MAR 653 Marketing Analytics

Homework Assignment 1 (week 1)

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Topic: Segmentation at Sticks Kebob Shop

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1 Introduction

1.1 Purpose

Provide a recommendation for the location of the next Sticks Kebob Shop based on the segmentation analysis and the demographic profiles of the locations in table 6.1 Demographic Profile Table.

(Hint: Consider differences in the set restaurants visited for lunch/dinner by Sticks customers and noncustomers.)

1.2 Scope

Answer the following questions from the Sticks Kebob Data Spreadsheet:

- How do people choose a fast food restaurant to visit?
    - What is important: location, price, assortment, or cuisine?
- Who do you think are Sticks' customers, and what are their motivations for visiting Sticks?
- What does the survey data tell us about differences between customers and noncustomers?
- What survey questions would you use to identify the customer segments?
- How many customer segments can you estimate from the survey data?
    - What are the profiles of the customer segments?
    - Which customer segments should Sticks target?

2 Results

2.1 Q1: How people choose a fast food restaurant

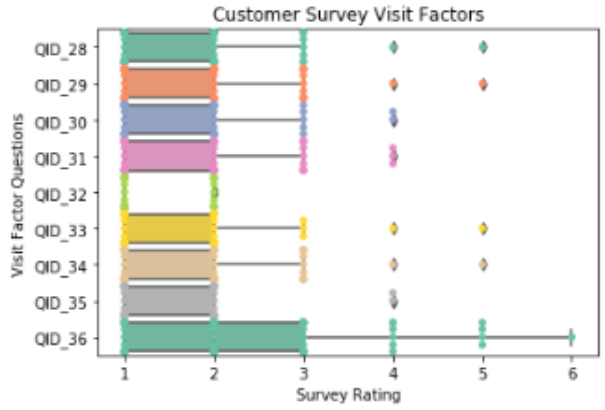
How do people **choose a fast food restaurant to visit**? And **What is important**: location, price, assortment, or cuisine?

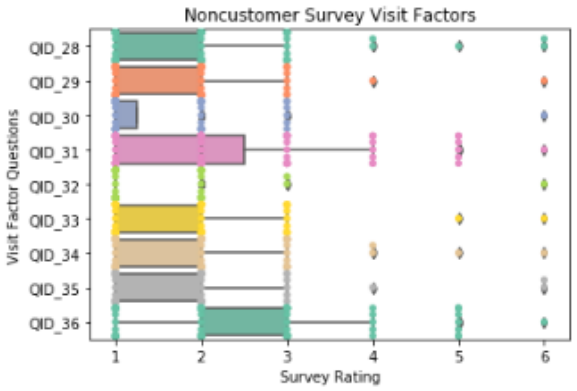
Rating Scale:

1-Very Important, 2-Somewhat Important, 3-Indifferent, 4-Somewhat unimportant, 5-Not Important at all, 6-Don't know

Question ID Key Map:

QID_28	Please indicate how important the following factors are when you visit a restaurant - Convenient place to eat
QID_29	Please indicate how important the following factors are when you visit a restaurant - Variety of menu options
QID_30	Please indicate how important the following factors are when you visit a restaurant - Good value for money
QID_31	Please indicate how important the following factors are when you visit a restaurant - Healthy menu options
QID_32	Please indicate how important the following factors are when you visit a restaurant - Food taste and satisfaction
QID_33	Please indicate how important the following factors are when you visit a restaurant - Friendly staff
QID_34	Please indicate how important the following factors are when you visit a restaurant - Pleasant ambiance
QID_35	Please indicate how important the following factors are when you visit a restaurant - Consistency / reliability
QID_36	Please indicate how important the following factors are when you visit a restaurant - Part of community





Median Customer Survey Visiting Factors:	**Median Noncustomer Survey Visiting Factors:**
QID_28 1.0	QID_28 2.0
QID_29 2.0	QID_29 2.0
QID_30 1.0	**QID_30 1.0**
QID_31 1.0	QID_31 2.0
QID_32 1.0	**QID_32 1.0**
QID_33 2.0	**QID_33 1.0**

QID_34 2.0 **QID_35 1.0** QID_36 2.0 **Average Customer Survey Visiting Factors:** QID_28 1.4895 QID_29 1.6862 QID_30 1.3333 QID_31 1.4762 QID_32 1.0691 QID_33 1.5979 QID_34 1.7513 QID_35 1.2751 QID_36 2.123	QID_34 2.0 **QID_35 1.0** QID_36 2.0 **Average Noncustomer Survey Visiting Factors:** QID_28 1.7308 QID_29 1.6169 QID_30 1.3141 QID_31 2.0452 QID_32 1.1987 QID_33 1.5677 QID_34 1.7372 QID_35 1.4679 QID_36 2.375

2.1.1 *How do they choose - what's important*

Customers of Sticks Kebob, on average, say that **convienence**, **variety**, **good value**, **taste and satisfaction**, and **consistency** are **very important** to them when choosing a fast food restaurant.

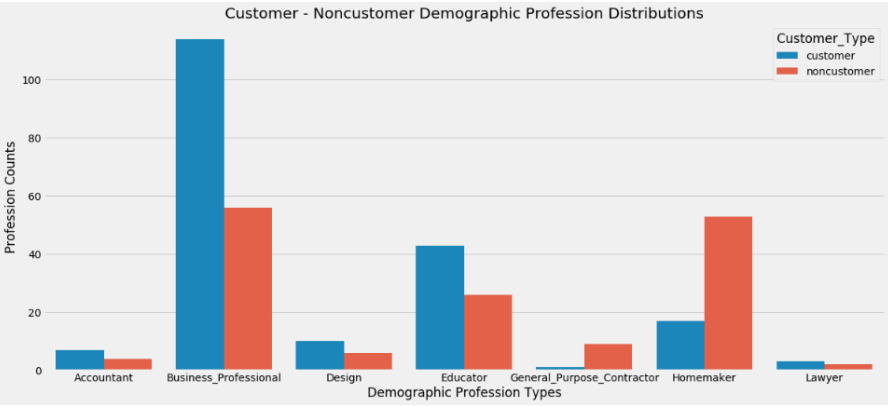
Nocustomers of Stick Kebob, on average, say that **good value**, **taste and satisfaction**, a **friendly staff**, and **consistency** are **very important** to them when choosing a fast food restaurant.

2.2 Q2: Customers & Motivation

Who are Sticks customers, and what are their motivations for visiting Sticks?

2.2.1 *Customers*

Sticks Kebob's customer base is predominately composed of **Business Professionals at 58% (114 or 195)** and **Educators at 22% (43 of 195), making up 80%** of those customers surveyed by Sticks Kebob.

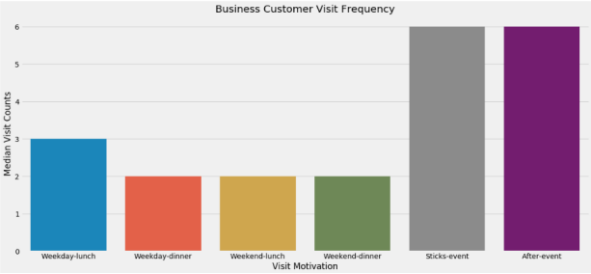


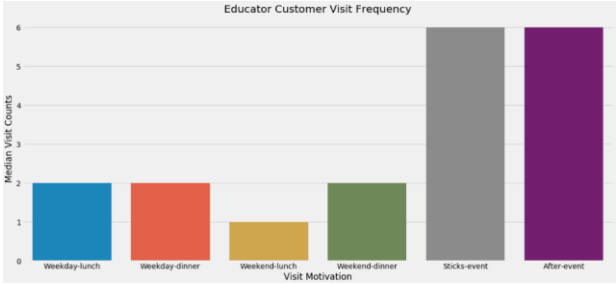
Question	Profession_Type	Profession_Cnt	Customer_Type
QID_60	Accountant	7.0	customer
QID_61	Lawyer	3.0	customer
QID_62	General_Purpose_Contractor	1.0	customer
QID_63	Design	10.0	customer
QID_64	Educator	43.0	customer
QID_65	Homemaker	17.0	customer
QID_66	Business_Professional	114.0	customer
QID_60	Accountant	4.0	noncustomer
QID_61	Lawyer	2.0	noncustomer
QID_62	General_Purpose_Contractor	9.0	noncustomer
QID_63	Design	6.0	noncustomer
QID_64	Educator	26.0	noncustomer
QID_65	Homemaker	53.0	noncustomer
QID_66	Business_Professional	56.0	noncustomer

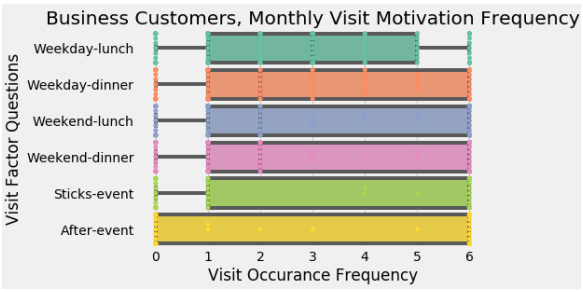
2.2.2 *Motivation*

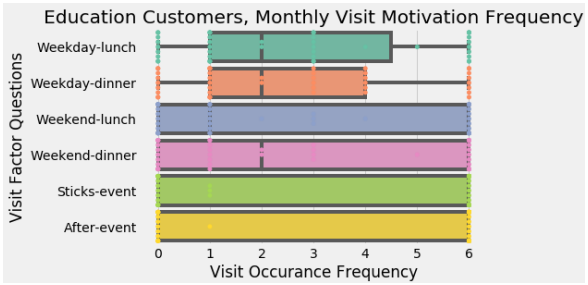
Sticks Kebob's **Business** Professional customers tend to visit **more frequently** when it's an **event**, either a Sticks event or After work or sports event. **Second** to that they visit more frequently during the **week for lunch**.

Sticks Kebob's **Education** Professionals customers tend to visit **more frequently** when it's an event, either a **Sticks event** or **after work or sports event**. They visit **least frequently** during the **weekends for lunch**.







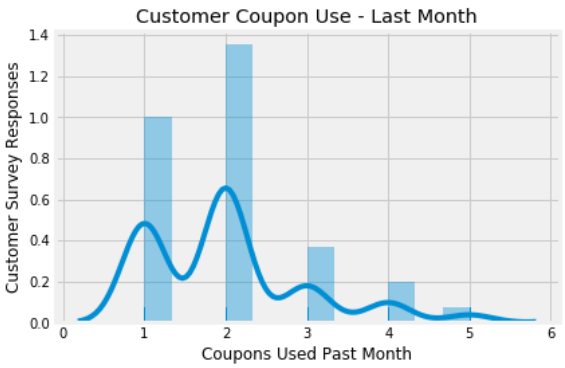


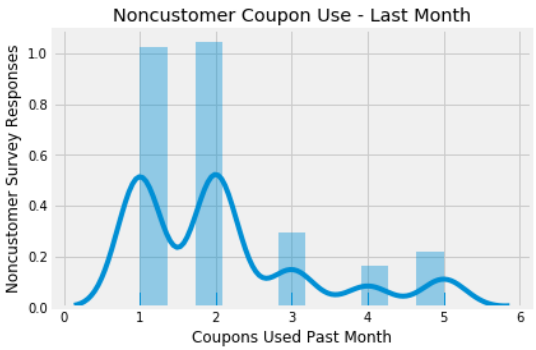
2.3 Q3: Survey Differences - Customers and Noncustomers

What does the survey data tell us about differences between customers and noncustomers?

2.3.1 *Use of Coupon Differences:*

Sticks Kebob's customers use coupons much more than their non-customers surveyed. Noteable coupon channels Sticks kebob should focus on for **customer retention** are: **customer-loyalty** at 4x that of noncustomers, **store-receipts** at 2x that of noncustomers, and **social-daily-deals** at 2.5x that of noncustomers.





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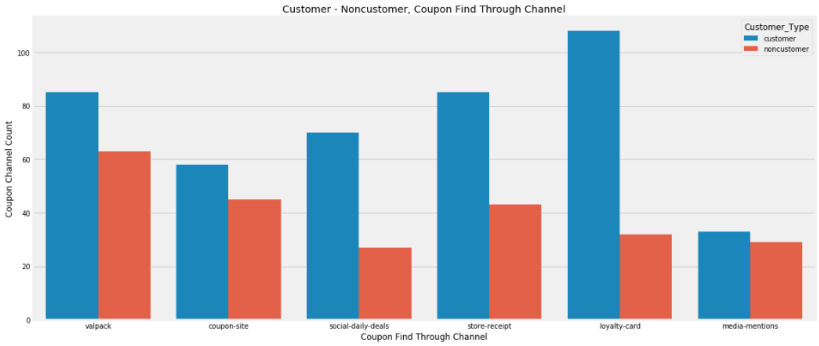
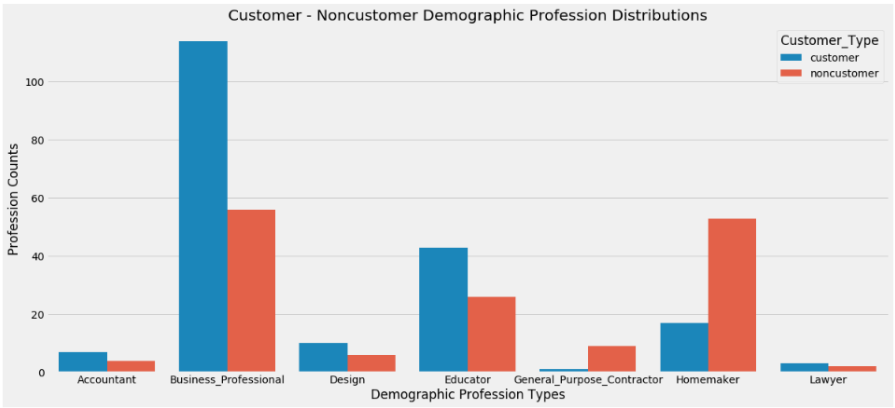


Question	Question_Alias	Coupon_Find_Cnt	Customer_Type
QID_98	valpack	85.0	customer
QID_99	coupon-site	58.0	customer
QID_100	social-daily-deals	70.0	customer
QID_101	store-receipt	85.0	customer
QID_102	loyalty-card	108.0	customer
QID_103	media-mentions	33.0	customer
QID_98	valpack	63.0	noncustomer
QID_99	coupon-site	45.0	noncustomer
QID_100	social-daily-deals	27.0	noncustomer
QID_101	store-receipt	43.0	noncustomer
QID_102	loyalty-card	32.0	noncustomer
QID_103	media-mentions	29.0	noncustomer

2.3.2 *Business Profession Differences*

Sticks Kebob's Business customers are 2x of noncustomers, and Educators are 1.5x of noncustomers. Noncustomers Homemaker's are 2.5x of Sticks Kebobs Customers.



2.4 Q4: Survey Questions to Identify Customer Segments

What survey questions would you use to identify the customer segments?

Survey Questions:

- food_consumption_habbit
- visit_occasion
- visit_factors
- visit_compare
- demographic
- behavioral_profile
- behavioral_profile_activity
- coupons_savings
- food_consumption_habbit: (frequency count)
    - QID_2 - QID_6:
        - Make and eat lunch at home

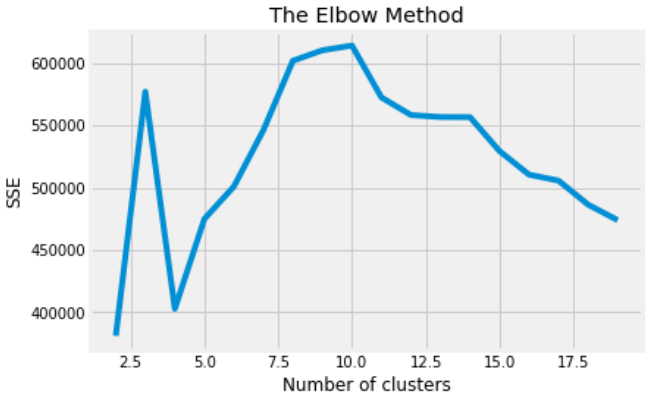
        - Bring own lunch to work
        - Buy lunch at workplace (e.g., cafeteria)
        - Buy lunch at a restaurant / food court / food truck
        - Skipped lunch / ate a small snack item
- visit_occasion: (frequency count)
    - QID_21 - QID_26
        - Weekday lunch
        - Weekday dinner
        - Weekend lunch
        - Weekend dinner
        - Sticks event (catering at work, food festival)
        - After school snack or after sports practice / event
- visit_compare (factor - rating)
    - QID_38 - QID_46
        - Convenient place to eat
        - Variety of menu options
        - Good value for money
        - Healthy menu options
        - Food taste and satisfaction
        - Friendly staff
        - Pleasant ambiance
        - Consistency / reliability
        - Part of community
- demographic: (factor - categorical)
    - QID_48 - QID_50
        - gender
        - age
        - average household income
    - QID_51 - QID_54
        - household type
        - children less than 12
        - children 12 - 17
        - children 18 and older
    - Profession: QID_60 - QID_66 (1 - 7)
        - Accountant
        - Lawyer
        - General purpose contractor
        - Design
        - Educator
        - Homemaker
        - Business professional
- behavioral_profile (factor - categorical)
    - QID_55 - QID_58
        - plan carefully
        - trouble controlling spending
        - important made locally
        - careful consider health benefitds
- behavioral_profile_active (factor - categorical)
    - QID_79 - QID_95
        - volunteer
        - tennis
        - swimming

        - skiing / snowboarding
        - running
        - hiking
        - golf
        - gardening
        - fishing
        - camping
        - bicycling
        - yoga
        - book club
        - eating out
        - attending local sports events
        - visting meseums
        - kids activities
- visit_factors
    - QID_28 - QID_36
        - convenience
        - variety
        - good value
        - healthy options
        - food taste and satisfaction
        - friendly staff
        - pleasant ambiance
        - consistency
        - part of community

2.5 Q5: Number of Customer Segments

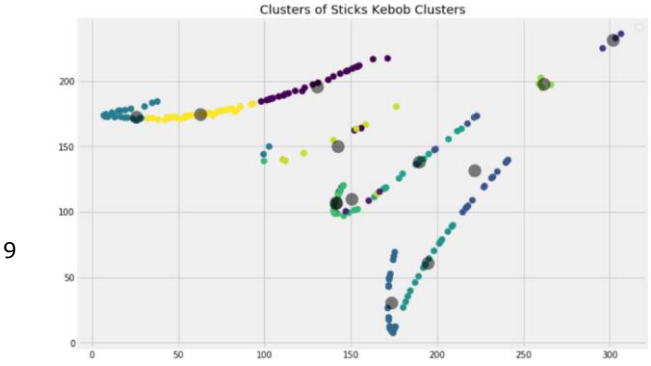
How many customer segments can you estimate from the survey data?

- What are the profiles of the customer segments?
- Which customer segments should Sticks target?




```
from sklearn.cluster import KMeans, SpectralClustering
from sklearn.preprocessing import StandardScaler
from sklearn.metrics import silhouette_samples, silhouette_score

def build_kmeans(n_clusters,random_state,n_jobs,verbose=0):
    km = KMeans(
        n_clusters=n_clusters,
        init="k-means++", # using elbow to figure out k for kmean
        n_init=10,
        max_iter=300,
        tol=0.0001,
        precompute_distances="auto",
        verbose=verbose,
        random_state=random_state, # determines random number gen
        copy_x=True,
        n_jobs=n_jobs,
        algorithm="auto")

    return km
```

```
# Run multiple k means to determin optimal k size for final model creation

sse = {} # store output for analysis
# set range from 2 - 20, assum max number of clusters to be 20
for k in range(2,20):
    km = build_kmeans(n_clusters=k,random_state=0,n_jobs=None)
    X_std = km.fit_transform(new_customer_survey) #
    kmeans = km.fit(X_std)
    sse[k] = kmeans.inertia_ # Inertia: sum of distances of samples to their closest cluster center

# plot elbow
plt.figure()
plt.plot(list(sse.keys()), list(sse.values()))
plt.title('The Elbow Method')
plt.xlabel('Number of clusters')
plt.ylabel('SSE')
plt.show()
```



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Estimated number of customer segments: **13**

This group segmentation count comes from runnig an elbow test on the updated dataset.
Multiple k means test were ran to determin optimal k size referenced above for final model creation.

Customer segment profiles:

- **Location C**
- **Brite Lites, Li'l City, Family Thrifts, Up-and-Comers, Upward Bound, White Picket Fences**

	QID_48	QID_49	QID_50	label
0	1	3	2	3
1	1	2	1	7
2	1	2	3	0
3	1	2	3	7
4	1	3	3	7

```
Median Customer Age Bracket: 2.0
Median Customer Household Income Bracket: 2.0
```

Loc.	Pop.	Median Age	Median Income	Consumer Spend	Consumer Spend Per Household	Major Customer Profiles
A	29,321	39.1	$92,700	$722M	$62,404	Blue Blood Estates, Brite Lites, Li'l City, Executive Suites, Upward Bound, Winner's Circle
B	34,183	32.5	$31,900	$482M	$36,720	City Startups, Family Thrifts, Hometown Retired, New Beginnings, Sunset City Blues
C	42,913	32.5	$55,700	$754M	$46,828	Brite Lites, Li'l City, Family Thrifts, Up-and-Comers, Upward Bound, White Picket Fences
D	57,509	34.8	$75,500	$1,184M	$57,880	Brite Lites, Li'l City, Country Quires, Up-and-Comers, Upward Bound, White Picket Fences

QID_3	QID_4	QID_5	QID_6	QID_1	QID_20	QID_21	QID_22	...	QID_94	QID_95	QID_97	QID_98	QID_99	QID_100	QID_101	QID_102	QID_103	label
1	1	6	1	1	1	6	2	...	0	0	2	0	0	0	0	1	0	0
5	1	3	1	1	1	2	6	...	0	0	1	0	0	0	0	0	0	0
1	1	5	2	1	1	6	3	...	0	0	2	0	0	0	1	1	0	0
3	1	3	1	1	1	1	3	...	1	0	1	0	0	0	0	0	0	0
3	1	2	2	2	0	0	0	...	0	0	2	0	1	1	1	1	0	0

3 Appendix

3.1 Demographic Profile Table

Loc.	Pop.	Median Age	Median Income	Consumer Spend	Consumer Spend Per Household	Major Customer Profiles
A	29,321	39.1	$92,700	$722M	$62,404	Blue Blood Estates, Brite Lites, Li'l City, Executive Suites, Upward Bound, Winner's Circle
B	34,183	32.5	$31,900	$482M	$36,720	City Startups, Family Thrifts, Hometown Retired, New Beginnings, Sunset City Blues
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D	57,509	34.8	$75,500	$1,184M	$57,880	Brite Lites, Li'l City, Country Quires, Up-and-Comers, Upward Bound, White Picket Fences

The questions used for segmentation are available for both the customers and noncustomers. You want to see if the customers of Sticks Kebob are different than the noncustomers in their responses to these questions. Say you find four segments, but there was a higher chance of finding Sticks Kebob customers in segments 2 and 3. You would then try to see if segments 2 and 3 are different than others in terms of demographics and if segments 2 and 3 provided different responses on the segmentation questions. The segmentation questions provide the psychographic profile, and the other variables in the survey provide the demographic profile.