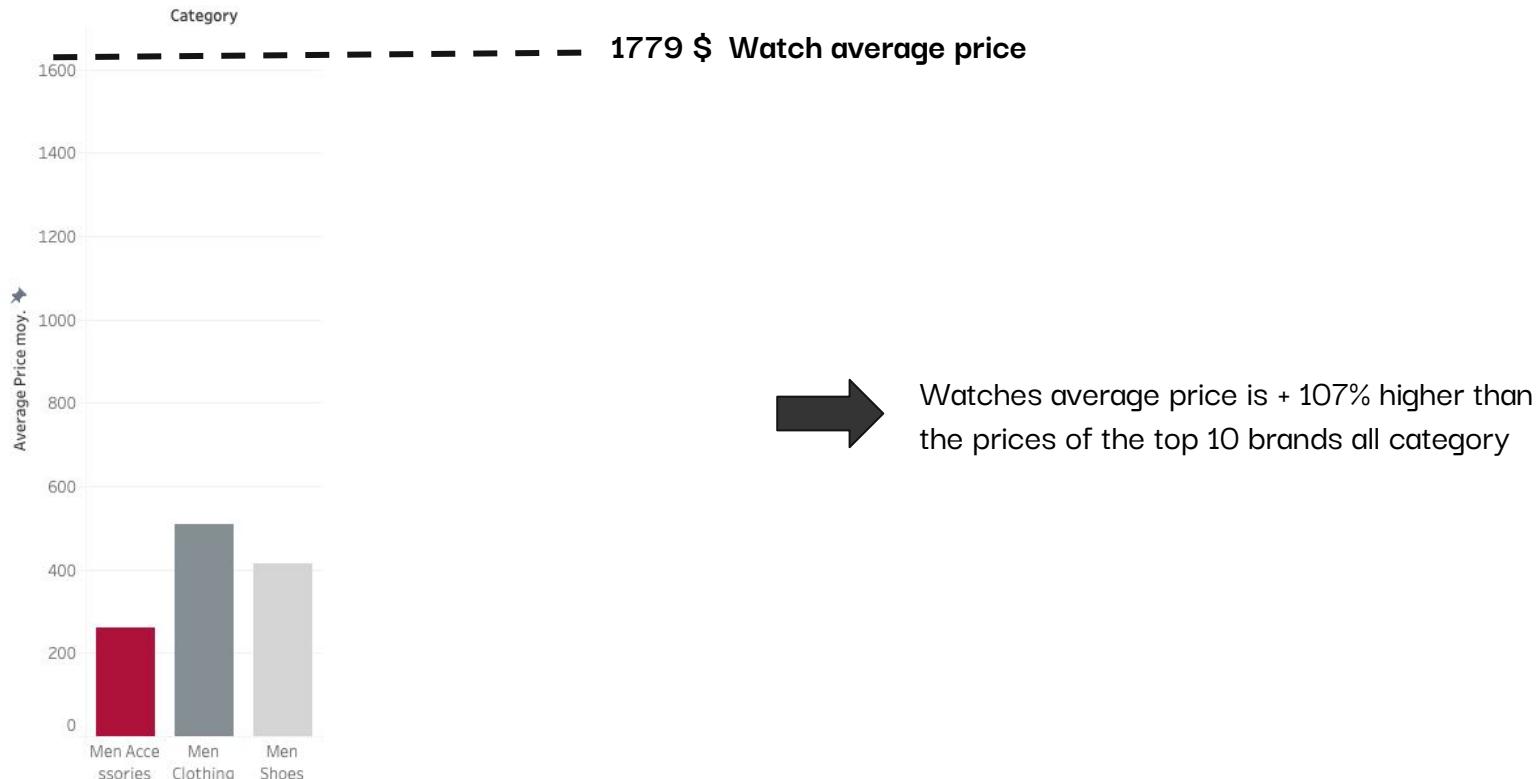
Top 10 brands by cat



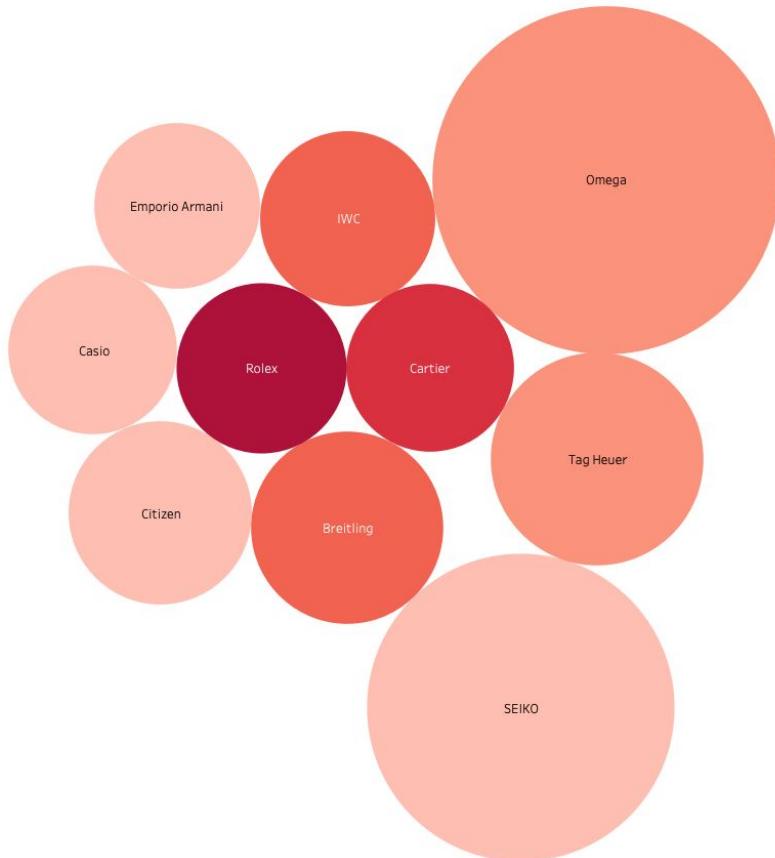
Leading brands in Vestiaire collective offer
are not specialized luxury watches brands



These top brands have lower average price



Men watches brands Top 10



Omega and Seiko are the biggest brands in terms of quantity but Rolex has the highest average price



Top 10 watch brands

	Brand Name	Product Count	Product Ratio (%)	Average Price
0	Omega	1781	10.09	2661.15
1	SEIKO	1401	7.94	1271.24
2	Tag Heuer	649	3.68	1876.72
3	Breitling	521	2.95	3845.65
4	Citizen	495	2.81	584.38
5	Rolex	484	2.74	6390.50
6	Cartier	436	2.47	4281.01
7	Tissot	422	2.39	618.94
8	Casio	421	2.39	336.04
9	IWC	417	2.36	3536.26



H

H

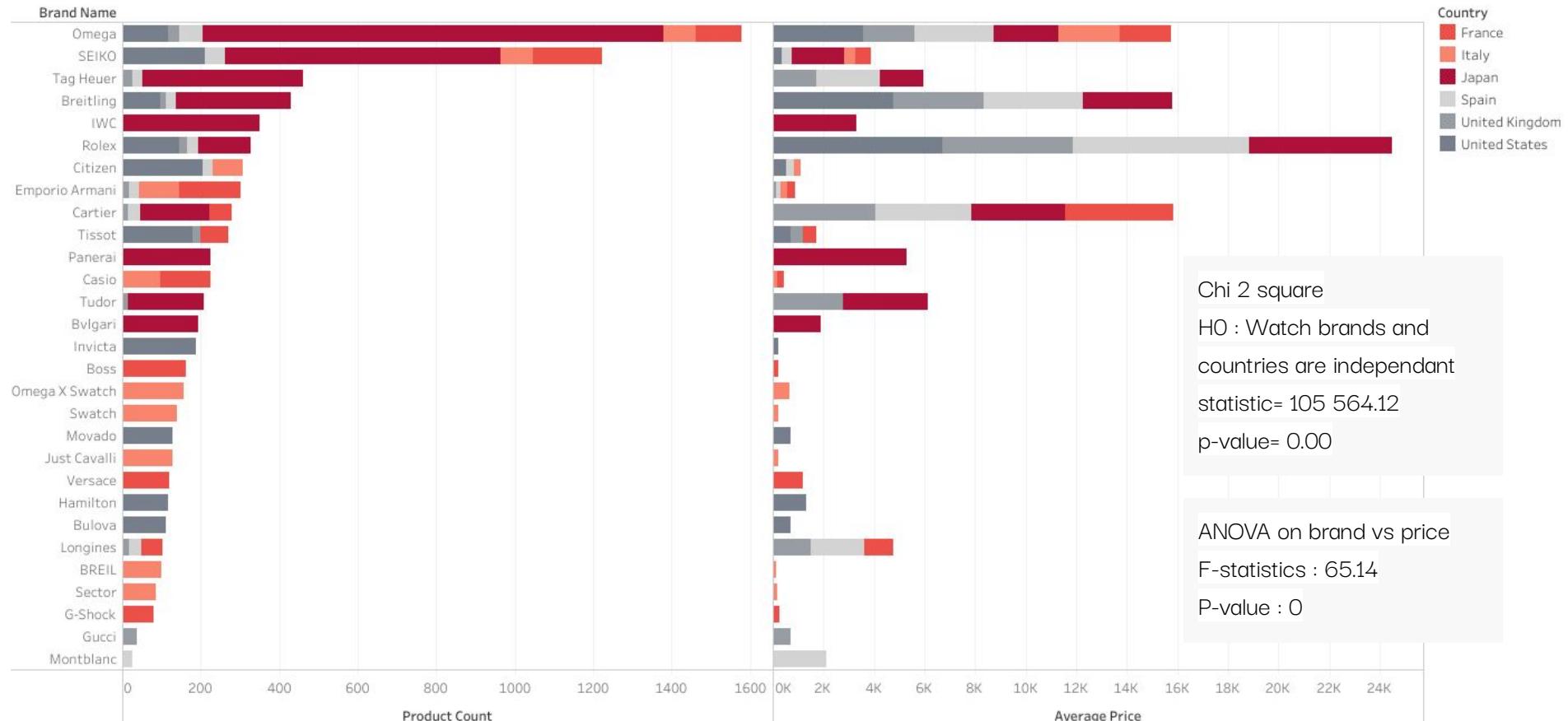
H

H

H

60% of the top 10 watch brands is made of Swiss brands

Watches brands across top countries relationship

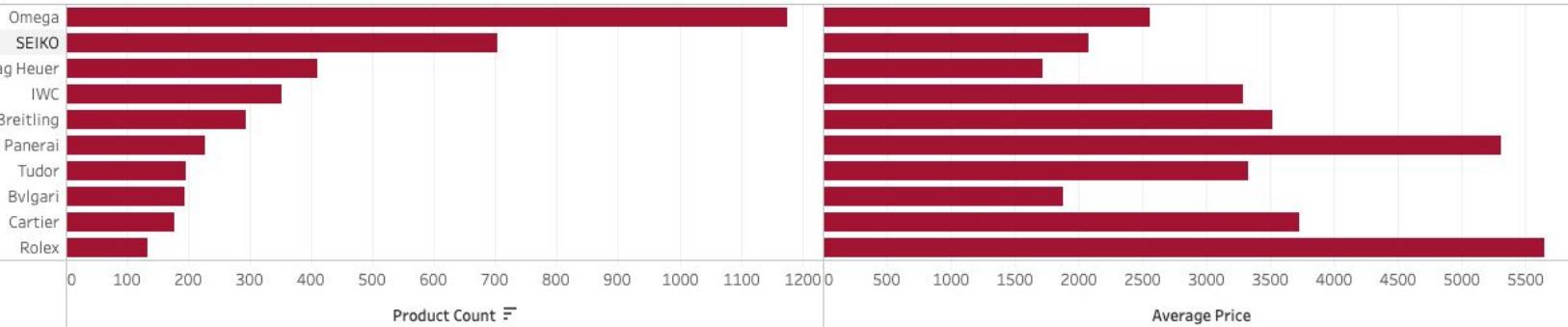


Focus on Japan

Country Brand Japan

Country
Japan

Brand ..



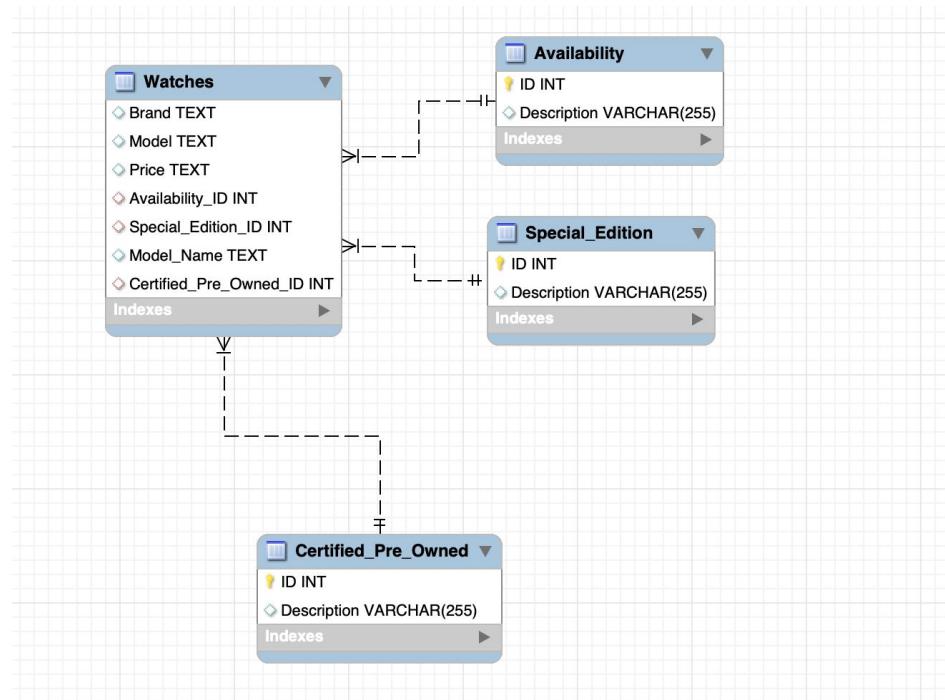
04

SQL



Database & ERD

Web scraped database from Bucherer.com
Wizard import used to import database



My SQL queries 1 & 2

Price mean overall watches

```
1 • USE watches_website;
2
3 • SELECT * from Watches;
4
5 -- Query 1
6
7 • SELECT AVG(Price) from Watches;
```

100% 32:7

Result Grid Filter Rows: Search Export:

AVG(Price)
22975.714285714286

Special Edition Watches check

```
9 -- Query 2
10
11 • SELECT w.Brand, w.Model_Name, w.Model, w.Price
12   FROM Watches w
13   JOIN Special_Edition se ON w.Special_Edition_ID = se.ID
14   WHERE se.Description = 'Special Edition';
15
16
```

100% 1:16

Result Grid Filter Rows: Search Export:

Brand	Model_Name	Model	Price
Breguet	Type XXII	Type XXII Certified Pre-Owned	10500.0

My SQL queries 3 & 4

Wrangle watches from “Cartier” Brand

```
18 •   SELECT
19       w.Brand,
20       w.Model_Name,
21       w.Model,
22       w.Price,
23       se.Description AS Special_Edition_Status,
24       av.Description AS Availability_Status,
25       cpo.Description AS Certified_Pre_Owned_Status
26   FROM Watches w
27   JOIN Special_Edition se ON w.Special_Edition_ID = se.ID
28   JOIN Availability av ON w.Availability_ID = av.ID
29   JOIN Certified_Pre_Owned cpo ON w.Certified_Pre_Owned_ID = cpo.ID
30   WHERE w.Brand = 'Cartier';
31
```

100% 27:30

Result Grid Filter Rows: Search Export:

Brand	Model_Name	Model	Price	Special_Edition_Status	Availability_Status	Certified_Pre_Owned_Status
Cartier	Pasha Certified Pre Owned	Pasha Certified Pre Owned	3500.0	Not Special Edition	In Stock	Not Certified Pre-Owned
Cartier	Panthere Certified Pre Owned	Panthere Certified Pre Owned	3800.0	Not Special Edition	In Stock	Not Certified Pre-Owned
Cartier	Tank	Tank Certified Pre-Owned	7800.0	Not Special Edition	In Stock	Certified Pre-Owned
Cartier	Captive	Captive Certified Pre-Owned	11550.0	Not Special Edition	In Stock	Certified Pre-Owned
Cartier	Ballon Bleu de Cartier	Ballon Bleu de Cartier Certified Pre-Owned	18000.0	Not Special Edition	In Stock	Certified Pre-Owned

Price mean of watches from “Cartier” Brand

```
32     -- Query 4
33 •   SELECT AVG(w.Price) AS Mean_Price
34   FROM Watches w
35   WHERE w.Brand = 'Cartier';
36
```

100% 27:35

Result Grid Filter Rows: Search Export:

Mean_Price
8930

My SQL query 5

Number of available / in stock watches from “Cartier” Brand

```
38    -- Query 5
39 •  SELECT
40      w.Brand,
41      w.Model_Name,
42      w.Model,
43      w.Price,
44      av.Description AS Availability_Status,
45      COUNT(w.Brand) AS NumberOfAvailableWatches
46  FROM
47      Watches AS w
48  JOIN
49      Availability av ON w.Availability_ID = av.ID
50  WHERE
51      av.Description = 'In Stock' AND w.Brand = 'Cartier'
52  GROUP BY
53      w.Brand, w.Model_Name, w.Model, w.Price, av.Description
54
55
56
```

100% 1:55

Result Grid Filter Rows: Search Export:

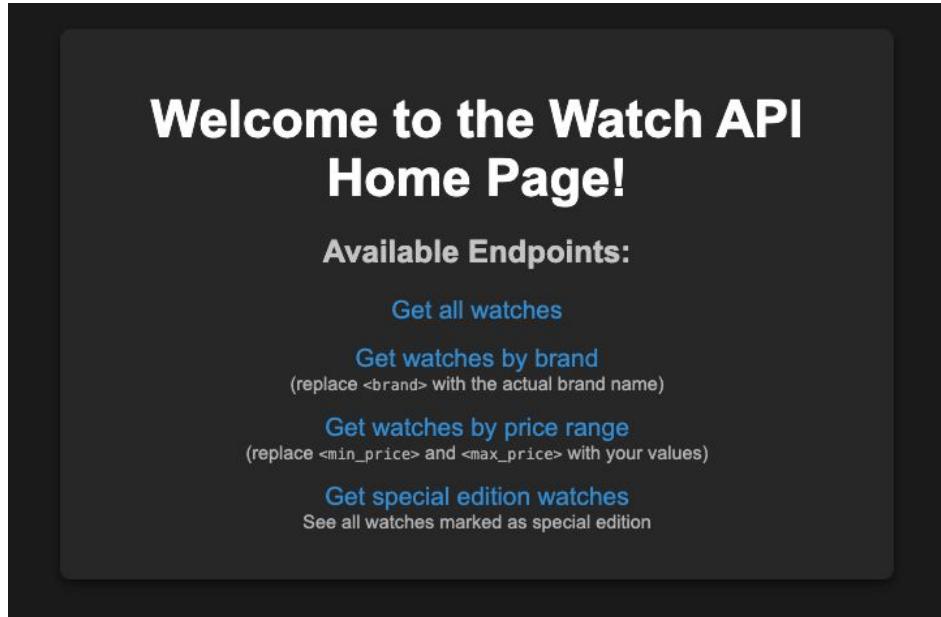
Brand	Model_Name	Model	Price	Availability_Status	NumberOfAvailableWatches
Cartier	Pasha Certified Pre Owned	Pasha Certified Pre Owned	3500.0	In Stock	1
Cartier	Panthere Certified Pre Owned	Panthere Certified Pre Owned	3800.0	In Stock	1
Cartier	Tank	Tank Certified Pre-Owned	7800.0	In Stock	1
Cartier	Captive	Captive Certified Pre-Owned	11550.0	In Stock	1
Cartier	Ballon Bleu de Cartier	Ballon Bleu de Cartier Certified Pre-Owned	18000.0	In Stock	1

04

API



API via Flask to store data



04

Business recommendations



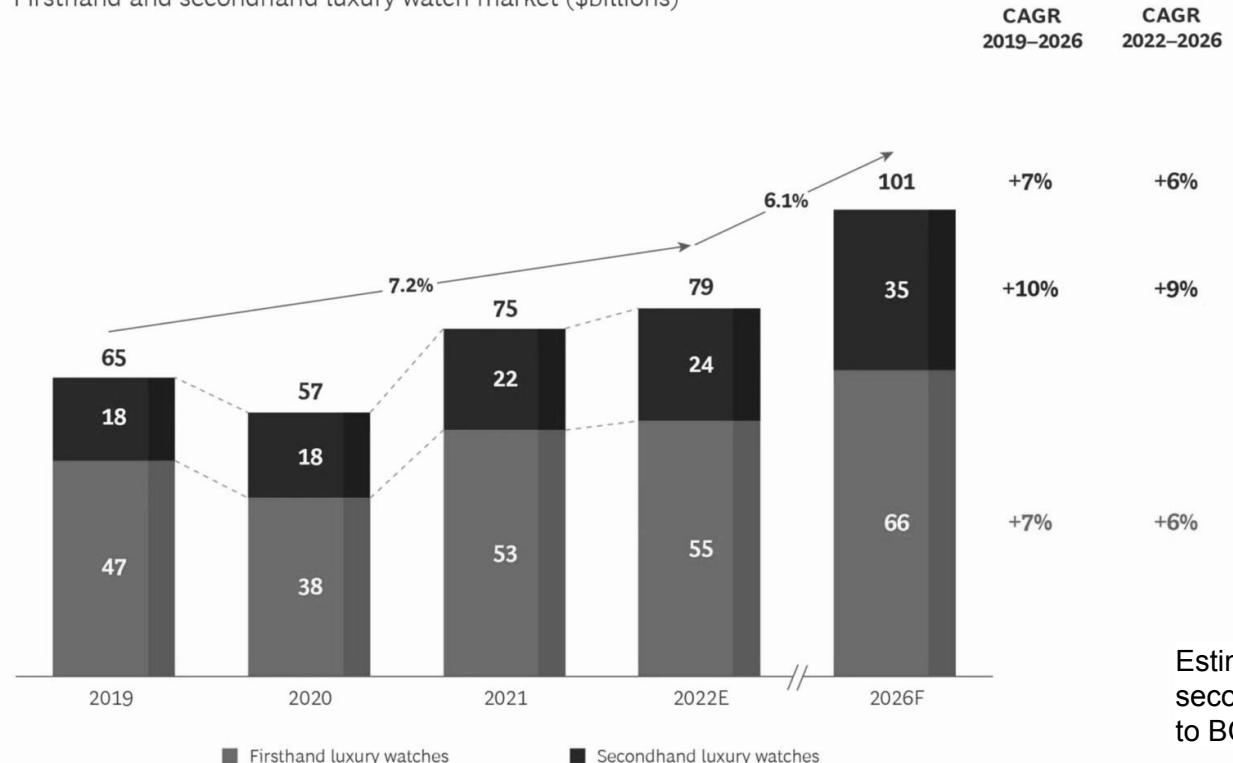


Sourcing second hand luxury watches are a business opportunity

- Sourcing top brands as : Rolex, Omega, Tag Hauer, Cartier
- Investigate Japanese second hand market
- Deep dive into secondary market in Europe
- Set partnership with watches luxury brands

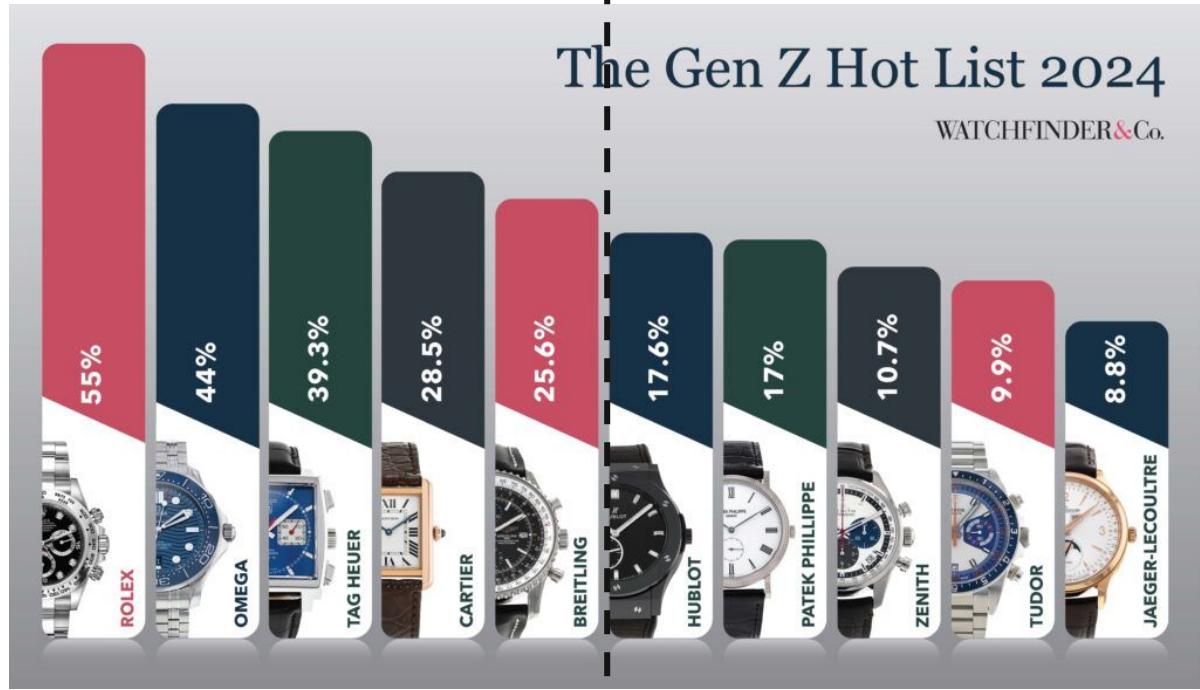
What future for second hand luxury watches ?

Firsthand and secondhand luxury watch market (\$billions)



Estimated sizes of the firsthand and secondhand luxury watch markets according to BCG – Source: Boston Consulting Group

What future for second hand luxury watches ?



A Deloitte report highlights that 23% of Gen Z prefers traditional watches over smartwatches

Vestiaire Collective

LONG LIVE FASHION



Thank you for your attention