Chips analysis

May 16, 2025

[74]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import matplotlib.dates as dd
import seaborn as sns
```

[75]:
```
# Data has been cleaned with MS Excel
```

[76]:
```
Data = pd.read_excel(r"D:\Project\Quuantium\Merged.xlsx")
```

[77]:
```
Data
```

[77]:

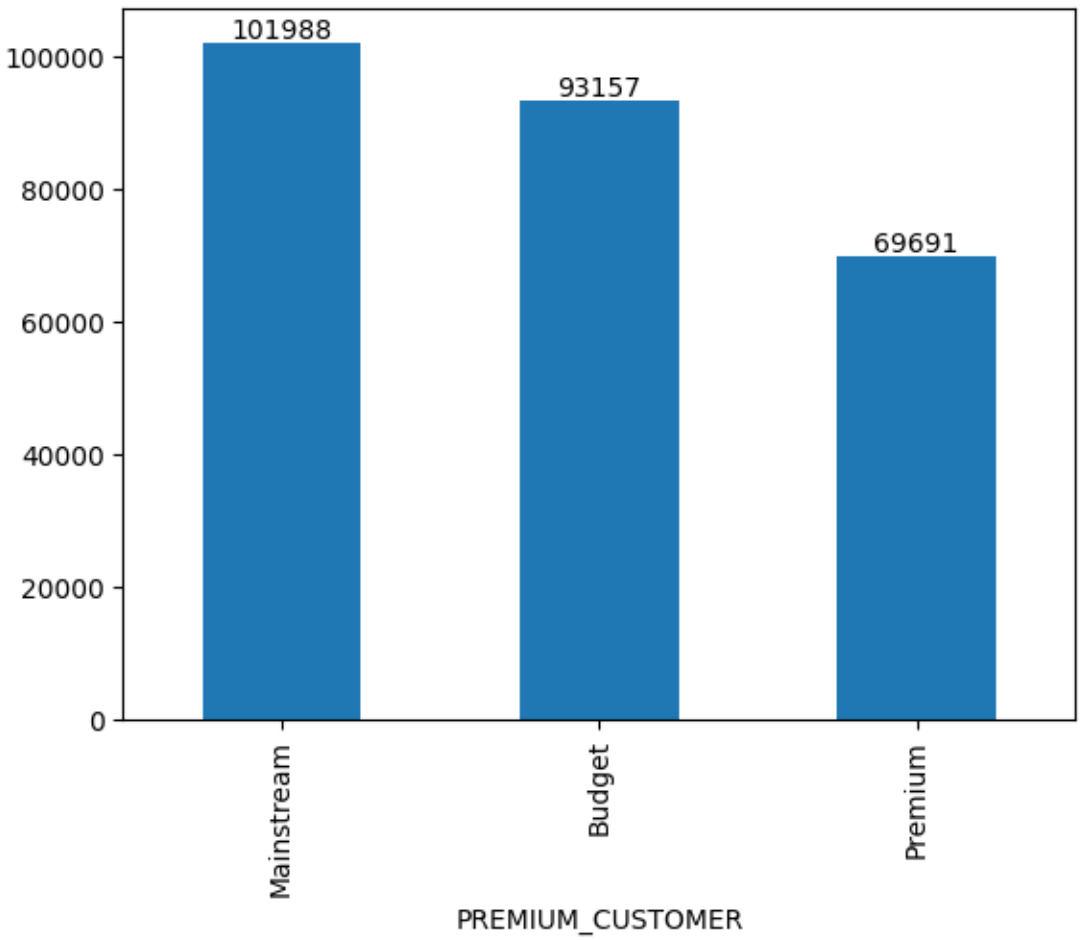
	DATE	STORE_NBR	LYLTY_CARD_NBR	TXN_ID	PROD_NBR	PROD_NAME	PROD_Type	PROD_Wt(in Grams)	PROD_QTY
0	2018-10-17	1	1000	1	5	Natural Chip Co	SeaSalt	175	2
1	2019-05-14	1	1307	348	66	CC's	NachoCheee	175	3
2	2018-11-10	1	1307	346	96	WW	OriginalStacked	160	2
3	2019-03-09	1	1307	347	54	CC's	Original	175	1
4	2019-05-20	1	1343	383	61	Smith's	CrinkleCutChicken	170	2
…	…	…	…	…	…	…	…	…	…
264831	2019-03-09	272	272319	270088	89	Kettle	SweetChilliAndSourCream	175	2
264832	2018-08-13	272	272358	270154	74	Tostitos	SplahOfLime	175	1
264833	2018-11-06	272	272379	270187	51	Doritos	Mexicana	170	2
264834	2018-12-27	272	272379	270188	42	Doritos	MexicanJalapeno	150	2
264835	2018-09-22	272	272380	270189	74	Tostitos	SplahOfLime	175	2

```
        TOT_SALES               LIFESTAGE PREMIUM_CUSTOMER  \
0             6.0   YOUNG SINGLES/COUPLES          Premium
1             6.3  MIDAGE SINGLES/COUPLES           Budget
2             3.8  MIDAGE SINGLES/COUPLES           Budget
3             2.1  MIDAGE SINGLES/COUPLES           Budget
4             2.9  MIDAGE SINGLES/COUPLES           Budget
…             …                       …              …
264831       10.8   YOUNG SINGLES/COUPLES          Premium
264832        4.4   YOUNG SINGLES/COUPLES          Premium
264833        8.8   YOUNG SINGLES/COUPLES          Premium
264834        7.8   YOUNG SINGLES/COUPLES          Premium
264835        8.8   YOUNG SINGLES/COUPLES          Premium

        Check_LYLTY_CARD_NBR
0                       True
1                       True
2                       True
3                       True
4                       True
…                       …
264831                  True
264832                  True
264833                  True
264834                  True
264835                  True

[264836 rows x 13 columns]
```

[78]:
```
Data3 = Data.groupby(Data['PREMIUM_CUSTOMER'])['LIFESTAGE'].count()
Data3
```

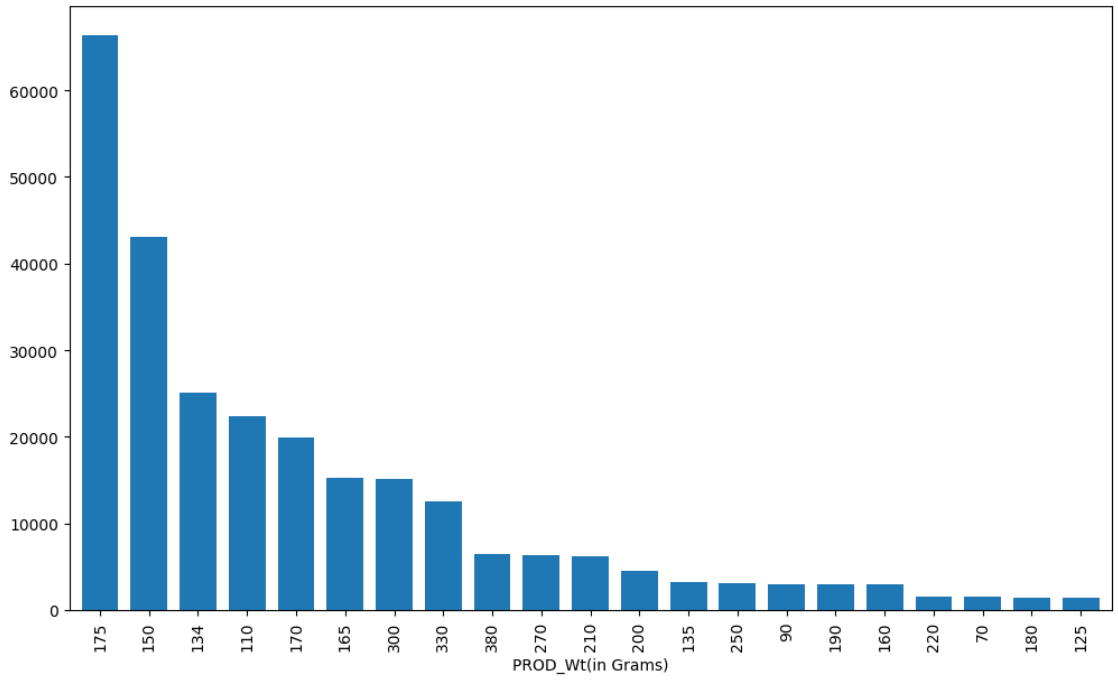
[78]:
```
PREMIUM_CUSTOMER
Budget         93157
Mainstream    101988
Premium        69691
Name: LIFESTAGE, dtype: int64
```

[79]:
```
cx = Data['PREMIUM_CUSTOMER'].value_counts().plot(kind = 'bar')
for bar in cx.patches:
    height = bar.get_height()
    cx.text(bar.get_x() + bar.get_width()/2, height + 0.1, int(height),
            ha='center', va='bottom', fontsize=10, color='black')
```

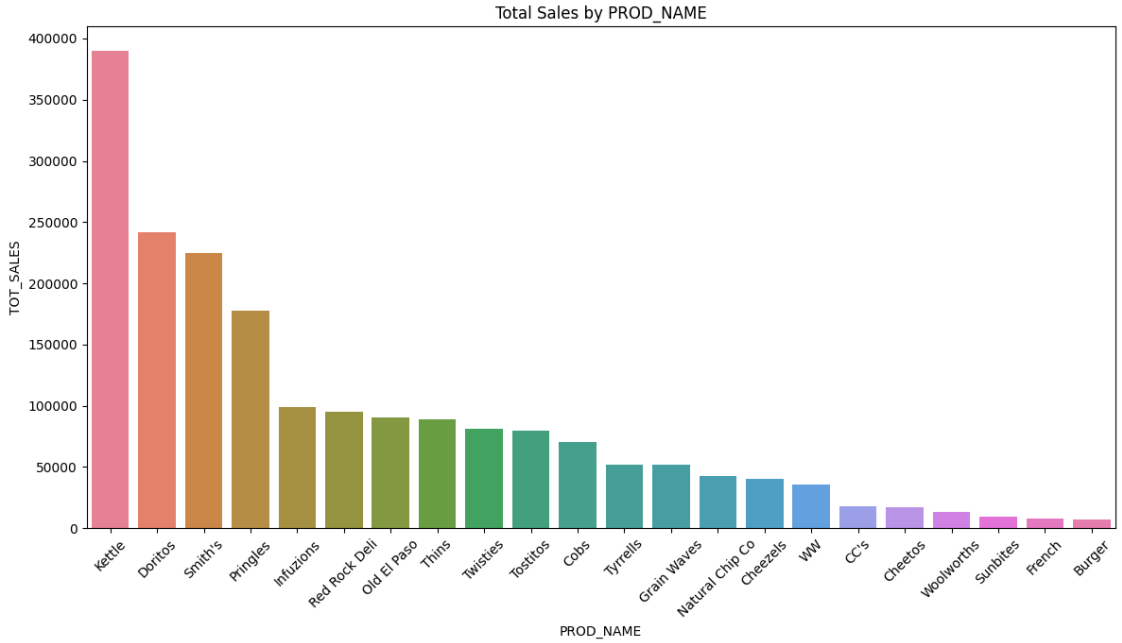


[80]:
```
plt.figure(figsize = (12,7))
Data['PROD_Wt(in Grams)'].value_counts().sort_values(ascending = False).
 ↪plot(kind = 'bar', width = 0.75 )
```

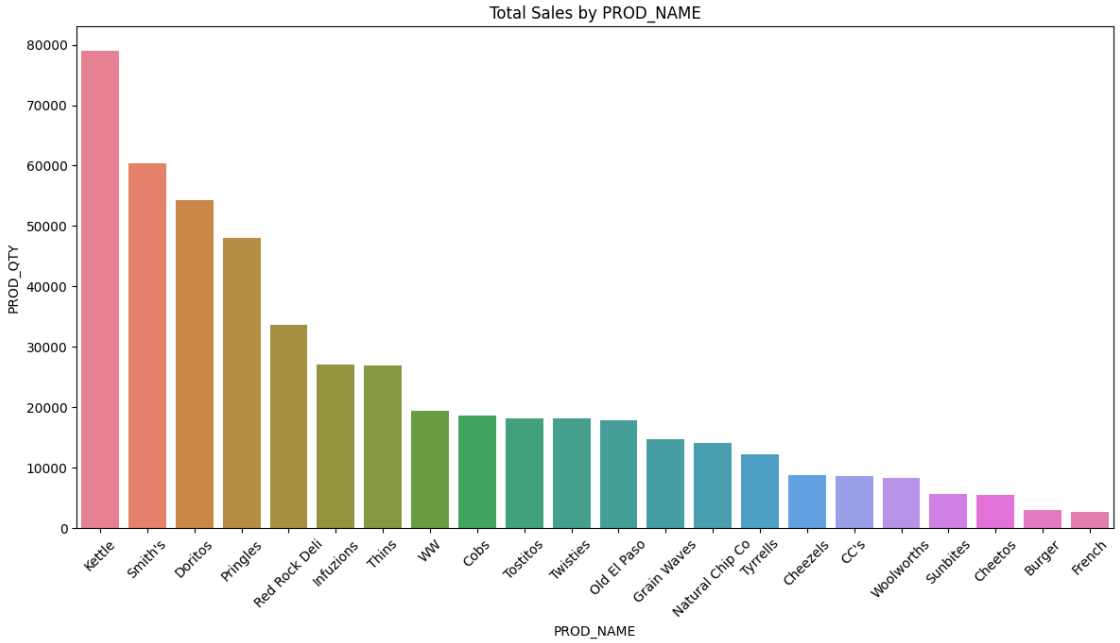
[80]: <Axes: xlabel='PROD_Wt(in Grams)'>



[81]:
```
count_data = Data.groupby(['PROD_NAME'])['TOT_SALES'].sum().
 ↪sort_values(ascending  = False).reset_index()


plt.figure(figsize=(12, 7))
sns.barplot(data=count_data, x='PROD_NAME', y='TOT_SALES', hue='PROD_NAME')
plt.title('Total Sales by PROD_NAME')
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```



[82]:
```
count_data = Data.groupby(['PROD_NAME'])['PROD_QTY'].sum().
 ↪sort_values(ascending  = False).reset_index()


plt.figure(figsize=(12, 7))
sns.barplot(data=count_data, x='PROD_NAME', y='PROD_QTY', hue='PROD_NAME')
plt.title('Total Sales by PROD_NAME')
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```

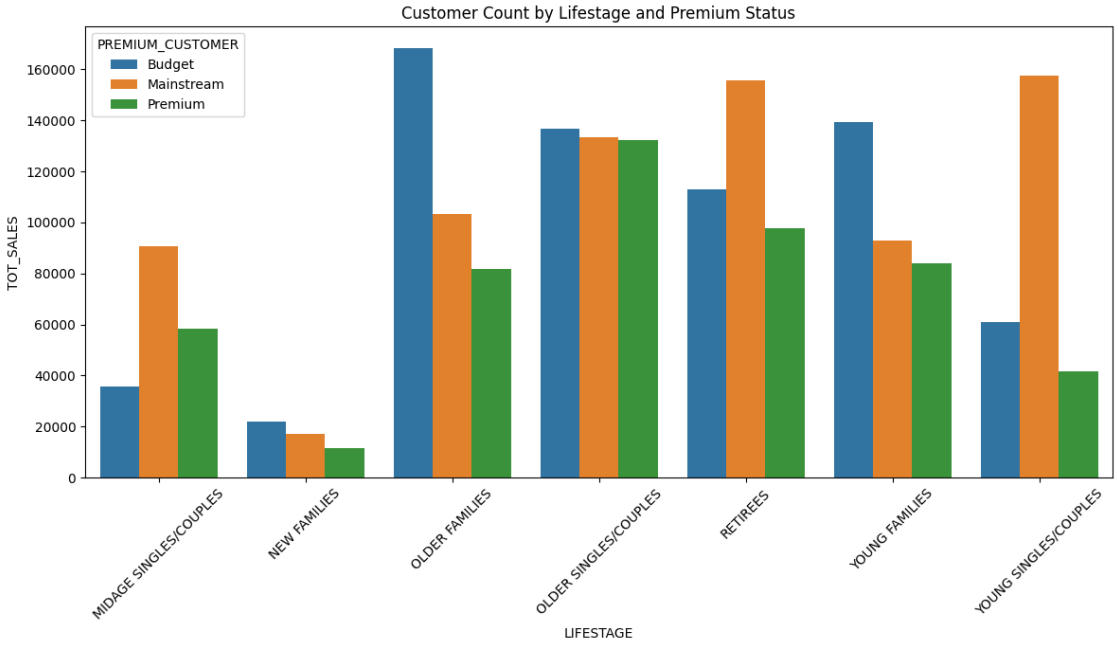


[83]:
```
Data.groupby(['LIFESTAGE','PREMIUM_CUSTOMER'])['PREMIUM_CUSTOMER'].
↪value_counts()
```

[83]:
```
LIFESTAGE               PREMIUM_CUSTOMER
MIDAGE SINGLES/COUPLES  Budget              5020
                        Mainstream         11874
                        Premium             8216
NEW FAMILIES            Budget              3005
                        Mainstream          2325
                        Premium             1589
OLDER FAMILIES          Budget             23160
                        Mainstream         14244
                        Premium            11192
OLDER SINGLES/COUPLES   Budget             18407
                        Mainstream         18318
                        Premium            17754
RETIREES                Budget             15201
                        Mainstream         21466
                        Premium            13096
YOUNG FAMILIES          Budget             19122
                        Mainstream         12907
                        Premium            11563
YOUNG SINGLES/COUPLES   Budget              9242
                        Mainstream         20854
                        Premium             6281
Name: count, dtype: int64
```

[ ]:

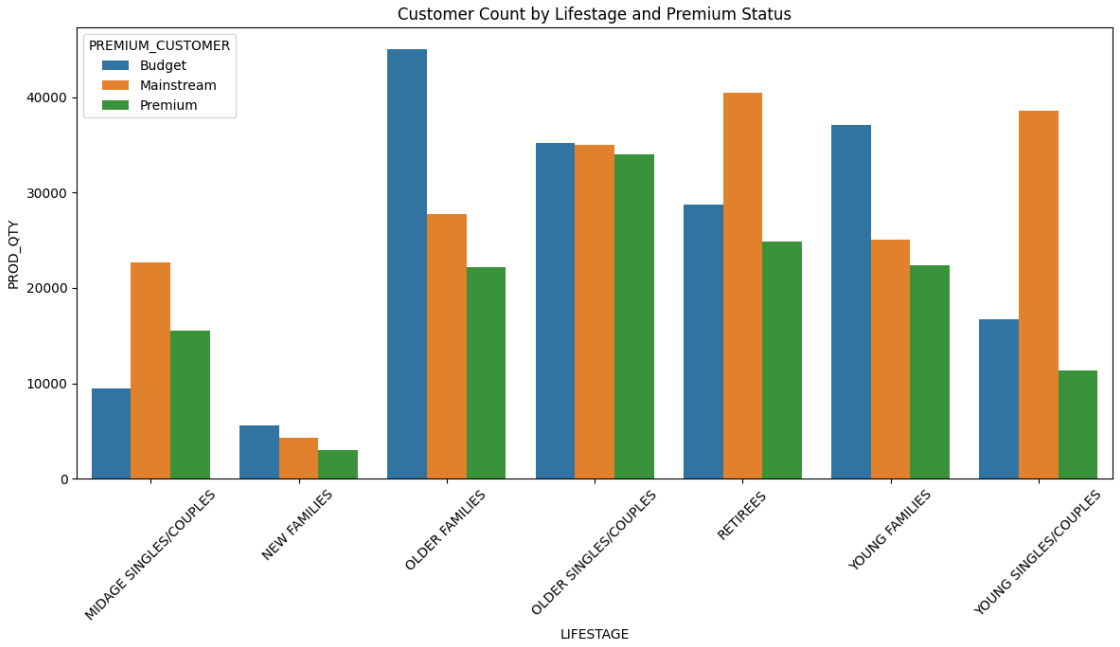
[84]:
```
count_data = Data.groupby(['LIFESTAGE', 'PREMIUM_CUSTOMER'])['TOT_SALES'].sum().
 ↪reset_index()


plt.figure(figsize=(12, 7))
sns.barplot(data=count_data, x='LIFESTAGE', y='TOT_SALES',␣
 ↪hue='PREMIUM_CUSTOMER')
plt.title('Customer Count by Lifestage and Premium Status')
plt.xticks(rotation=45)
plt.tight_layout()
plt.show()
```



[ ]:

[85]:
```
count_data = Data.groupby(['LIFESTAGE', 'PREMIUM_CUSTOMER'])['PROD_QTY'].sum().
 ↪reset_index()


plt.figure(figsize=(12, 7))
sns.barplot(data=count_data, x='LIFESTAGE', y='PROD_QTY',␣
 ↪hue='PREMIUM_CUSTOMER')
plt.title('Customer Count by Lifestage and Premium Status')
plt.xticks(rotation=45)
```

```
plt.tight_layout()
plt.show()
```



[86]:
```
Data.groupby('PROD_QTY')['PROD_QTY'].value_counts()
```

[86]:
```
PROD_QTY
1       27518
2      236039
3         430
4         397
5         450
200         2
Name: count, dtype: int64
```

[87]:
```
 Data.groupby('STORE_NBR').agg({'PROD_QTY': 'sum' ,'LYLTY_CARD_NBR' :␣
 ↪'nunique'}).rename( columns = {'LYLTY_CARD_NBR':'Customers'}).sort_values(by␣
 ↪= 'PROD_QTY',ascending = False).reset_index().head(10)
```

[87]:

	STORE_NBR	PROD_QTY	Customers
0	226	4401	382
1	88	3718	388
2	93	3639	264
3	165	3602	390
4	43	3519	251
5	237	3515	382
6	40	3499	388

```
7         230       3476         248
8         213       3470         256
9          58       3463         393
```

[88]:
```
Data.groupby('STORE_NBR').agg({'TOT_SALES': 'sum' ,'LYLTY_CARD_NBR' :␣
↪'nunique'}).rename( columns = {'LYLTY_CARD_NBR':'Customers'}).sort_values(by␣
↪= 'TOT_SALES',ascending = False).reset_index().head(10)
```

[88]:
```
   STORE_NBR  TOT_SALES  Customers
0        226   18905.45        382
1         88   16333.25        388
2        165   15973.75        390
3         40   15559.50        388
4        237   15539.50        382
5         58   15251.45        393
6        199   14797.00        376
7          4   14647.65        379
8        203   14551.60        397
9         26   14469.30        377
```

[89]:
```
#PROD_NBR        PROD_NAME        PROD_Type        PROD_Wt(in Grams)

Data.groupby(['PROD_NAME','PROD_Type','PROD_Wt(in␣
↪Grams)','PROD_NBR'])['PROD_QTY'].value_counts().sort_values(ascending =␣
↪False).reset_index().head(5)
```

[89]:
```
  PROD_NAME                 PROD_Type  PROD_Wt(in Grams)  PROD_NBR  PROD_QTY  \
0    Kettle       MozzarellaBail&Peto                175       102         2
1      Cobs                PopdSeaSalt                110        75         2
2    Kettle  TortillaChpHny&JlpnoChili                150       108         2
3      Cobs    PopdSwt/Chlli&Sr/Cream                110        33         2
4  Tostitos                SplahOfLime                175        74         2

   count
0   3004
1   2979
2   2961
3   2950
4   2936
```

[90]:
```
#PROD_NBR        PROD_NAME        PROD_Type        PROD_Wt(in Grams)

Data.groupby(['PROD_NAME','PROD_Type','PROD_Wt(in␣
↪Grams)','PROD_NBR'])['TOT_SALES'].sum().sort_values(ascending = False).
↪reset_index().head(5)
```

[90]:

	PROD_NAME	PROD_Type	PROD_Wt(in Grams)	PROD_NBR	TOT_SALES
0	Doritos	ChpSupreme	380	4	40352.0
1	Smith's	CkleOrgnlBigBag	380	14	36367.6
2	Smith's	CrinkleSalt&Vinegar	330	16	34804.2
3	Kettle	MozzarellaBail&Peto	175	102	34457.4
4	Smith's	CrinkleOriginal	330	7	34302.6

[91]:
```
# Data Analysis of Chips Sales

#From the given data,the most selling chips product_name :-  Kettle , Doritos␣
 ↪and Smith's are the brands took top 3 sales and Quantity
# 175g, 150g are the most selling package in all categories
# Older singles/couples categories having high premium users, Older & Young␣
 ↪families have more Budget category customers, Retires and young singles/
#couples shares more Mainstream customers
# Most customers buys the 2 chips packs

# Total 272 stores according to store number

#STORE_NBR having high  quantity 226 with 4.4K and sales ~19K


#ToP selling products by Quantity
#1 Kettle    -        MozzarellaBail&Peto        -        175g
#2        Cobs     -        PopdSeaSalt                        -    110g
#3        Kettle   -        TortillaChpHny&JlpnoChili  -    150g
#4        Cobs     -        PopdSwt/Chlli&Sr/Cream             -    110g
#5        Tostitos -        SplahOfLime                        -    175g

#Top selling by Total sales

#1        Doritos        - ChpSupreme              - 380g        - $ 40352.0
#2        Smith's        - CkleOrgnlBigBag          - 380g        - $ 36367.6
#3        Smith's        - CrinkleSalt&Vinegar - 330g        - $ 34804.2
#4        Kettle        - MozzarellaBail&Peto - 175g        - $ 34457.4
#5        Smith's        - CrinkleOriginal          - 330g        - $ 34302.6
```

[92]:
```
#
#STORE_NBR        PROD_QTY        Customers_counts
#        226              4401              382
#        88               3718              388
#        93               3639              264
#        165              3602              390
#        43               3519              251
#        237              3515              382
#        40               3499              388
#        230              3476              248
```

```
#          213                 3470                256
#          58                  3463                393
```

[ ]:

[ ]: