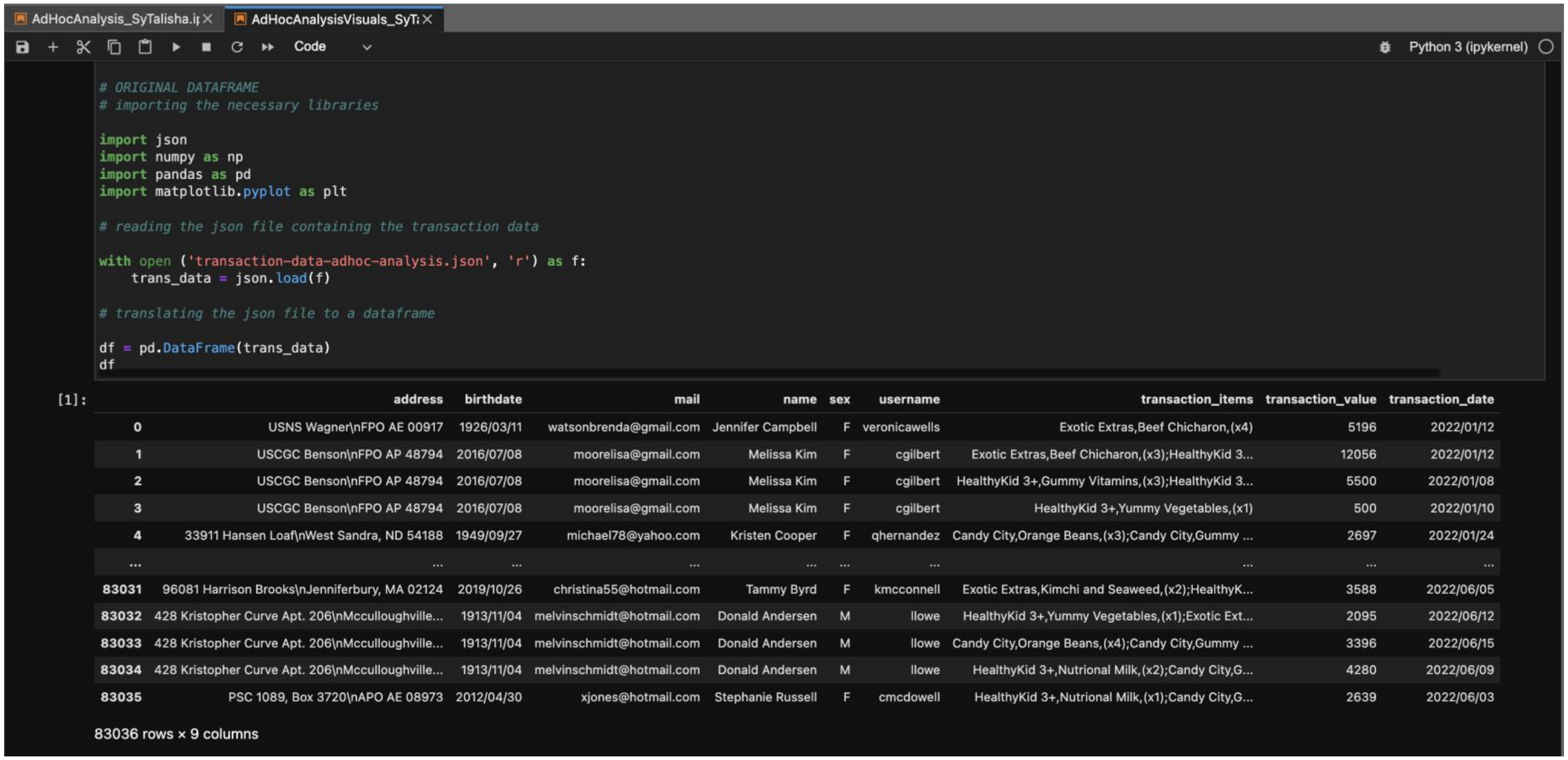
Talisha Isabella L. Sy
ITMGT 25.03-B
Ad Hoc Analysis Visuals

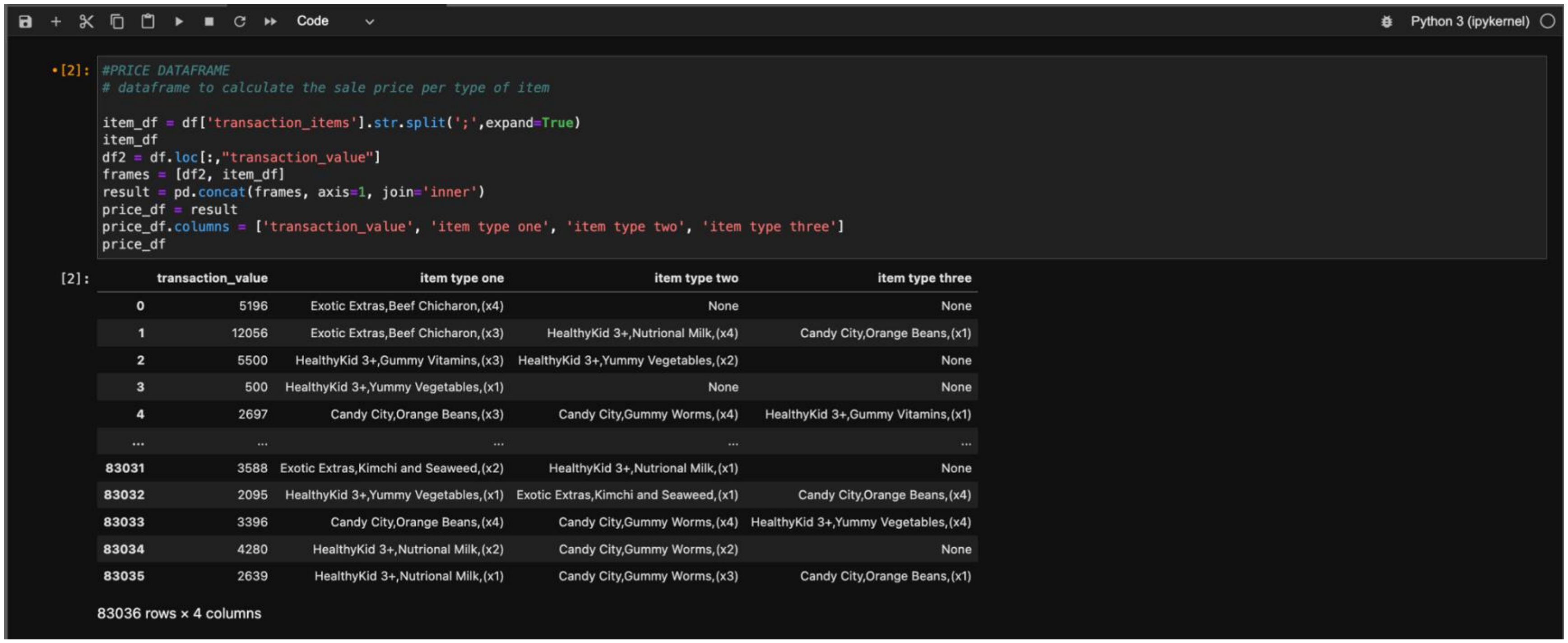
The following visuals below are the necessary tables and graphs for the Ad Hoc Analysis. They are screenshots from the AdHocAnalysisVisuals_SyTalisha.ipynb file. Please note that there are some dataframes or pivot tables that are only available in the AdHocAnalysisVisuals_SyTalisha.ipynb file. Those that are not in this file are just dataframes or pivot tables which show a better step-by-step process of how I was able to arrive to the official dataframes and pivot tables (the ones found in this document).

If you wish to see all the visuals, please access the AdHocAnalysisVisuals_SyTalisha.ipynb file from the GitHub repository link. Thank you so much!



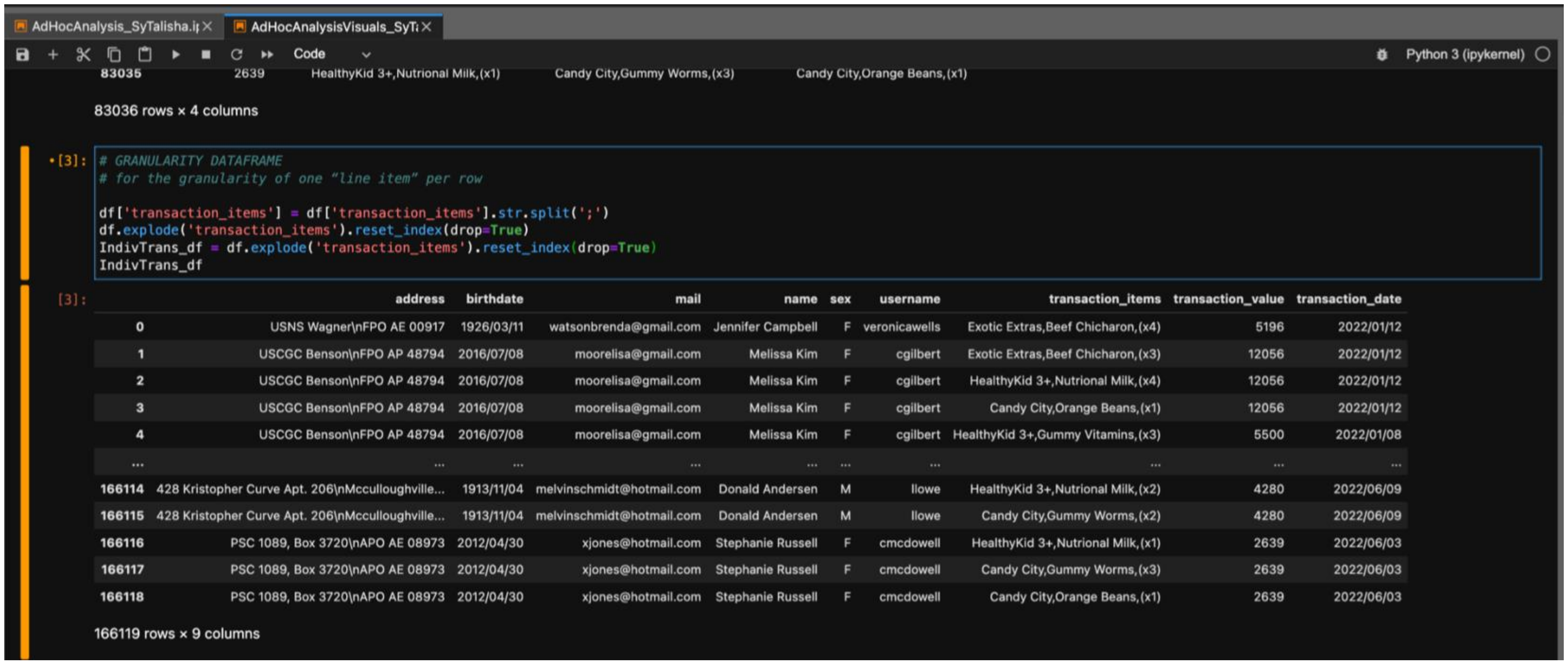
```python
# ORIGINAL DATAFRAME
# importing the necessary libraries

import json
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt

# reading the json file containing the transaction data

with open ('transaction-data-adhoc-analysis.json', 'r') as f:
    trans_data = json.load(f)

# translating the json file to a dataframe

df = pd.DataFrame(trans_data)
df
```

```
[1]:
                                          address   birthdate                       mail               name  sex     username                                     transaction_items  transaction_value  transaction_date
0                       USNS Wagner\nFPO AE 00917  1926/03/11    watsonbrenda@gmail.com   Jennifer Campbell   F  veronicawells                          Exotic Extras,Beef Chicharon,(x4)               5196        2022/01/12
1                      USCGC Benson\nFPO AP 48794  2016/07/08       moorelisa@gmail.com         Melissa Kim   F       cgilbert     Exotic Extras,Beef Chicharon,(x3);HealthyKid 3...              12056        2022/01/12
2                      USCGC Benson\nFPO AP 48794  2016/07/08       moorelisa@gmail.com         Melissa Kim   F       cgilbert   HealthyKid 3+,Gummy Vitamins,(x3);HealthyKid 3...               5500        2022/01/08
3                      USCGC Benson\nFPO AP 48794  2016/07/08       moorelisa@gmail.com         Melissa Kim   F       cgilbert                  HealthyKid 3+,Yummy Vegetables,(x1)                500        2022/01/10
4           33911 Hansen Loaf\nWest Sandra, ND 54188  1949/09/27       michael78@yahoo.com      Kristen Cooper   F     qhernandez   Candy City,Orange Beans,(x3);Candy City,Gummy ...               2697        2022/01/24
...                                           ...         ...                       ...                 ...  ...          ...                                                 ...                ...               ...
83031  96081 Harrison Brooks\nJenniferbury, MA 02124  2019/10/26   christina55@hotmail.com          Tammy Byrd   F     kmcconnell     Exotic Extras,Kimchi and Seaweed,(x2);HealthyK...               3588        2022/06/05
83032  428 Kristopher Curve Apt. 206\nMcculloughville...  1913/11/04  melvinschmidt@hotmail.com     Donald Andersen   M          llowe     HealthyKid 3+,Yummy Vegetables,(x1);Exotic Ext...               2095        2022/06/12
83033  428 Kristopher Curve Apt. 206\nMcculloughville...  1913/11/04  melvinschmidt@hotmail.com     Donald Andersen   M          llowe   Candy City,Orange Beans,(x4);Candy City,Gummy ...               3396        2022/06/15
83034  428 Kristopher Curve Apt. 206\nMcculloughville...  1913/11/04  melvinschmidt@hotmail.com     Donald Andersen   M          llowe     HealthyKid 3+,Nutrional Milk,(x2);Candy City,G...               4280        2022/06/09
83035          PSC 1089, Box 3720\nAPO AE 08973  2012/04/30        xjones@hotmail.com    Stephanie Russell   F      cmcdowell     HealthyKid 3+,Nutrional Milk,(x1);Candy City,G...               2639        2022/06/03

83036 rows × 9 columns
```



```
•[2]: #PRICE DATAFRAME
      # dataframe to calculate the sale price per type of item

      item_df = df['transaction_items'].str.split(';',expand=True)
      item_df
      df2 = df.loc[:,"transaction_value"]
      frames = [df2, item_df]
      result = pd.concat(frames, axis=1, join='inner')
      price_df = result
      price_df.columns = ['transaction_value', 'item type one', 'item type two', 'item type three']
      price_df
```

```
[2]:
       transaction_value                         item type one                          item type two                      item type three
     0              5196     Exotic Extras,Beef Chicharon,(x4)                                   None                                 None
     1             12056     Exotic Extras,Beef Chicharon,(x3)      HealthyKid 3+,Nutrional Milk,(x4)       Candy City,Orange Beans,(x1)
     2              5500    HealthyKid 3+,Gummy Vitamins,(x3)   HealthyKid 3+,Yummy Vegetables,(x2)                                 None
     3               500  HealthyKid 3+,Yummy Vegetables,(x1)                                   None                                 None
     4              2697         Candy City,Orange Beans,(x3)          Candy City,Gummy Worms,(x4)    HealthyKid 3+,Gummy Vitamins,(x1)
   ...               ...                                   ...                                    ...                                  ...
 83031              3588 Exotic Extras,Kimchi and Seaweed,(x2)      HealthyKid 3+,Nutrional Milk,(x1)                                 None
 83032              2095  HealthyKid 3+,Yummy Vegetables,(x1) Exotic Extras,Kimchi and Seaweed,(x1)       Candy City,Orange Beans,(x4)
 83033              3396         Candy City,Orange Beans,(x4)          Candy City,Gummy Worms,(x4)  HealthyKid 3+,Yummy Vegetables,(x4)
 83034              4280    HealthyKid 3+,Nutrional Milk,(x2)          Candy City,Gummy Worms,(x2)                                 None
 83035              2639    HealthyKid 3+,Nutrional Milk,(x1)          Candy City,Gummy Worms,(x3)         Candy City,Orange Beans,(x1)

83036 rows × 4 columns
```



```
83035        2639        HealthyKid 3+,Nutrional Milk,(x1)        Candy City,Gummy Worms,(x3)        Candy City,Orange Beans,(x1)
```

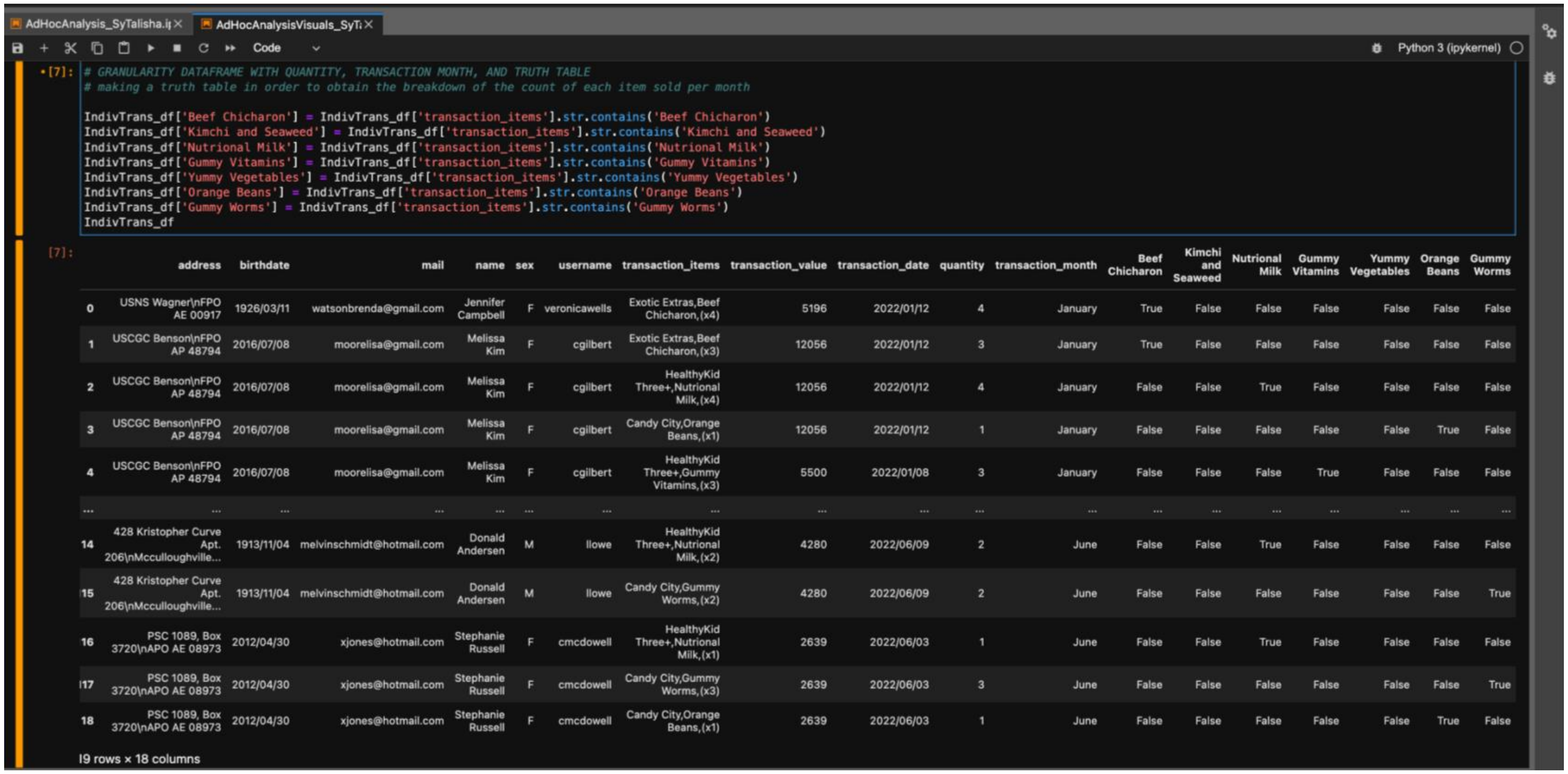
83036 rows × 4 columns

```
•[3]: # GRANULARITY DATAFRAME
      # for the granularity of one "line item" per row

      df['transaction_items'] = df['transaction_items'].str.split(';')
      df.explode('transaction_items').reset_index(drop=True)
      IndivTrans_df = df.explode('transaction_items').reset_index(drop=True)
      IndivTrans_df
```

[3]:

	address	birthdate	mail	name	sex	username	transaction_items	transaction_value	transaction_date
0	USNS Wagner\nFPO AE 00917	1926/03/11	watsonbrenda@gmail.com	Jennifer Campbell	F	veronicawells	Exotic Extras,Beef Chicharon,(x4)	5196	2022/01/12
1	USCGC Benson\nFPO AP 48794	2016/07/08	moorelisa@gmail.com	Melissa Kim	F	cgilbert	Exotic Extras,Beef Chicharon,(x3)	12056	2022/01/12
2	USCGC Benson\nFPO AP 48794	2016/07/08	moorelisa@gmail.com	Melissa Kim	F	cgilbert	HealthyKid 3+,Nutrional Milk,(x4)	12056	2022/01/12
3	USCGC Benson\nFPO AP 48794	2016/07/08	moorelisa@gmail.com	Melissa Kim	F	cgilbert	Candy City,Orange Beans,(x1)	12056	2022/01/12
4	USCGC Benson\nFPO AP 48794	2016/07/08	moorelisa@gmail.com	Melissa Kim	F	cgilbert	HealthyKid 3+,Gummy Vitamins,(x3)	5500	2022/01/08
...	...	...	...	...	...	...	...	...	...
166114	428 Kristopher Curve Apt. 206\nMcculloughville...	1913/11/04	melvinschmidt@hotmail.com	Donald Andersen	M	llowe	HealthyKid 3+,Nutrional Milk,(x2)	4280	2022/06/09
166115	428 Kristopher Curve Apt. 206\nMcculloughville...	1913/11/04	melvinschmidt@hotmail.com	Donald Andersen	M	llowe	Candy City,Gummy Worms,(x2)	4280	2022/06/09
166116	PSC 1089, Box 3720\nAPO AE 08973	2012/04/30	xjones@hotmail.com	Stephanie Russell	F	cmcdowell	HealthyKid 3+,Nutrional Milk,(x1)	2639	2022/06/03
166117	PSC 1089, Box 3720\nAPO AE 08973	2012/04/30	xjones@hotmail.com	Stephanie Russell	F	cmcdowell	Candy City,Gummy Worms,(x3)	2639	2022/06/03
166118	PSC 1089, Box 3720\nAPO AE 08973	2012/04/30	xjones@hotmail.com	Stephanie Russell	F	cmcdowell	Candy City,Orange Beans,(x1)	2639	2022/06/03

166119 rows × 9 columns

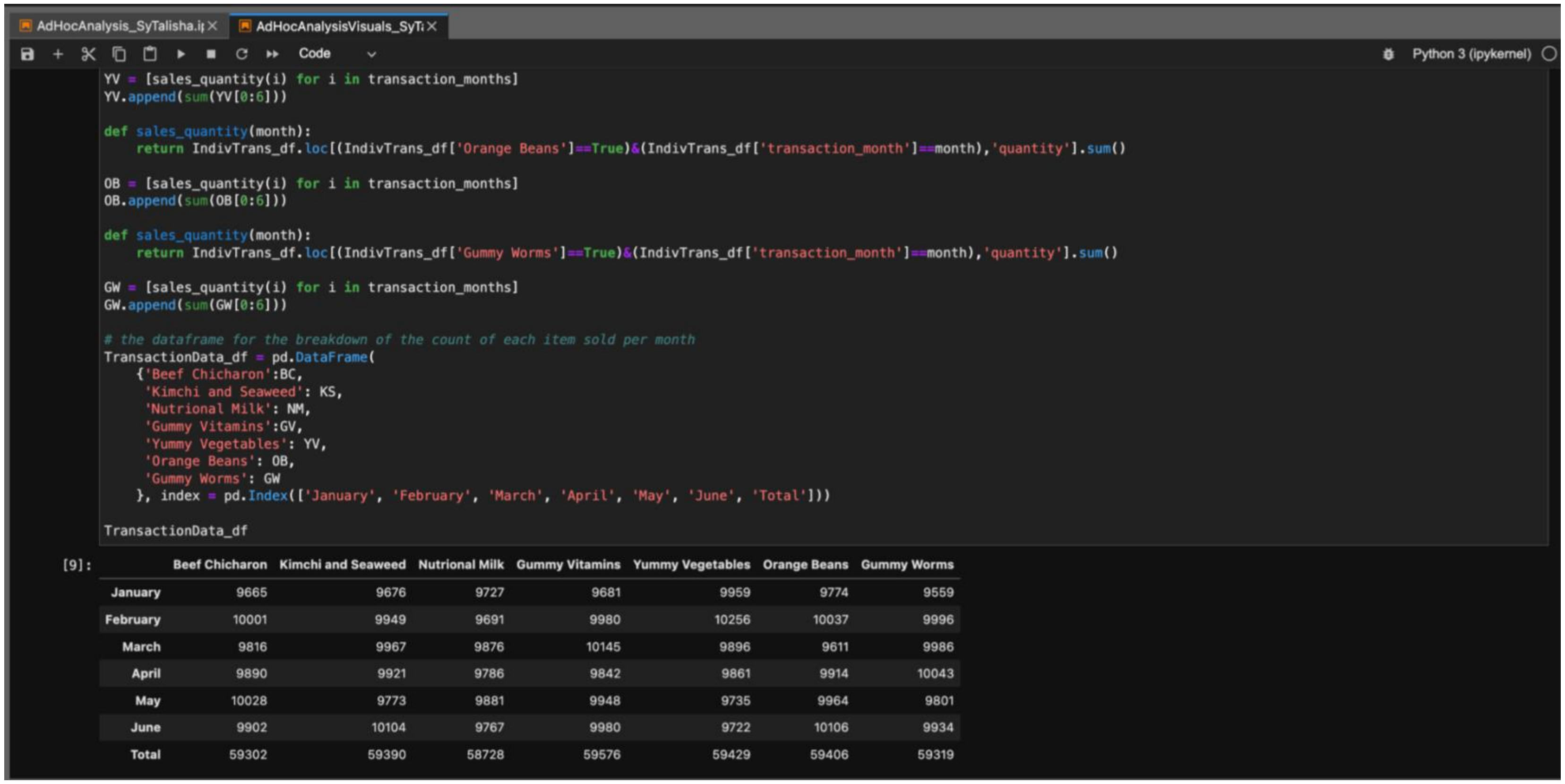


```
[7]: # GRANULARITY DATAFRAME WITH QUANTITY, TRANSACTION MONTH, AND TRUTH TABLE
     # making a truth table in order to obtain the breakdown of the count of each item sold per month

     IndivTrans_df['Beef Chicharon'] = IndivTrans_df['transaction_items'].str.contains('Beef Chicharon')
     IndivTrans_df['Kimchi and Seaweed'] = IndivTrans_df['transaction_items'].str.contains('Kimchi and Seaweed')
     IndivTrans_df['Nutrional Milk'] = IndivTrans_df['transaction_items'].str.contains('Nutrional Milk')
     IndivTrans_df['Gummy Vitamins'] = IndivTrans_df['transaction_items'].str.contains('Gummy Vitamins')
     IndivTrans_df['Yummy Vegetables'] = IndivTrans_df['transaction_items'].str.contains('Yummy Vegetables')
     IndivTrans_df['Orange Beans'] = IndivTrans_df['transaction_items'].str.contains('Orange Beans')
     IndivTrans_df['Gummy Worms'] = IndivTrans_df['transaction_items'].str.contains('Gummy Worms')
     IndivTrans_df
```

[7]:

	address	birthdate	mail	name	sex	username	transaction_items	transaction_value	transaction_date	quantity	transaction_month	Beef Chicharon	Kimchi and Seaweed	Nutrional Milk	Gummy Vitamins	Yummy Vegetables	Orange Beans	Gummy Worms
0	USNS Wagner\nFPO AE 00917	1926/03/11	watsonbrenda@gmail.com	Jennifer Campbell	F	veronicawells	Exotic Extras,Beef Chicharon,(x4)	5196	2022/01/12	4	January	True	False	False	False	False	False	False
1	USCGC Benson\nFPO AP 48794	2016/07/08	moorelisa@gmail.com	Melissa Kim	F	cgilbert	Exotic Extras,Beef Chicharon,(x3)	12056	2022/01/12	3	January	True	False	False	False	False	False	False
2	USCGC Benson\nFPO AP 48794	2016/07/08	moorelisa@gmail.com	Melissa Kim	F	cgilbert	HealthyKid Three+,Nutrional Milk,(x4)	12056	2022/01/12	4	January	False	False	True	False	False	False	False
3	USCGC Benson\nFPO AP 48794	2016/07/08	moorelisa@gmail.com	Melissa Kim	F	cgilbert	Candy City,Orange Beans,(x1)	12056	2022/01/12	1	January	False	False	False	False	False	True	False
4	USCGC Benson\nFPO AP 48794	2016/07/08	moorelisa@gmail.com	Melissa Kim	F	cgilbert	HealthyKid Three+,Gummy Vitamins,(x3)	5500	2022/01/08	3	January	False	False	False	True	False	False	False
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	428 Kristopher Curve Apt. 206\nMcculloughville...	1913/11/04	melvinschmidt@hotmail.com	Donald Andersen	M	llowe	HealthyKid Three+,Nutrional Milk,(x2)	4280	2022/06/09	2	June	False	False	True	False	False	False	False
15	428 Kristopher Curve Apt. 206\nMcculloughville...	1913/11/04	melvinschmidt@hotmail.com	Donald Andersen	M	llowe	Candy City,Gummy Worms,(x2)	4280	2022/06/09	2	June	False	False	False	False	False	False	True
16	PSC 1089, Box 3720\nAPO AE 08973	2012/04/30	xjones@hotmail.com	Stephanie Russell	F	cmcdowell	HealthyKid Three+,Nutrional Milk,(x1)	2639	2022/06/03	1	June	False	False	True	False	False	False	False
17	PSC 1089, Box 3720\nAPO AE 08973	2012/04/30	xjones@hotmail.com	Stephanie Russell	F	cmcdowell	Candy City,Gummy Worms,(x3)	2639	2022/06/03	3	June	False	False	False	False	False	False	True
18	PSC 1089, Box 3720\nAPO AE 08973	2012/04/30	xjones@hotmail.com	Stephanie Russell	F	cmcdowell	Candy City,Orange Beans,(x1)	2639	2022/06/03	1	June	False	False	False	False	False	True	False

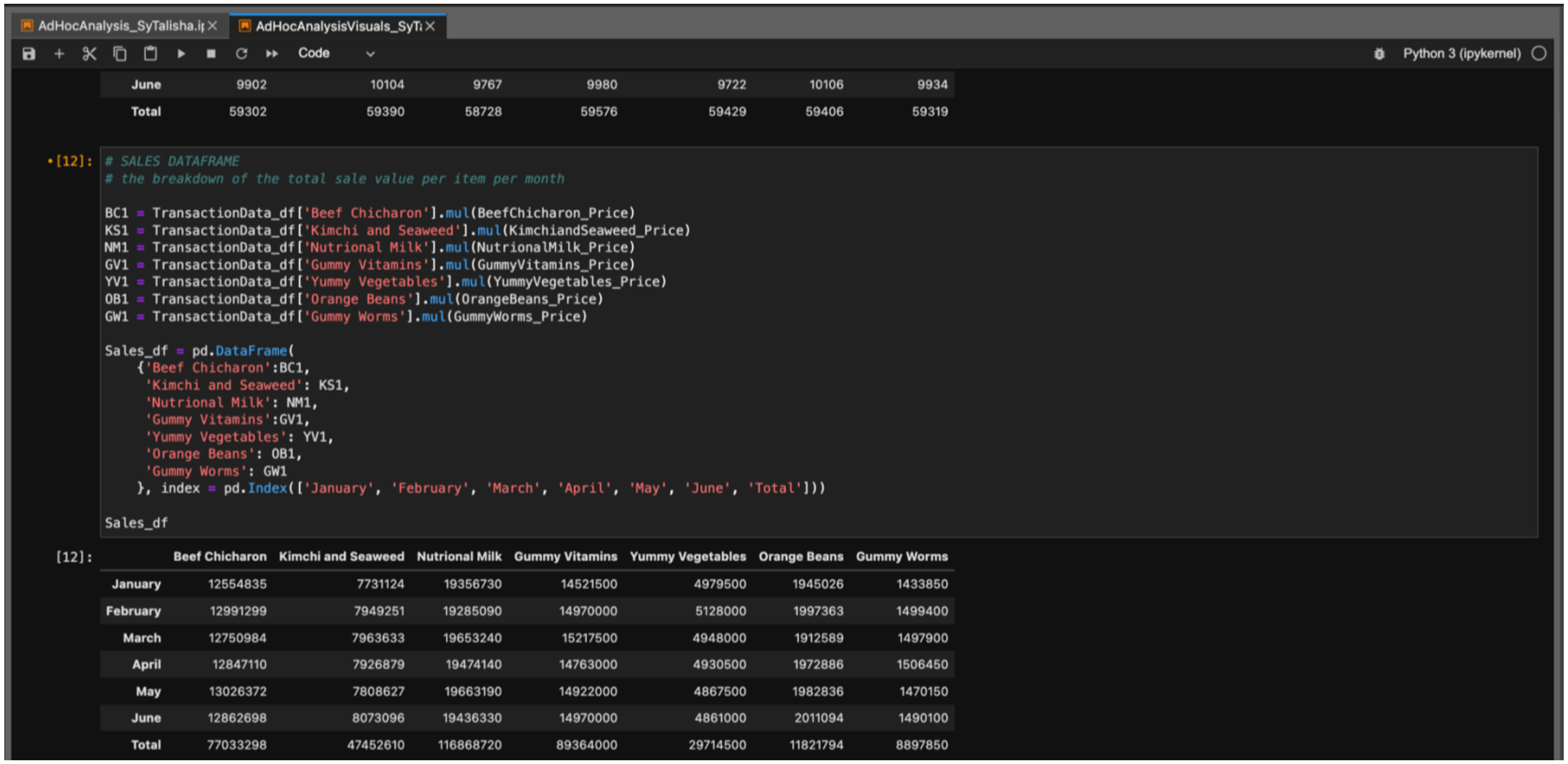
19 rows × 18 columns



```python
YV = [sales_quantity(i) for i in transaction_months]
YV.append(sum(YV[0:6]))

def sales_quantity(month):
    return IndivTrans_df.loc[(IndivTrans_df['Orange Beans']==True)&(IndivTrans_df['transaction_month']==month),'quantity'].sum()

OB = [sales_quantity(i) for i in transaction_months]
OB.append(sum(OB[0:6]))

def sales_quantity(month):
    return IndivTrans_df.loc[(IndivTrans_df['Gummy Worms']==True)&(IndivTrans_df['transaction_month']==month),'quantity'].sum()

GW = [sales_quantity(i) for i in transaction_months]
GW.append(sum(GW[0:6]))

# the dataframe for the breakdown of the count of each item sold per month
TransactionData_df = pd.DataFrame(
    {'Beef Chicharon':BC,
     'Kimchi and Seaweed': KS,
     'Nutrional Milk': NM,
     'Gummy Vitamins':GV,
     'Yummy Vegetables': YV,
     'Orange Beans': OB,
     'Gummy Worms': GW
    }, index = pd.Index(['January', 'February', 'March', 'April', 'May', 'June', 'Total']))

TransactionData_df
```

[9]:

	Beef Chicharon	Kimchi and Seaweed	Nutrional Milk	Gummy Vitamins	Yummy Vegetables	Orange Beans	Gummy Worms
January	9665	9676	9727	9681	9959	9774	9559
February	10001	9949	9691	9980	10256	10037	9996
March	9816	9967	9876	10145	9896	9611	9986
April	9890	9921	9786	9842	9861	9914	10043
May	10028	9773	9881	9948	9735	9964	9801
June	9902	10104	9767	9980	9722	10106	9934
Total	59302	59390	58728	59576	59429	59406	59319

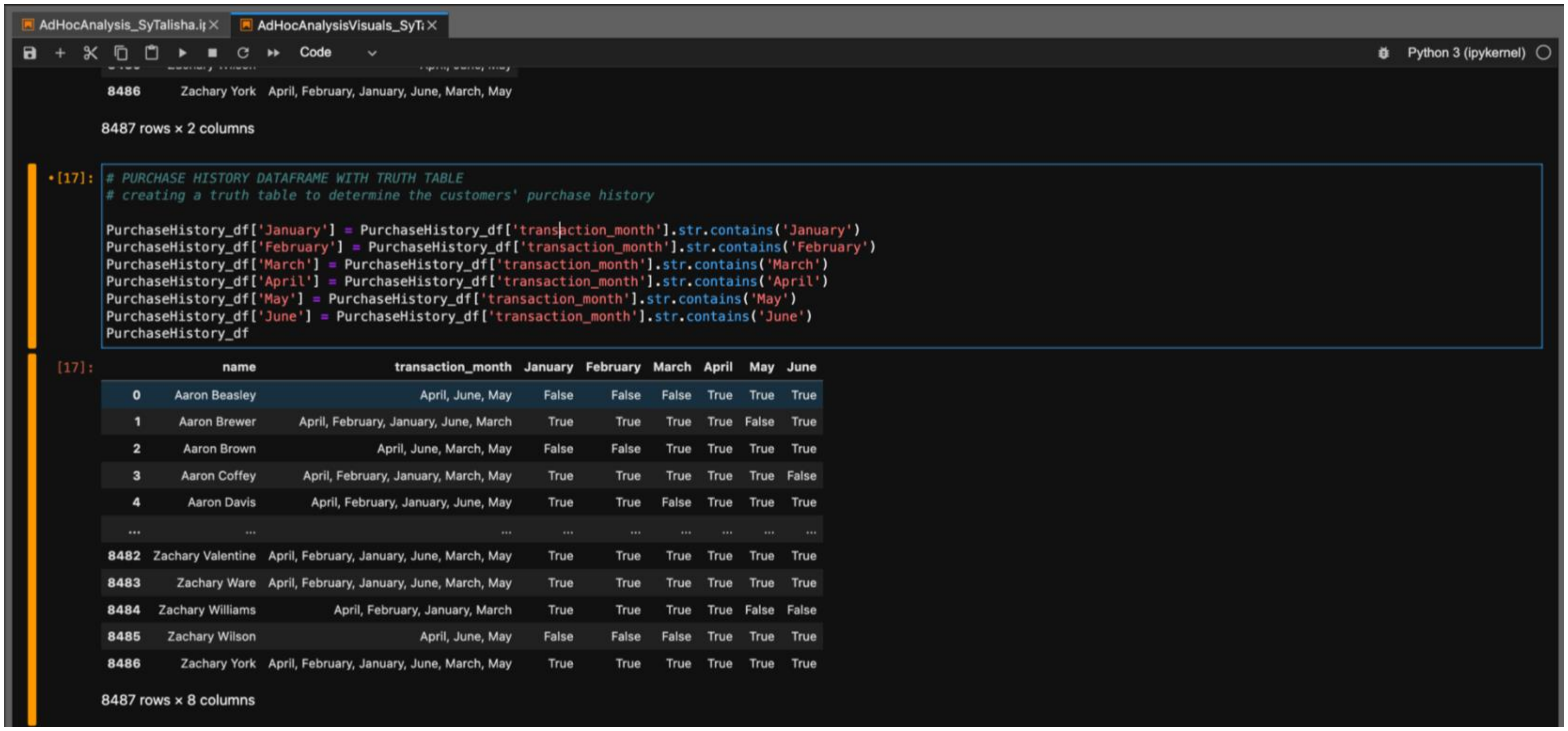


June	9902	10104	9767	9980	9722	10106	9934
Total	59302	59390	58728	59576	59429	59406	59319

•[12]:
```
# SALES DATAFRAME
# the breakdown of the total sale value per item per month

BC1 = TransactionData_df['Beef Chicharon'].mul(BeefChicharon_Price)
KS1 = TransactionData_df['Kimchi and Seaweed'].mul(KimchiandSeaweed_Price)
NM1 = TransactionData_df['Nutrional Milk'].mul(NutrionalMilk_Price)
GV1 = TransactionData_df['Gummy Vitamins'].mul(GummyVitamins_Price)
YV1 = TransactionData_df['Yummy Vegetables'].mul(YummyVegetables_Price)
OB1 = TransactionData_df['Orange Beans'].mul(OrangeBeans_Price)
GW1 = TransactionData_df['Gummy Worms'].mul(GummyWorms_Price)

Sales_df = pd.DataFrame(
    {'Beef Chicharon':BC1,
     'Kimchi and Seaweed': KS1,
     'Nutrional Milk': NM1,
     'Gummy Vitamins':GV1,
     'Yummy Vegetables': YV1,
     'Orange Beans': OB1,
     'Gummy Worms': GW1
    }, index = pd.Index(['January', 'February', 'March', 'April', 'May', 'June', 'Total']))

Sales_df
```

[12]:

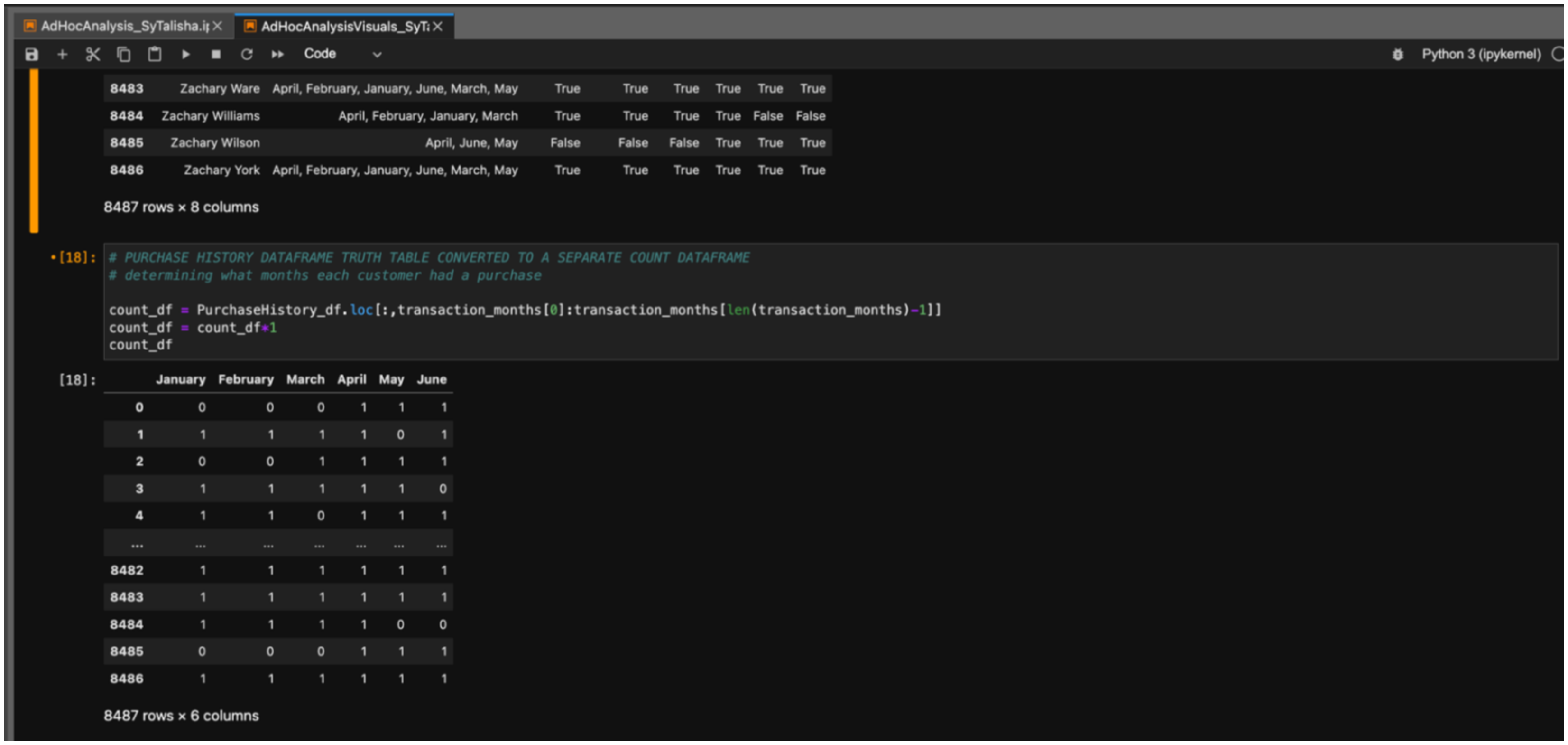
	Beef Chicharon	Kimchi and Seaweed	Nutrional Milk	Gummy Vitamins	Yummy Vegetables	Orange Beans	Gummy Worms
January	12554835	7731124	19356730	14521500	4979500	1945026	1433850
February	12991299	7949251	19285090	14970000	5128000	1997363	1499400
March	12750984	7963633	19653240	15217500	4948000	1912589	1497900
April	12847110	7926879	19474140	14763000	4930500	1972886	1506450
May	13026372	7808627	19663190	14922000	4867500	1982836	1470150
June	12862698	8073096	19436330	14970000	4861000	2011094	1490100
Total	77033298	47452610	116868720	89364000	29714500	11821794	8897850



```
8486     Zachary York  April, February, January, June, March, May

8487 rows × 2 columns
```

```
[17]:
# PURCHASE HISTORY DATAFRAME WITH TRUTH TABLE
# creating a truth table to determine the customers' purchase history

PurchaseHistory_df['January'] = PurchaseHistory_df['transaction_month'].str.contains('January')
PurchaseHistory_df['February'] = PurchaseHistory_df['transaction_month'].str.contains('February')
PurchaseHistory_df['March'] = PurchaseHistory_df['transaction_month'].str.contains('March')
PurchaseHistory_df['April'] = PurchaseHistory_df['transaction_month'].str.contains('April')
PurchaseHistory_df['May'] = PurchaseHistory_df['transaction_month'].str.contains('May')
PurchaseHistory_df['June'] = PurchaseHistory_df['transaction_month'].str.contains('June')
PurchaseHistory_df
```

```
[17]:
                  name                           transaction_month  January  February  March  April    May   June
0        Aaron Beasley                             April, June, May    False     False  False   True   True   True
1         Aaron Brewer       April, February, January, June, March     True      True   True   True  False   True
2          Aaron Brown                      April, June, March, May    False     False   True   True   True   True
3         Aaron Coffey        April, February, January, March, May     True      True   True   True   True  False
4          Aaron Davis         April, February, January, June, May     True      True  False   True   True   True
...                ...                                          ...      ...       ...    ...    ...    ...    ...
8482  Zachary Valentine  April, February, January, June, March, May     True      True   True   True   True   True
8483      Zachary Ware  April, February, January, June, March, May     True      True   True   True   True   True
8484  Zachary Williams             April, February, January, March     True      True   True   True  False  False
8485    Zachary Wilson                             April, June, May    False     False  False   True   True   True
8486      Zachary York  April, February, January, June, March, May     True      True   True   True   True   True

8487 rows × 8 columns
```



8483	Zachary Ware	April, February, January, June, March, May	True	True	True	True	True	True
8484	Zachary Williams	April, February, January, March	True	True	True	True	False	False
8485	Zachary Wilson	April, June, May	False	False	False	True	True	True
8486	Zachary York	April, February, January, June, March, May	True	True	True	True	True	True

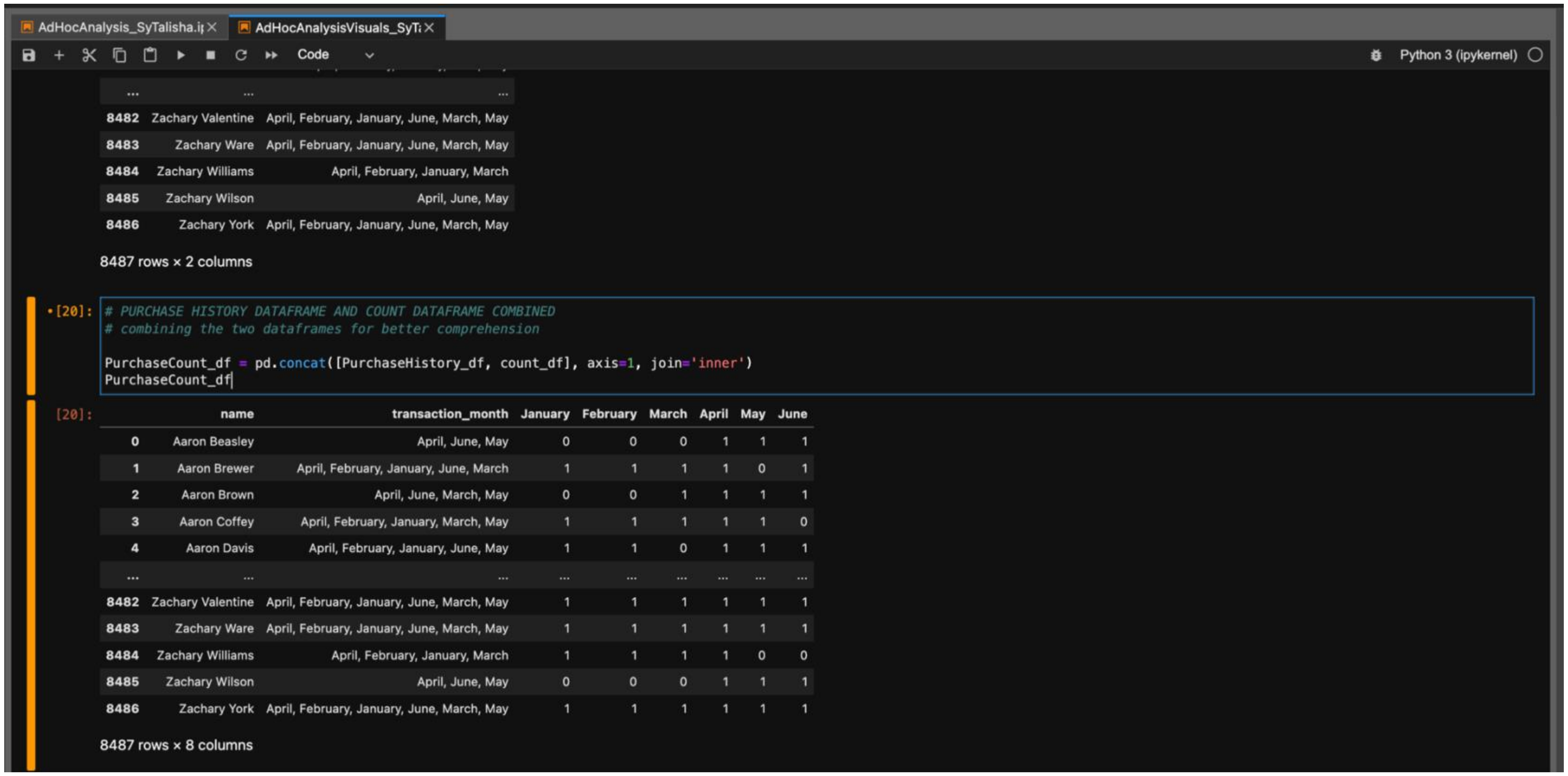
8487 rows × 8 columns

•[18]:
```
# PURCHASE HISTORY DATAFRAME TRUTH TABLE CONVERTED TO A SEPARATE COUNT DATAFRAME
# determining what months each customer had a purchase

count_df = PurchaseHistory_df.loc[:,transaction_months[0]:transaction_months[len(transaction_months)-1]]
count_df = count_df*1
count_df
```

[18]:

	January	February	March	April	May	June
0	0	0	0	1	1	1
1	1	1	1	1	0	1
2	0	0	1	1	1	1
3	1	1	1	1	1	0
4	1	1	0	1	1	1
...	...	...	...	...	...	...
8482	1	1	1	1	1	1
8483	1	1	1	1	1	1
8484	1	1	1	1	0	0
8485	0	0	0	1	1	1
8486	1	1	1	1	1	1

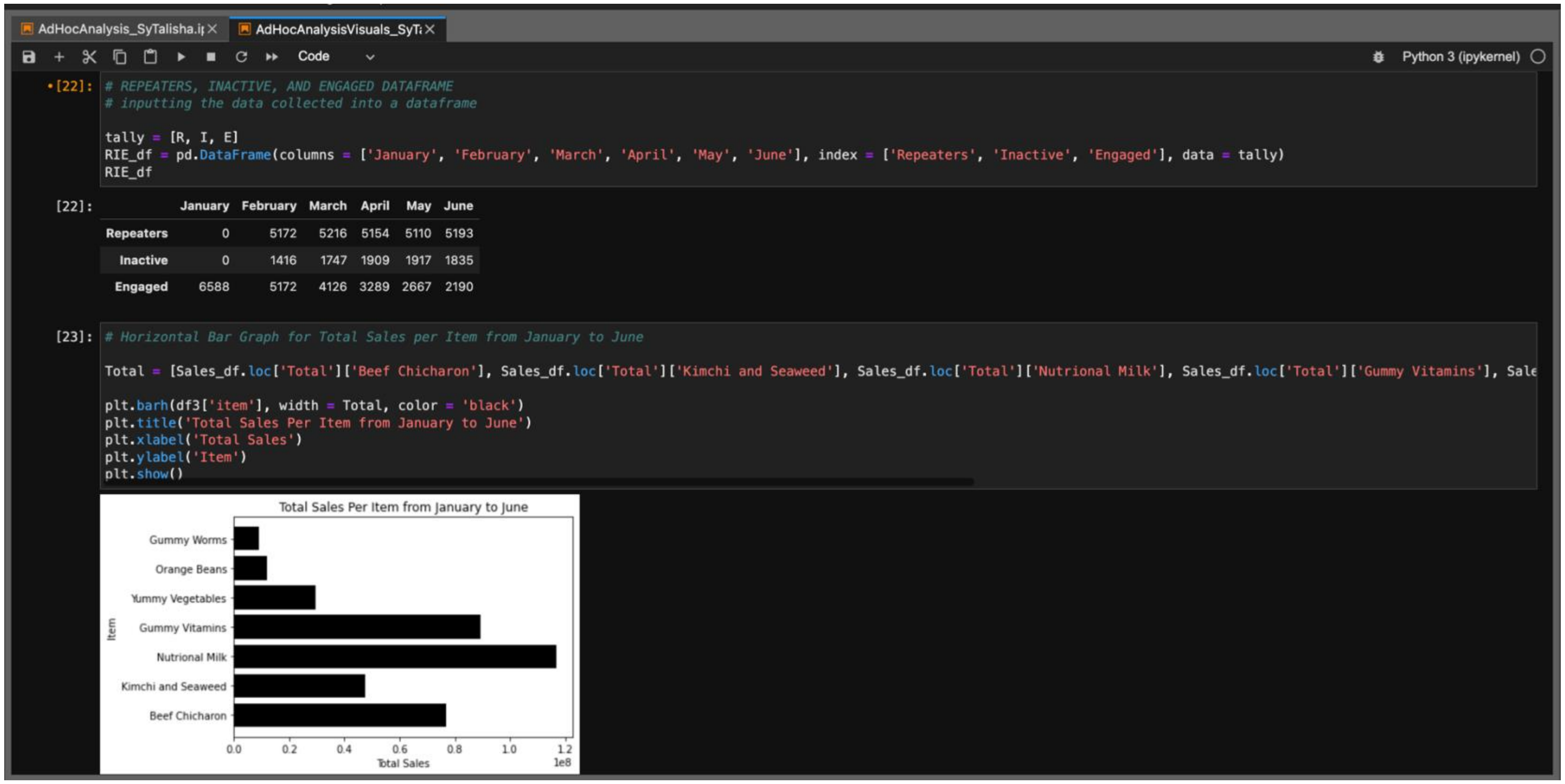
8487 rows × 6 columns



```
       ...               ...                                       ...
8482   Zachary Valentine  April, February, January, June, March, May
8483   Zachary Ware       April, February, January, June, March, May
8484   Zachary Williams   April, February, January, March
8485   Zachary Wilson     April, June, May
8486   Zachary York       April, February, January, June, March, May

8487 rows × 2 columns
```

```
•[20]: # PURCHASE HISTORY DATAFRAME AND COUNT DATAFRAME COMBINED
       # combining the two dataframes for better comprehension

       PurchaseCount_df = pd.concat([PurchaseHistory_df, count_df], axis=1, join='inner')
       PurchaseCount_df
```

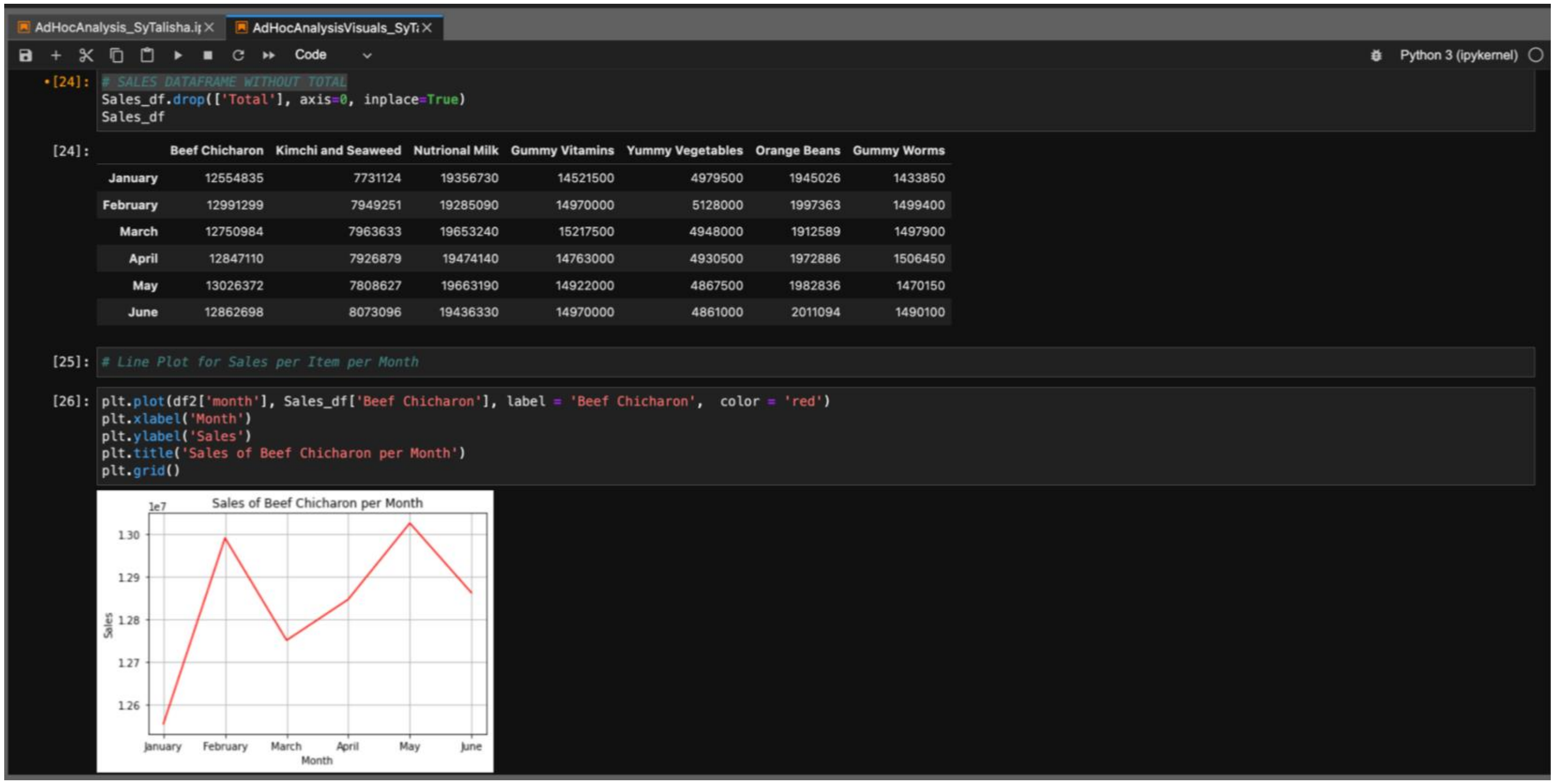
```
[20]:
                   name                           transaction_month  January  February  March  April  May  June
   0      Aaron Beasley                            April, June, May        0         0      0      1    1     1
   1       Aaron Brewer       April, February, January, June, March        1         1      1      1    0     1
   2        Aaron Brown                     April, June, March, May        0         0      1      1    1     1
   3       Aaron Coffey        April, February, January, March, May        1         1      1      1    1     0
   4        Aaron Davis         April, February, January, June, May        1         1      0      1    1     1
 ...                ...                                         ...      ...       ...    ...    ...  ...   ...
8482  Zachary Valentine  April, February, January, June, March, May        1         1      1      1    1     1
8483       Zachary Ware  April, February, January, June, March, May        1         1      1      1    1     1
8484   Zachary Williams             April, February, January, March        1         1      1      1    0     0
8485     Zachary Wilson                            April, June, May        0         0      0      1    1     1
8486       Zachary York  April, February, January, June, March, May        1         1      1      1    1     1

8487 rows × 8 columns
```



```
[22]:
# REPEATERS, INACTIVE, AND ENGAGED DATAFRAME
# inputting the data collected into a dataframe

tally = [R, I, E]
RIE_df = pd.DataFrame(columns = ['January', 'February', 'March', 'April', 'May', 'June'], index = ['Repeaters', 'Inactive', 'Engaged'], data = tally)
RIE_df
```

```
[22]:
           January  February  March  April  May   June
Repeaters        0      5172   5216   5154  5110  5193
 Inactive        0      1416   1747   1909  1917  1835
  Engaged     6588      5172   4126   3289  2667  2190
```

```
[23]:
# Horizontal Bar Graph for Total Sales per Item from January to June

Total = [Sales_df.loc['Total']['Beef Chicharon'], Sales_df.loc['Total']['Kimchi and Seaweed'], Sales_df.loc['Total']['Nutrional Milk'], Sales_df.loc['Total']['Gummy Vitamins'], Sale

plt.barh(df3['item'], width = Total, color = 'black')
plt.title('Total Sales Per Item from January to June')
plt.xlabel('Total Sales')
plt.ylabel('Item')
plt.show()
```



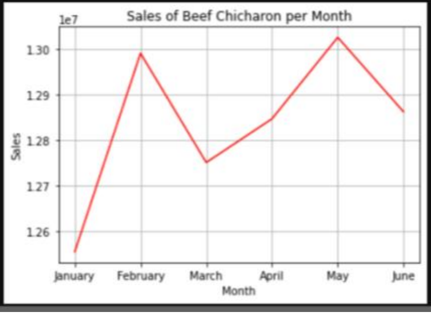
```
[24]: # SALES DATAFRAME WITHOUT TOTAL
      Sales_df.drop(['Total'], axis=0, inplace=True)
      Sales_df
```

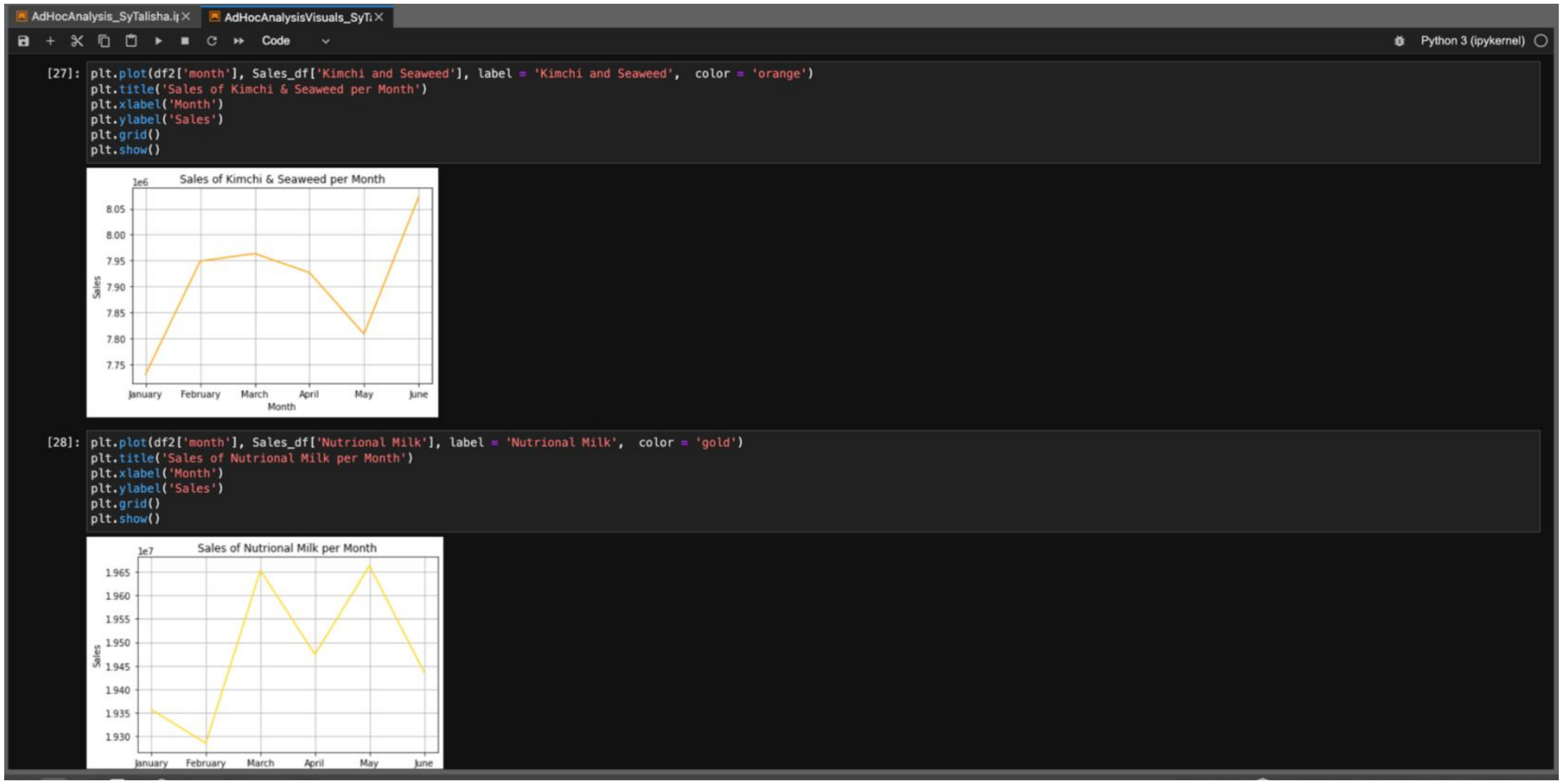
[24]:

	Beef Chicharon	Kimchi and Seaweed	Nutrional Milk	Gummy Vitamins	Yummy Vegetables	Orange Beans	Gummy Worms
January	12554835	7731124	19356730	14521500	4979500	1945026	1433850
February	12991299	7949251	19285090	14970000	5128000	1997363	1499400
March	12750984	7963633	19653240	15217500	4948000	1912589	1497900
April	12847110	7926879	19474140	14763000	4930500	1972886	1506450
May	13026372	7808627	19663190	14922000	4867500	1982836	1470150
June	12862698	8073096	19436330	14970000	4861000	2011094	1490100

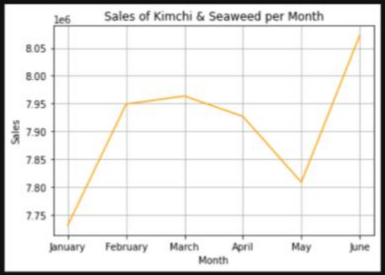
```
[25]: # Line Plot for Sales per Item per Month
```

```
[26]: plt.plot(df2['month'], Sales_df['Beef Chicharon'], label = 'Beef Chicharon',  color = 'red')
      plt.xlabel('Month')
      plt.ylabel('Sales')
      plt.title('Sales of Beef Chicharon per Month')
      plt.grid()
```

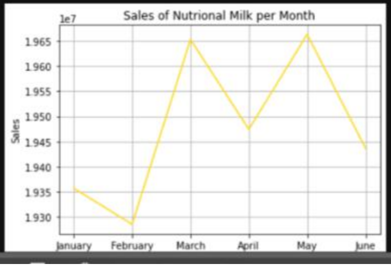




```
[27]: plt.plot(df2['month'], Sales_df['Kimchi and Seaweed'], label = 'Kimchi and Seaweed',  color = 'orange')
      plt.title('Sales of Kimchi & Seaweed per Month')
      plt.xlabel('Month')
      plt.ylabel('Sales')
      plt.grid()
      plt.show()
```



```
[28]: plt.plot(df2['month'], Sales_df['Nutrional Milk'], label = 'Nutrional Milk',  color = 'gold')
      plt.title('Sales of Nutrional Milk per Month')
      plt.xlabel('Month')
      plt.ylabel('Sales')
      plt.grid()
      plt.show()
```



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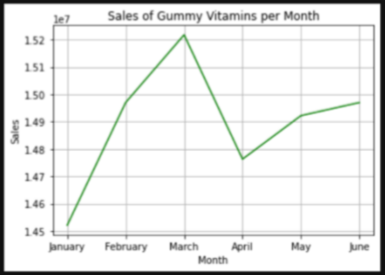
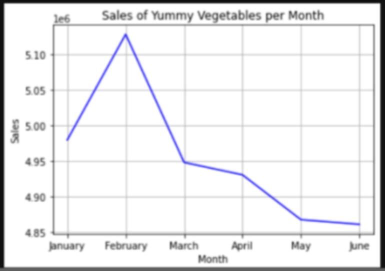
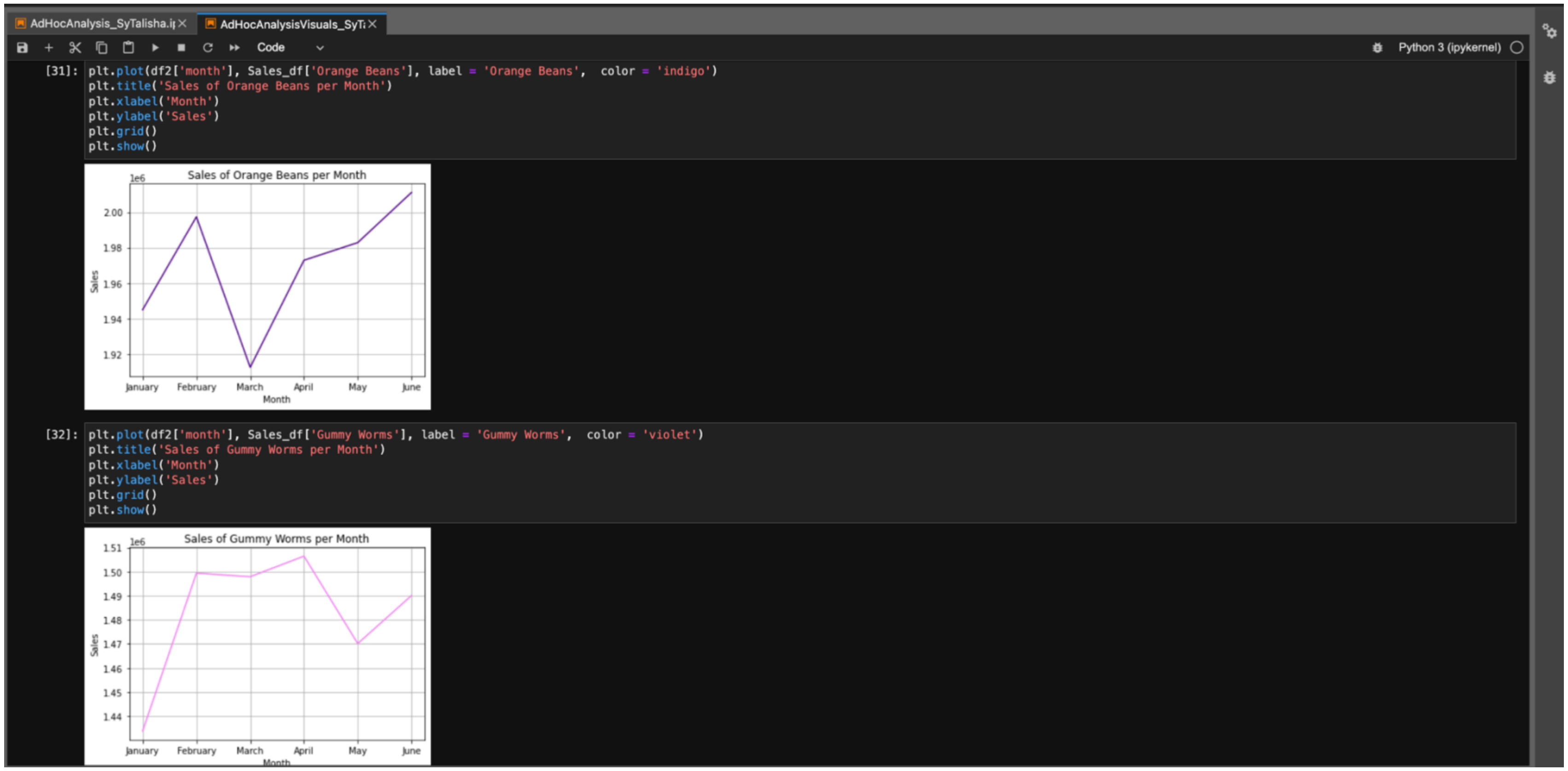
```
[29]: plt.plot(df2['month'], Sales_df['Gummy Vitamins'], label = 'Gummy Vitamins',  color = 'green')
      plt.title('Sales of Gummy Vitamins per Month')
      plt.xlabel('Month')
      plt.ylabel('Sales')
      plt.grid()
      plt.show()
```

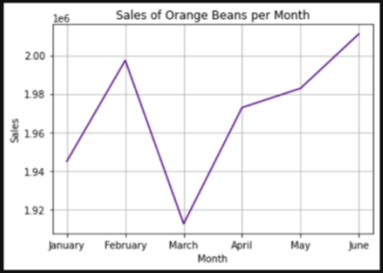


```
[30]: plt.plot(df2['month'], Sales_df['Yummy Vegetables'], label = 'Yummy Vegetables',  color = 'blue')
      plt.title('Sales of Yummy Vegetables per Month')
      plt.xlabel('Month')
      plt.ylabel('Sales')
      plt.grid()
      plt.show()
```

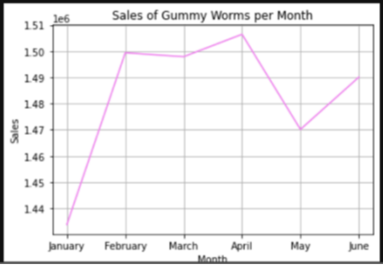


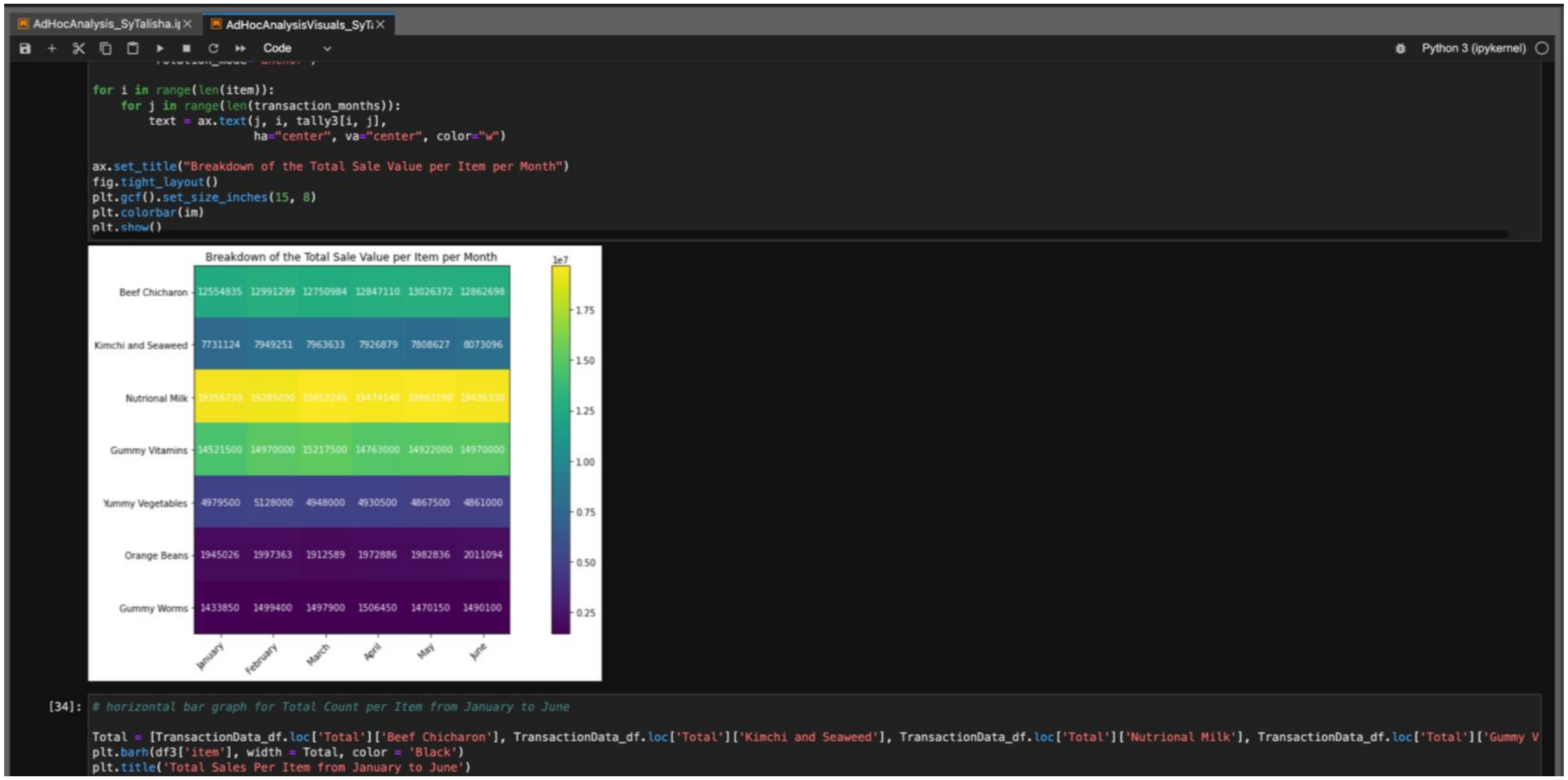


```
[31]: plt.plot(df2['month'], Sales_df['Orange Beans'], label = 'Orange Beans',  color = 'indigo')
      plt.title('Sales of Orange Beans per Month')
      plt.xlabel('Month')
      plt.ylabel('Sales')
      plt.grid()
      plt.show()
```

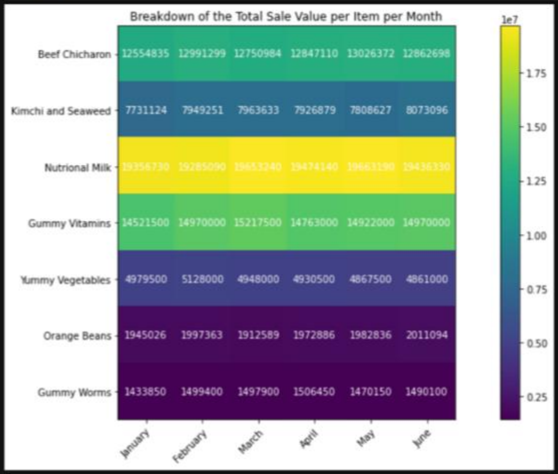


```
[32]: plt.plot(df2['month'], Sales_df['Gummy Worms'], label = 'Gummy Worms',  color = 'violet')
      plt.title('Sales of Gummy Worms per Month')
      plt.xlabel('Month')
      plt.ylabel('Sales')
      plt.grid()
      plt.show()
```



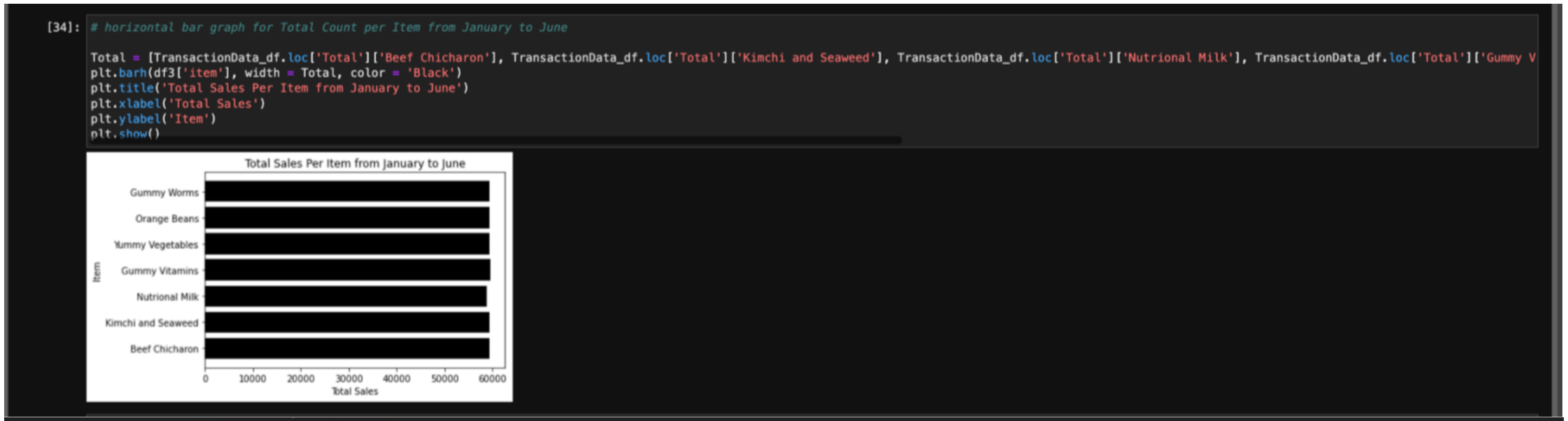


```python
for i in range(len(item)):
    for j in range(len(transaction_months)):
        text = ax.text(j, i, tally3[i, j],
                       ha="center", va="center", color="w")

ax.set_title("Breakdown of the Total Sale Value per Item per Month")
fig.tight_layout()
plt.gcf().set_size_inches(15, 8)
plt.colorbar(im)
plt.show()
```

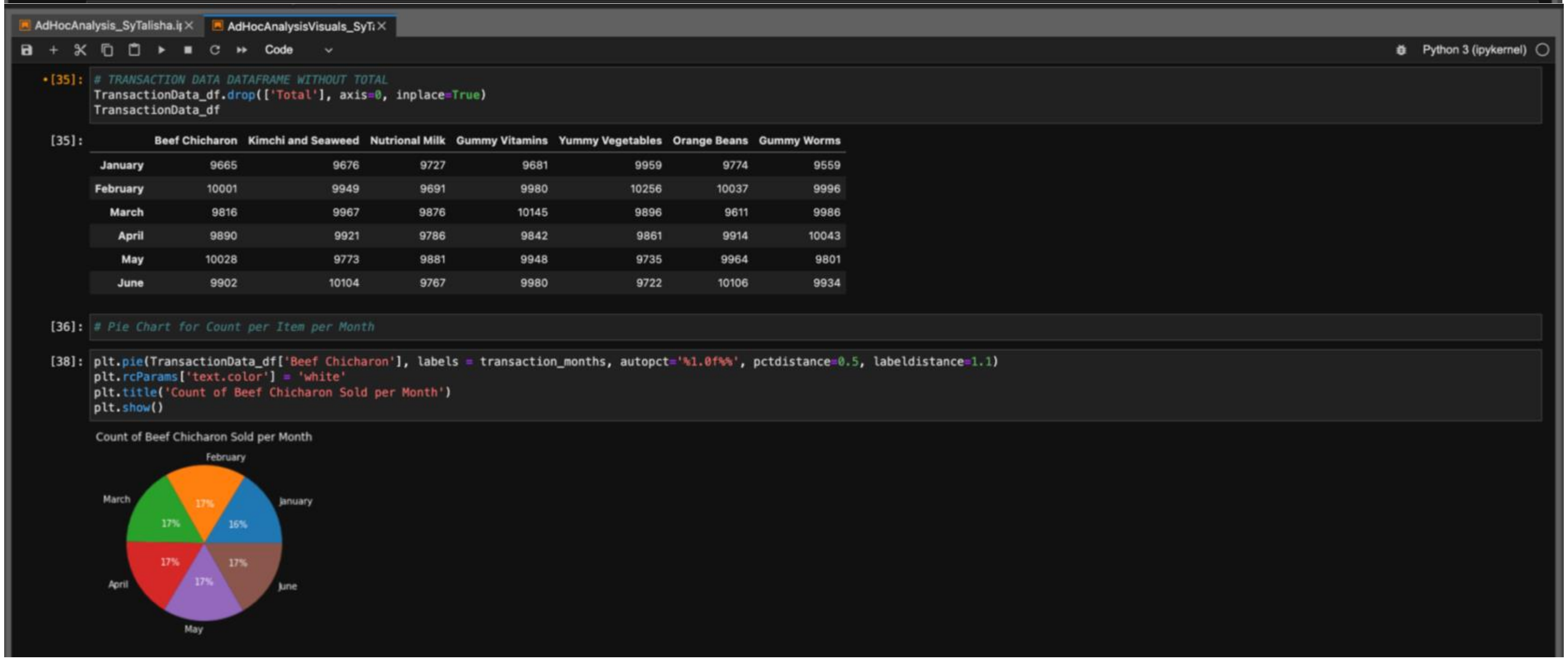


	January	February	March	April	May	June
Beef Chicharon	12554835	12991299	12750984	12847110	13026372	12862698
Kimchi and Seaweed	7731124	7949251	7963633	7926879	7808627	8073096
Nutrional Milk	19356730	19285090	19653240	19474140	19663190	19436330
Gummy Vitamins	14521500	14970000	15217500	14763000	14922000	14970000
Yummy Vegetables	4979500	5128000	4948000	4930500	4867500	4861000
Orange Beans	1945026	1997363	1912589	1972886	1982836	2011094
Gummy Worms	1433850	1499400	1497900	1506450	1470150	1490100

```python
[34]: # horizontal bar graph for Total Count per Item from January to June

Total = [TransactionData_df.loc['Total']['Beef Chicharon'], TransactionData_df.loc['Total']['Kimchi and Seaweed'], TransactionData_df.loc['Total']['Nutrional Milk'], TransactionData_df.loc['Total']['Gummy V
plt.barh(df3['item'], width = Total, color = 'Black')
plt.title('Total Sales Per Item from January to June')
```



```
[34]: # horizontal bar graph for Total Count per Item from January to June

      Total = [TransactionData_df.loc['Total']['Beef Chicharon'], TransactionData_df.loc['Total']['Kimchi and Seaweed'], TransactionData_df.loc['Total']['Nutrional Milk'], TransactionData_df.loc['Total']['Gummy V
      plt.barh(df3['item'], width = Total, color = 'Black')
      plt.title('Total Sales Per Item from January to June')
      plt.xlabel('Total Sales')
      plt.ylabel('Item')
      plt.show()
```

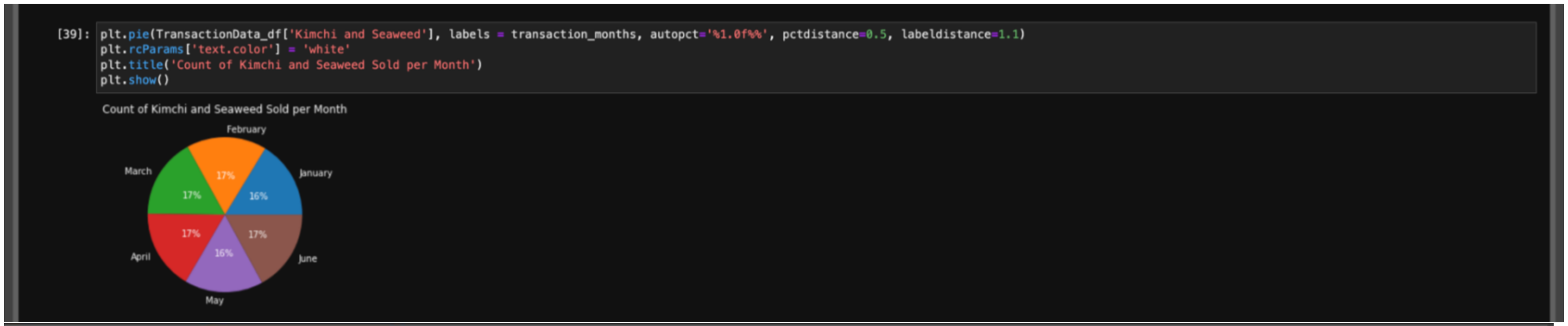


```
•[35]: # TRANSACTION DATA DATAFRAME WITHOUT TOTAL
       TransactionData_df.drop(['Total'], axis=0, inplace=True)
       TransactionData_df
```

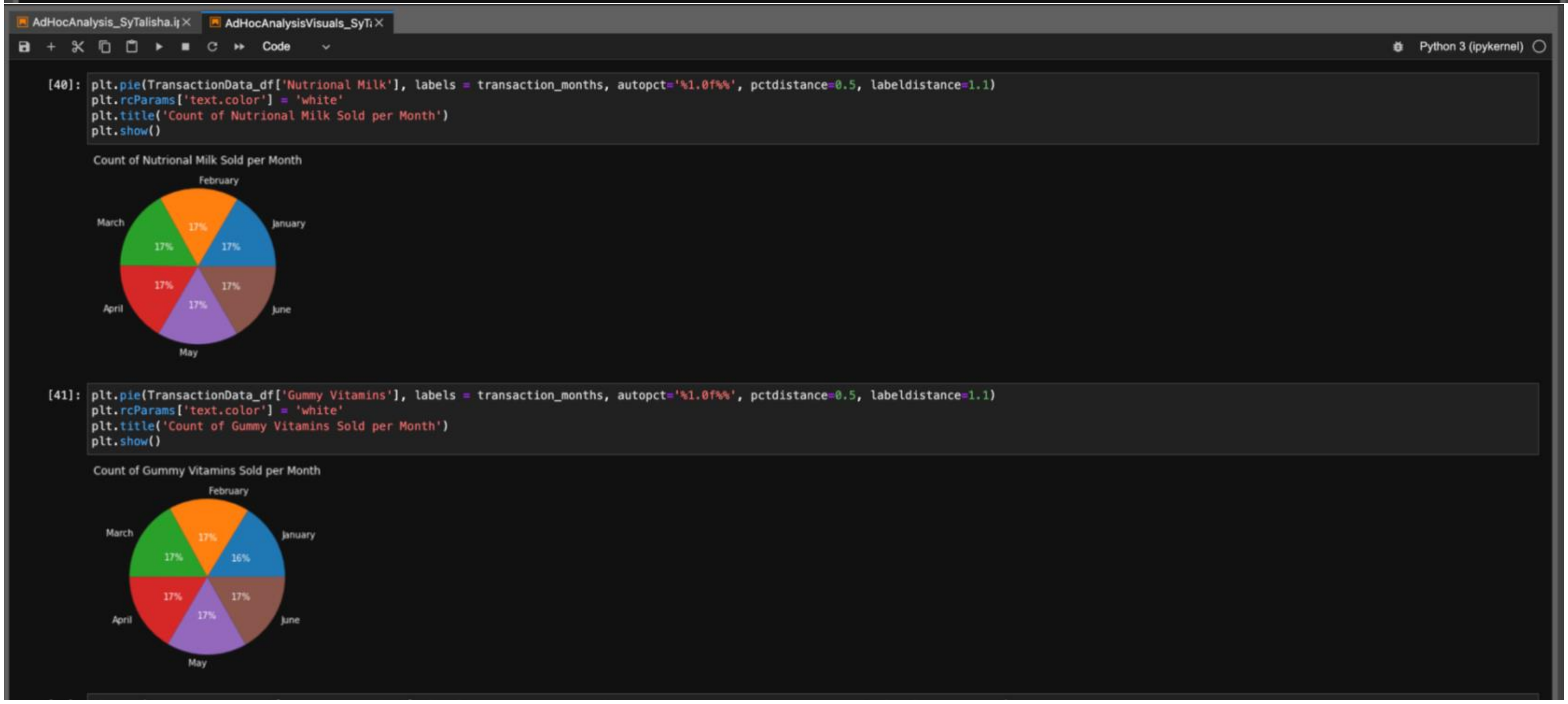
[35]:

	Beef Chicharon	Kimchi and Seaweed	Nutrional Milk	Gummy Vitamins	Yummy Vegetables	Orange Beans	Gummy Worms
January	9665	9676	9727	9681	9959	9774	9559
February	10001	9949	9691	9980	10256	10037	9996
March	9816	9967	9876	10145	9896	9611	9986
April	9890	9921	9786	9842	9861	9914	10043
May	10028	9773	9881	9948	9735	9964	9801
June	9902	10104	9767	9980	9722	10106	9934

```
[36]: # Pie Chart for Count per Item per Month

[38]: plt.pie(TransactionData_df['Beef Chicharon'], labels = transaction_months, autopct='%1.0f%%', pctdistance=0.5, labeldistance=1.1)
      plt.rcParams['text.color'] = 'white'
      plt.title('Count of Beef Chicharon Sold per Month')
      plt.show()
```

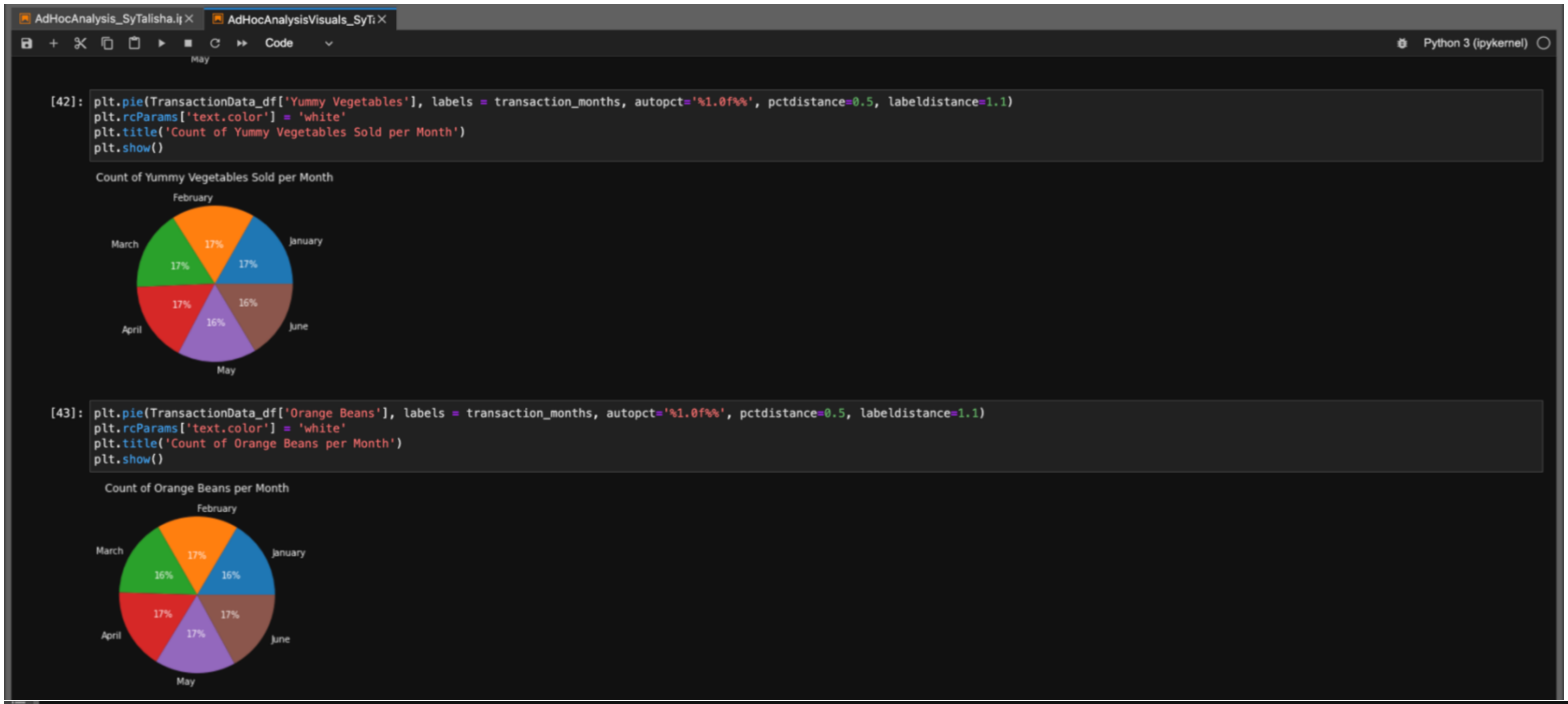


```
[39]: plt.pie(TransactionData_df['Kimchi and Seaweed'], labels = transaction_months, autopct='%1.0f%%', pctdistance=0.5, labeldistance=1.1)
      plt.rcParams['text.color'] = 'white'
      plt.title('Count of Kimchi and Seaweed Sold per Month')
      plt.show()
```



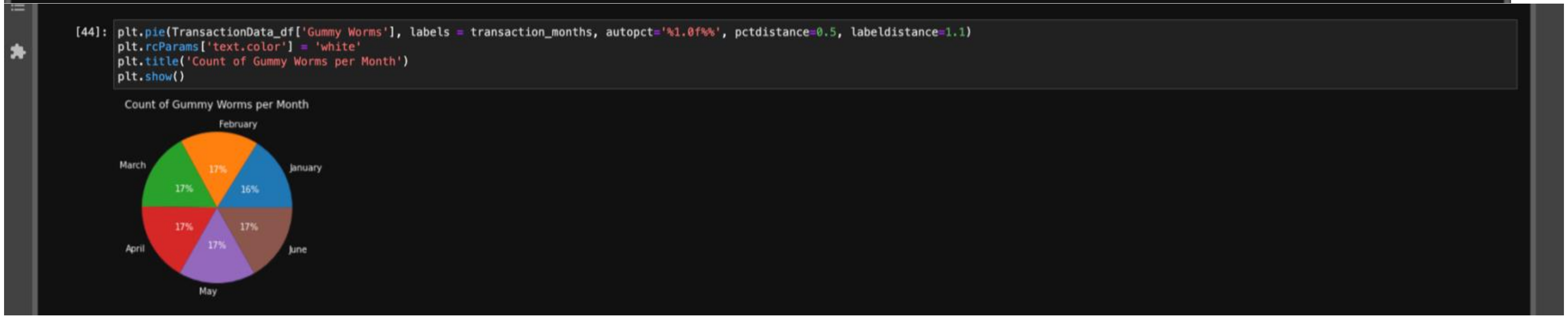
```
[40]: plt.pie(TransactionData_df['Nutrional Milk'], labels = transaction_months, autopct='%1.0f%%', pctdistance=0.5, labeldistance=1.1)
      plt.rcParams['text.color'] = 'white'
      plt.title('Count of Nutrional Milk Sold per Month')
      plt.show()
```

```
[41]: plt.pie(TransactionData_df['Gummy Vitamins'], labels = transaction_months, autopct='%1.0f%%', pctdistance=0.5, labeldistance=1.1)
      plt.rcParams['text.color'] = 'white'
      plt.title('Count of Gummy Vitamins Sold per Month')
      plt.show()
```

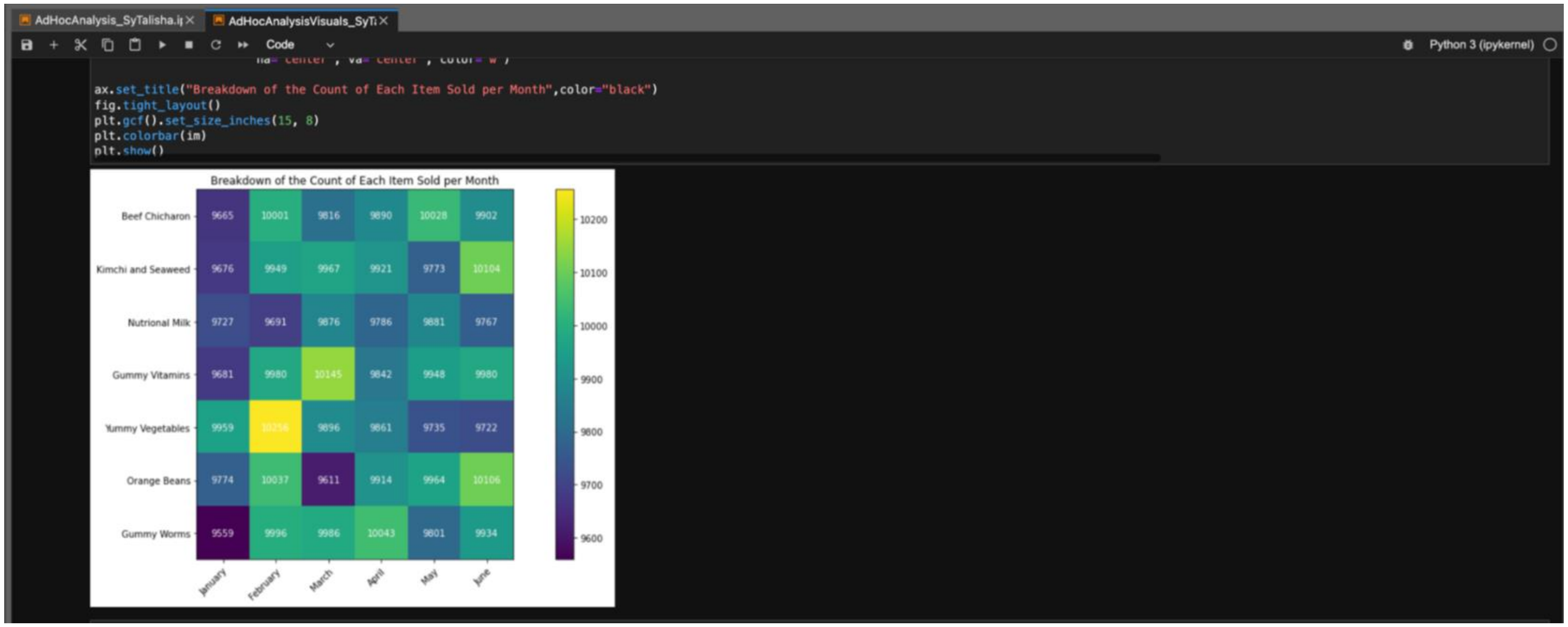


```
[42]: plt.pie(TransactionData_df['Yummy Vegetables'], labels = transaction_months, autopct='%1.0f%%', pctdistance=0.5, labeldistance=1.1)
      plt.rcParams['text.color'] = 'white'
      plt.title('Count of Yummy Vegetables Sold per Month')
      plt.show()
```

```
[43]: plt.pie(TransactionData_df['Orange Beans'], labels = transaction_months, autopct='%1.0f%%', pctdistance=0.5, labeldistance=1.1)
      plt.rcParams['text.color'] = 'white'
      plt.title('Count of Orange Beans per Month')
      plt.show()
```

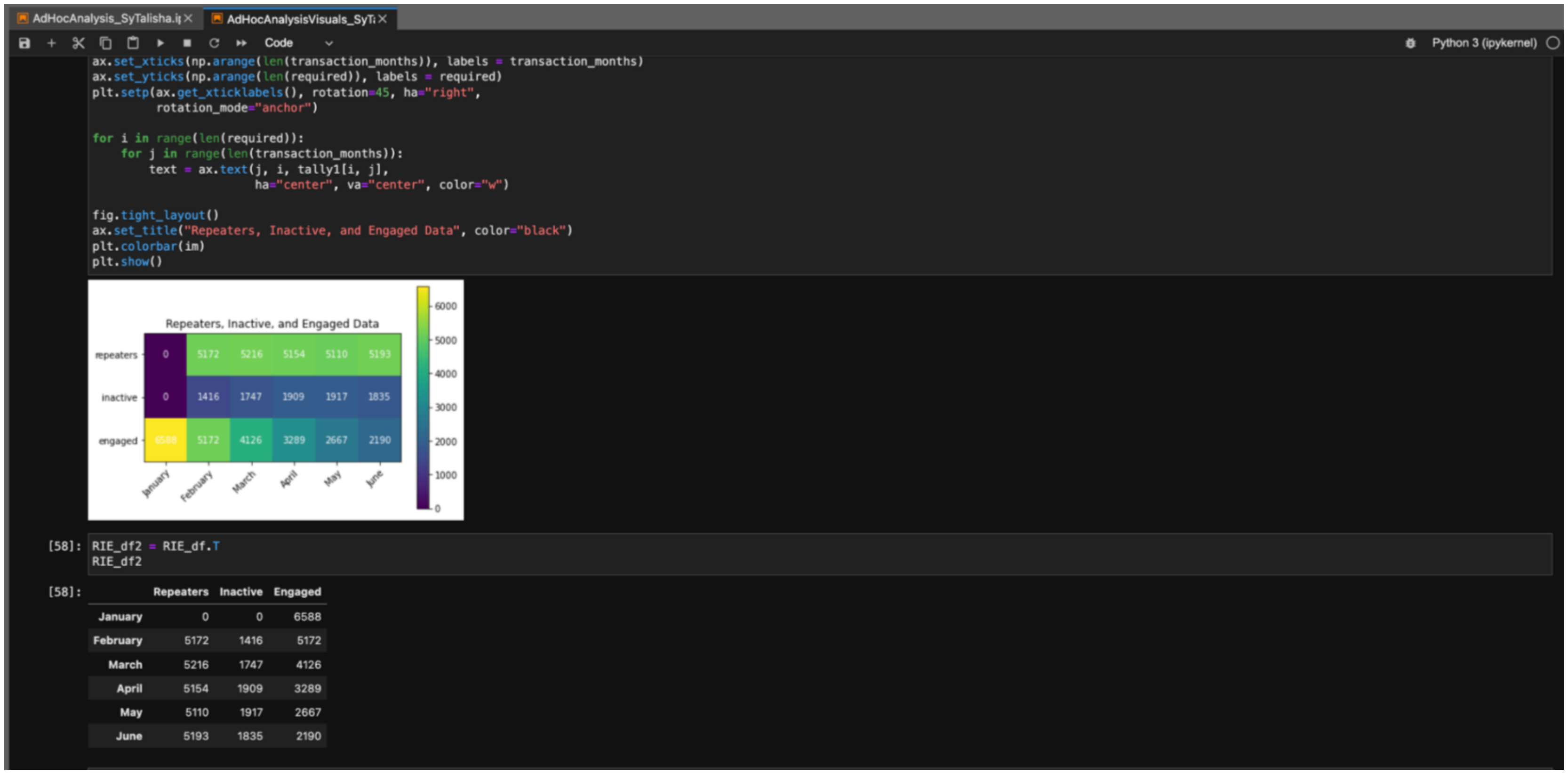


```
[44]: plt.pie(TransactionData_df['Gummy Worms'], labels = transaction_months, autopct='%1.0f%%', pctdistance=0.5, labeldistance=1.1)
      plt.rcParams['text.color'] = 'white'
      plt.title('Count of Gummy Worms per Month')
      plt.show()
```

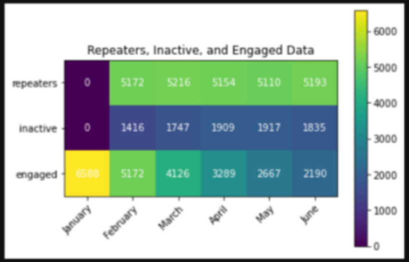

AdHocAnalysis_SyTalisha.i
AdHocAnalysisVisuals_SyT
Code
Python 3 (ipykernel)

```
                      ha="center", va="center", color="w")

ax.set_title("Breakdown of the Count of Each Item Sold per Month",color="black")
fig.tight_layout()
plt.gcf().set_size_inches(15, 8)
plt.colorbar(im)
plt.show()
```

Breakdown of the Count of Each Item Sold per Month
Beef Chicharon 9665 10001 9816 9890 10028 9902
Kimchi and Seaweed 9676 9949 9967 9921 9773 10104
Nutrional Milk 9727 9691 9876 9786 9881 9767
Gummy Vitamins 9681 9980 10145 9842 9948 9980
Yummy Vegetables 9959 10256 9896 9861 9735 9722
Orange Beans 9774 10037 9611 9914 9964 10106
Gummy Worms 9559 9996 9986 10043 9801 9934
January
February
March
April
May
June
10200
10100
10000
9900
9800
9700
9600



```
ax.set_xticks(np.arange(len(transaction_months)), labels = transaction_months)
ax.set_yticks(np.arange(len(required)), labels = required)
plt.setp(ax.get_xticklabels(), rotation=45, ha="right",
         rotation_mode="anchor")

for i in range(len(required)):
    for j in range(len(transaction_months)):
        text = ax.text(j, i, tally1[i, j],
                       ha="center", va="center", color="w")

fig.tight_layout()
ax.set_title("Repeaters, Inactive, and Engaged Data", color="black")
plt.colorbar(im)
plt.show()
```



```
[58]: RIE_df2 = RIE_df.T
      RIE_df2
```

[58]:

	Repeaters	Inactive	Engaged
January	0	0	6588
February	5172	1416	5172
March	5216	1747	4126
April	5154	1909	3289
May	5110	1917	2667
June	5193	1835	2190

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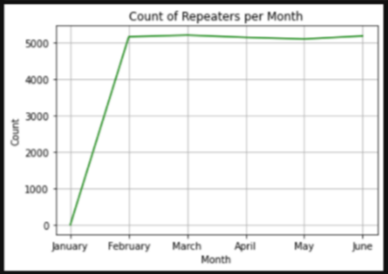
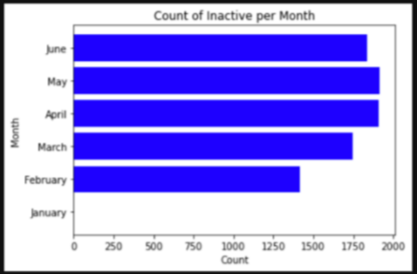
Code | Python 3 (ipykernel)



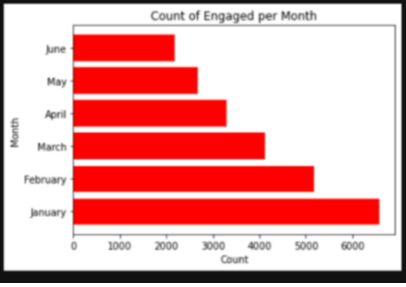
[60]:
```
# Horizontal Bar Chart for Inactive Data

plt.barh(df2['month'], width = RIE_df2['Inactive'], color = 'blue')
plt.title('Count of Inactive per Month',color="black")
plt.xlabel('Count')
plt.ylabel('Month')
plt.show()
```



[61]:
```
# Horizontal Bar Chart for Engaged Data

plt.barh(df2['month'], width = RIE_df2['Engaged'], color = 'red')
plt.title('Count of Engaged per Month',color="black")
plt.xlabel('Count')
plt.ylabel('Month')
plt.show()
```


Count of Engaged per Month
Month
June
May
April
March
February
January
Count