Peer review assignment 2

Project Description

This week, you will be using the results of last week's analysis to come up with some hypotheses. You will be answering questions such as: Who are the ideal customers that should be targeted? How should they be approached to maximize the sales of the client's new home security systems? Using the data, figure out the attributes of the customer who wants to install an advanced, hi-tech security system and the attributes of a person who would switch security system brands.

Data Dictionary

Field	Description
Segments	Customer Segments
Quality	Buy Based on Quality- Not Price- Agree
TryNewTechnology	I am Among First of my Friends to try new Technology Products- Agree
PayMore	I am Willing to Pay More for Top Quality Electronics- Agree
ProductsLatestTechnology	Prefer Products With the Latest Technology- Agree
Price	Price Is More Important than Brand Names- Agree
SwitchBrands	Will Switch Brands to Use a Cents-Off Coupon- Agree
BuySecurityDevices	Would like to buy Security Devices
Total	Summation

Import Libraries

In [1]:

```
import numpy as np
from numpy import count_nonzero, median, mean
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px
import random


%matplotlib inline
#sets the default autosave frequency in seconds
%autosave 60
sns.set_style('dark')
sns.set(font_scale=1.2)

plt.rc('axes', titlesize=9)
plt.rc('axes', labelsize=14)
plt.rc('xtick', labelsize=12)
plt.rc('ytick', labelsize=12)

import warnings
warnings.filterwarnings('ignore')

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

```
#pd.set_option('display.max_rows',None)
pd.set_option('display.width', 1000)
pd.set_option('display.float_format','{:.2f}'.format)

random.seed(0)
np.random.seed(0)
np.set_printoptions(suppress=True)
```

```
Autosaving every 60 seconds
```

Exploratory Data Analysis

In [2]:
```
df = pd.read_csv("security.csv")
```

In [3]:
```
df
```

Out[3]:

	Segments	Quality	TryNewTechnology	PayMore	ProductsLatestTechnology	Price	SwitchBrands	BuySecu
0	Comfortable Retirees	1094782	287818	537362	726376	1240547	759639	
1	Diverse Workers	2784539	1201534	1920240	2082794	3308650	2286425	
2	Elder Midscale Class	1709107	403429	1001329	1141297	1787397	1081551	
3	Elite Households	1349997	551943	1153657	1022352	1377813	887918	
4	Mass Markets	2792014	1296515	2239097	2229801	3152588	2168742	
5	Modest Families	1108450	610257	867047	932759	1332094	1076186	
6	Prosperous Acheivers	1345702	411378	953399	894410	1234963	704491	
7	Upscale Matures	1068362	285041	647027	667994	1015715	596014	
8	Well-heeled Affluents	933276	343055	756944	673420	874881	522831	
9	Young Affluent Mobiles	1901962	888932	1685141	1583489	1882546	1345477	
10	Young Upscale Families	2221763	848484	1768303	1682411	2281066	1472441	
11	Young Urban Masses	2069153	1025455	1705368	1651877	2332275	1686936	

In [4]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 12 entries, 0 to 11
```

```
Data columns (total 9 columns):
 #   Column                     Non-Null Count  Dtype
---  ------                     --------------  -----
 0   Segments                   12 non-null     object
 1   Quality                    12 non-null     int64
 2   TryNewTechnology           12 non-null     int64
 3   PayMore                    12 non-null     int64
 4   ProductsLatestTechnology   12 non-null     int64
 5   Price                      12 non-null     int64
 6   SwitchBrands               12 non-null     int64
 7   BuySecurityDevices         12 non-null     int64
 8   Total                      12 non-null     int64
dtypes: int64(8), object(1)
memory usage: 992.0+ bytes
```

In [5]:
```
df.describe()
```

Out[5]:

	Quality	TryNewTechnology	PayMore	ProductsLatestTechnology	Price	SwitchBrands	BuySecurityI
count	12.00	12.00	12.00	12.00	12.00	12.00	
mean	1698258.92	679486.75	1269576.17	1274081.67	1818377.92	1215720.92	50
std	658451.82	361399.70	564765.40	551228.35	804733.75	590675.12	32
min	933276.00	285041.00	537362.00	667994.00	874881.00	522831.00	12
25%	1105033.00	388335.50	839521.25	852401.50	1239151.00	745852.00	30
50%	1529552.00	581100.00	1077493.00	1081824.50	1582605.00	1078868.50	42
75%	2107305.50	923062.75	1721101.75	1659510.50	2293868.25	1526064.75	78
max	2792014.00	1296515.00	2239097.00	2229801.00	3308650.00	2286425.00	117

In [6]:
```
df.columns
```

Out[6]:
```
Index(['Segments', 'Quality', 'TryNewTechnology', 'PayMore', 'ProductsLatestTechnology',
'Price', 'SwitchBrands', 'BuySecurityDevices', 'Total'], dtype='object')
```

In [7]:
```
df[["Segments","Quality"]].sort_values(by="Quality", ascending=False).head()
```

Out[7]:

	Segments	Quality
4	Mass Markets	2792014
1	Diverse Workers	2784539
10	Young Upscale Families	2221763
11	Young Urban Masses	2069153
9	Young Affluent Mobiles	1901962

In [8]:
```
df[["Segments","TryNewTechnology"]].sort_values(by="TryNewTechnology", ascending=False).he
```

Out[8]:

	Segments	TryNewTechnology
4	Mass Markets	1296515
1	Diverse Workers	1201534
11	Young Urban Masses	1025455

	Segments	TryNewTechnology
9	Young Affluent Mobiles	888932
10	Young Upscale Families	848484

In [9]:
```
df[["Segments","PayMore"]].sort_values(by="PayMore", ascending=False).head()
```

Out[9]:

	Segments	PayMore
4	Mass Markets	2239097
1	Diverse Workers	1920240
10	Young Upscale Families	1768303
11	Young Urban Masses	1705368
9	Young Affluent Mobiles	1685141

In [10]:
```
df[["Segments","ProductsLatestTechnology"]].sort_values(by="ProductsLatestTechnology", asc
```

Out[10]:

	Segments	ProductsLatestTechnology
4	Mass Markets	2229801
1	Diverse Workers	2082794
10	Young Upscale Families	1682411
11	Young Urban Masses	1651877
9	Young Affluent Mobiles	1583489

In [11]:
```
df[["Segments","Price"]].sort_values(by="Price", ascending=False).head()
```

Out[11]:

	Segments	Price
1	Diverse Workers	3308650
4	Mass Markets	3152588
11	Young Urban Masses	2332275
10	Young Upscale Families	2281066
9	Young Affluent Mobiles	1882546

In [12]:
```
df[["Segments","SwitchBrands"]].sort_values(by="SwitchBrands", ascending=False).head()
```

Out[12]:

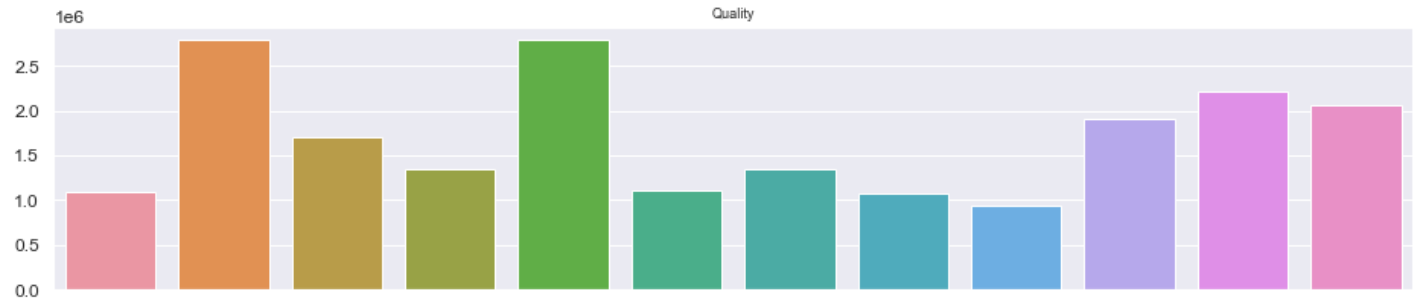
	Segments	SwitchBrands
1	Diverse Workers	2286425
4	Mass Markets	2168742
11	Young Urban Masses	1686936
10	Young Upscale Families	1472441
9	Young Affluent Mobiles	1345477

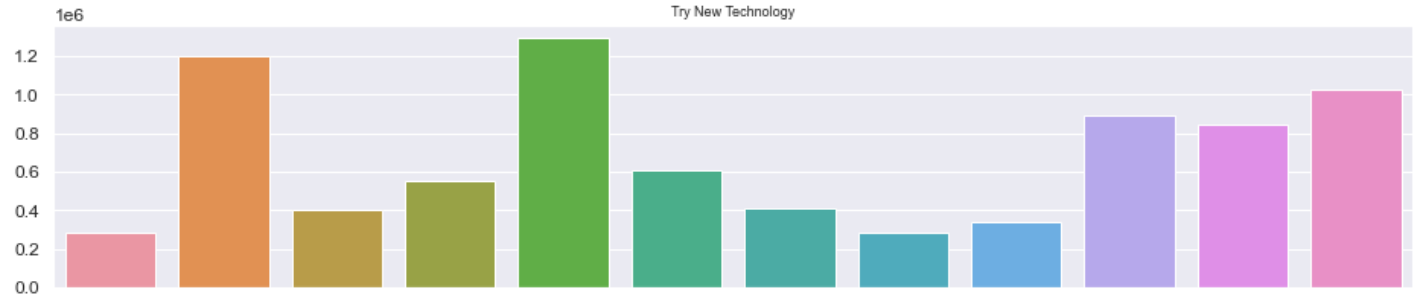
In [13]:
```
df[["Segments","BuySecurityDevices"]].sort_values(by="BuySecurityDevices", ascending=False
```

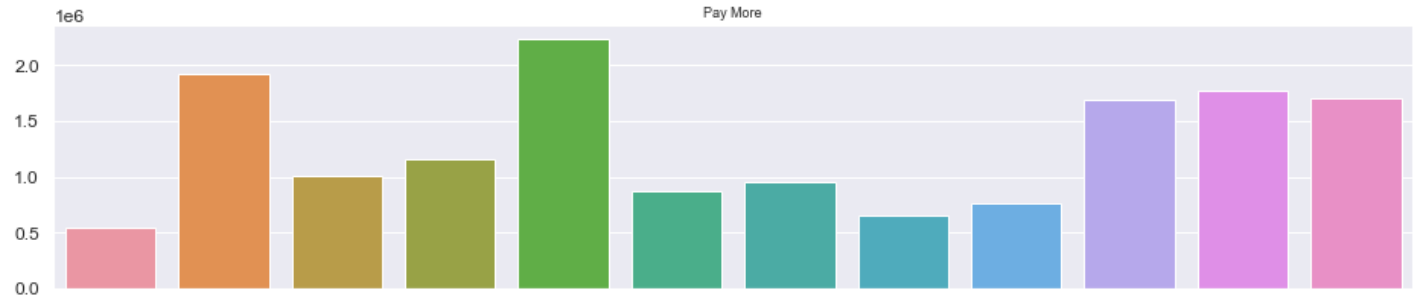
Out[13]:

	Segments	BuySecurityDevices
8	Well-heeled Affluents	1176191
6	Prosperous Acheivers	849727
4	Mass Markets	807344
3	Elite Households	773110
7	Upscale Matures	451118

In [14]:
```
# Plot 4 rows and 1 column (can be expanded)

fig, ax = plt.subplots(7,1, sharex=True, figsize=(16,26))
#fig.suptitle('Main Title')


sns.barplot(x="Segments", y="Quality", data=df, ax=ax[0])
ax[0].set_title('Quality')
ax[0].tick_params('x', labelrotation=90)
ax[0].set_xlabel("")
ax[0].set_ylabel("")

sns.barplot(x="Segments", y="TryNewTechnology", data=df, ax=ax[1])
ax[1].set_title('Try New Technology')
ax[1].tick_params('x', labelrotation=90)
ax[1].set_xlabel("")
ax[1].set_ylabel("")

sns.barplot(x="Segments", y="PayMore", data=df, ax=ax[2])
ax[2].set_title('Pay More')
ax[2].tick_params('x', labelrotation=90)
ax[2].set_xlabel("")
ax[2].set_ylabel("")

sns.barplot(x="Segments", y="ProductsLatestTechnology", data=df, ax=ax[3])
ax[3].set_title('Products Latest Technology')
ax[3].tick_params('x', labelrotation=90)
ax[3].set_xlabel("")
ax[3].set_ylabel("")

sns.barplot(x="Segments", y="Price", data=df, ax=ax[4])
ax[4].set_title('Price')
ax[4].tick_params('x', labelrotation=90)
ax[4].set_xlabel("")
ax[4].set_ylabel("")

sns.barplot(x="Segments", y="SwitchBrands", data=df, ax=ax[5])
ax[5].set_title('Switch Brands')
ax[5].tick_params('x', labelrotation=90)
ax[5].set_xlabel("")
ax[5].set_ylabel("")

sns.barplot(x="Segments", y="BuySecurityDevices", data=df, ax=ax[6])
ax[6].set_title('Buy Security Devices')
ax[6].tick_params('x', labelrotation=90)
ax[6].set_xlabel("")
ax[6].set_ylabel("")

plt.show()
```

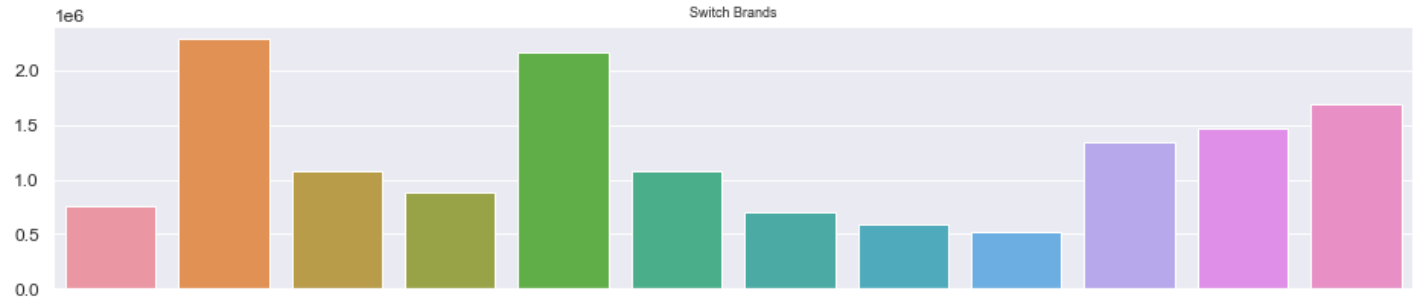

Quality
1e6
2.5
2.0
1.5
1.0
0.5
0.0

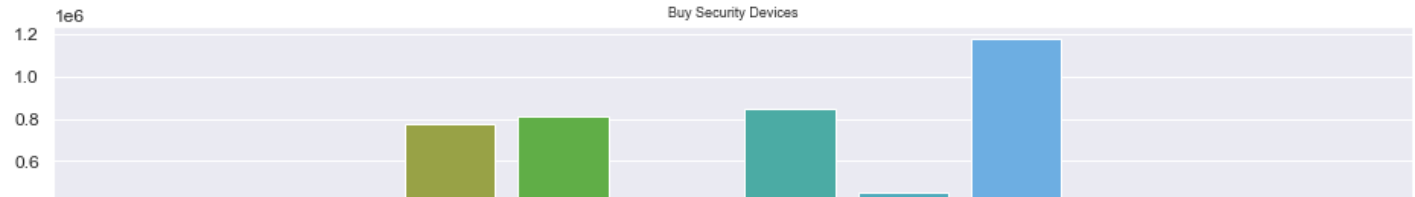

Try New Technology
1e6
1.2
1.0
0.8
0.6
0.4
0.2
0.0

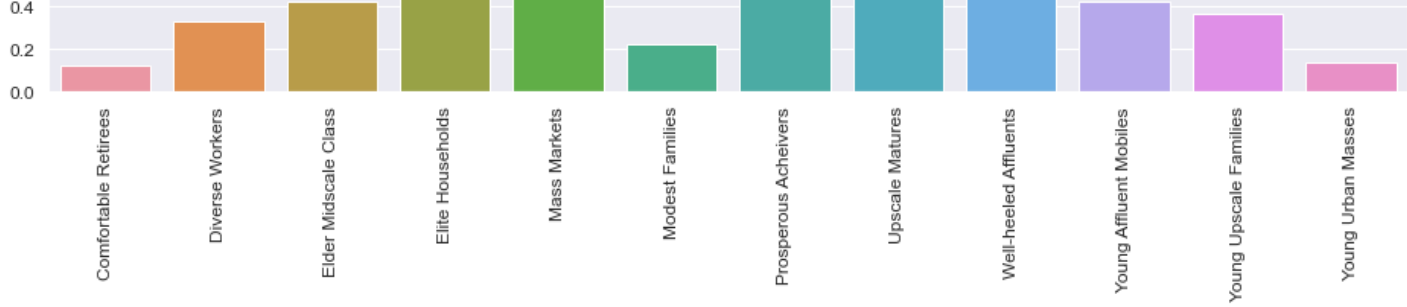

Pay More
1e6
2.0
1.5
1.0
0.5
0.0


Products Latest Technology
1e6
2.0
1.5
1.0
0.5
0.0


Price
1e6
3.0
2.5
2.0
1.5
1.0
0.5
0.0


Switch Brands
1e6
2.0
1.5
1.0
0.5
0.0


Buy Security Devices
1e6
1.2
1.0
0.8
0.6



Conclusion

From the graphs, we can deduce Diverse Workers, Mass Markets, Young Affluent Mobiles , Young Urban Masses and Young Upscale Families occupies top 5. Even though Well-heeled Affluents wants to buy security devices the most, they will have more choices to choose from.

Python code done by Dennis Lam