



MALL CUSTOMER  
SEGMENTATION

MANAGEMENT REPORT

JANUARY 2022

WHAT CUSTOMER SHOULD WE TARGET?

# DATA

- SAMPLE SIZE: 200
- DEMOGRAPHIC AND BEHAVIOURAL DATA
  - AGE
  - GENDER
  - CUSTOMER ID
  - ANNUAL INCOME
  - SPENDING SCORE

DESCRIPTIVE STATISTICS

	CustomerID	Age	Annual Income (k\$)	Spending Score (1-100)
count	200.000000	200.000000	200.000000	200.000000
mean	100.500000	38.850000	60.560000	50.200000
std	57.879185	13.969007	26.264721	25.823522
min	1.000000	18.000000	15.000000	1.000000
25%	50.750000	28.750000	41.500000	34.750000
50%	100.500000	36.000000	61.500000	50.000000
75%	150.250000	49.000000	78.000000	73.000000
max	200.000000	70.000000	137.000000	99.000000

# METHOD

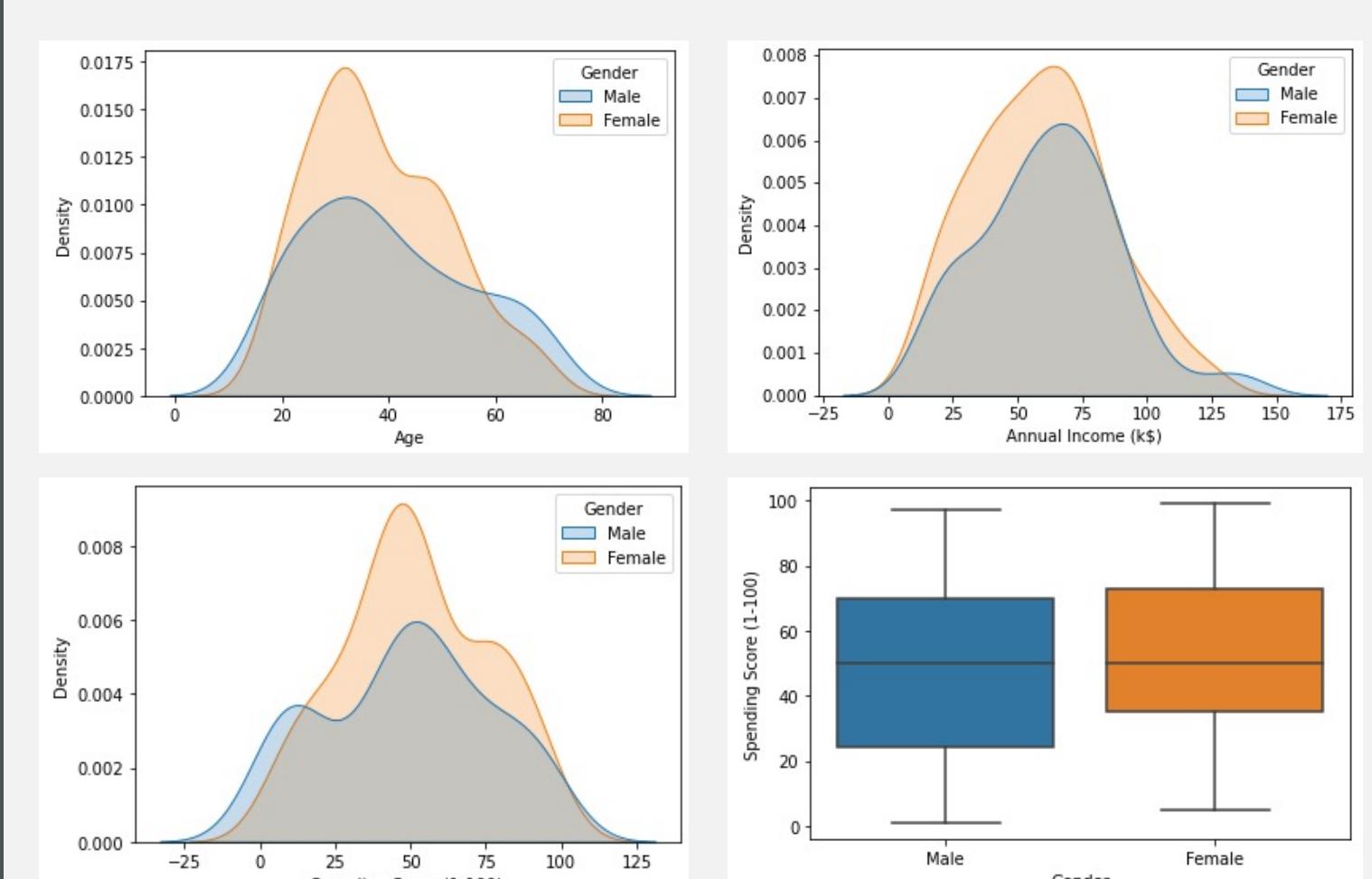
- UNSUPERVISED MACHINE LEARNING - K MEANS CLUSTERING

- ALLOWS MACHINE LEARNING TO CLASSIFY CUSTOMERS INTO SEGMENTS BASED ON THE FOLLOWING FACTORS:

- AGE
- GENDER
- ANNUAL INCOME
- SPENDING SCORE

# RESULTS

- CONCENTRATION OF SAMPLE AGE 35 YEARS FOR BOTH MALE AND FEMALE
- MOST FREQUENT ANNUAL INCOME IS APPROX. \$70K. FEMALE ANNUAL INCOME RANGE IS SLIGHTLY WIDER THAN MALES
- FEMALES HAVE HIGHER SPENDING SCORE IN A NARROWER RANGE THAN MALES
- SUGGESTS FEMALES SPEND MORE THAN MALES



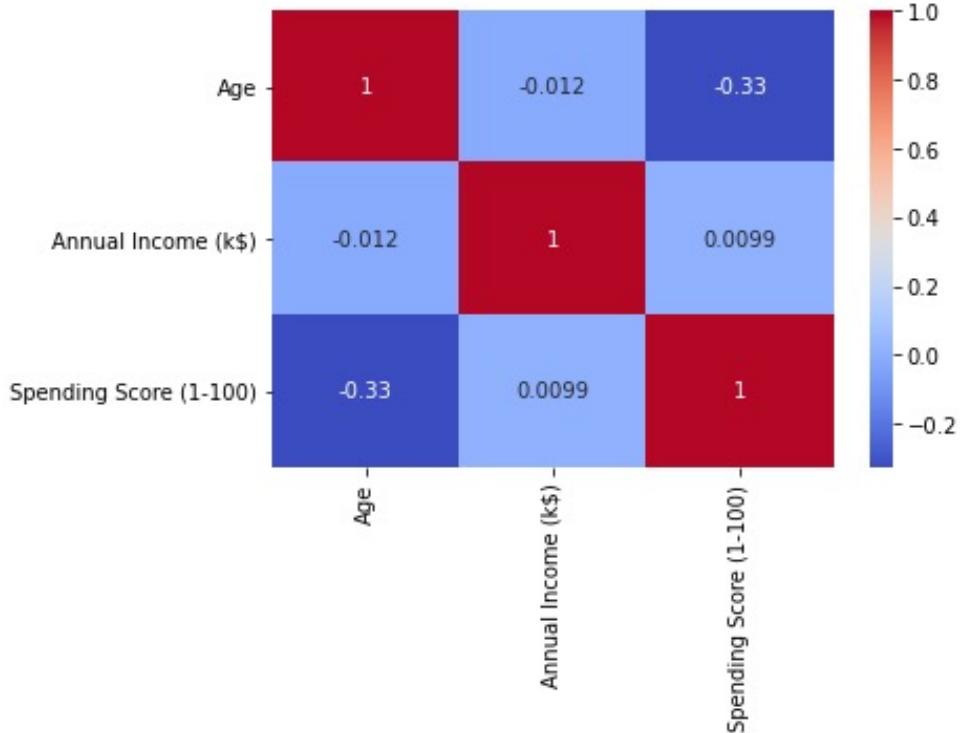
Selected Histograms (Age, Annual Income, Spending Score) and box plot (Spending Score) by gender.

# RESULTS

## CORRELATION BETWEEN FACTORS AS EXPECTED:

- SPENDING SCORE AND ANNUAL INCOME DECREASES WITH AGE
- SPENDING SCORE INCREASES WITH ANNUAL INCOME

FURTHER ANALYSIS RECOMMENDED TO IDENTIFY TRENDS BY AGE GROUP

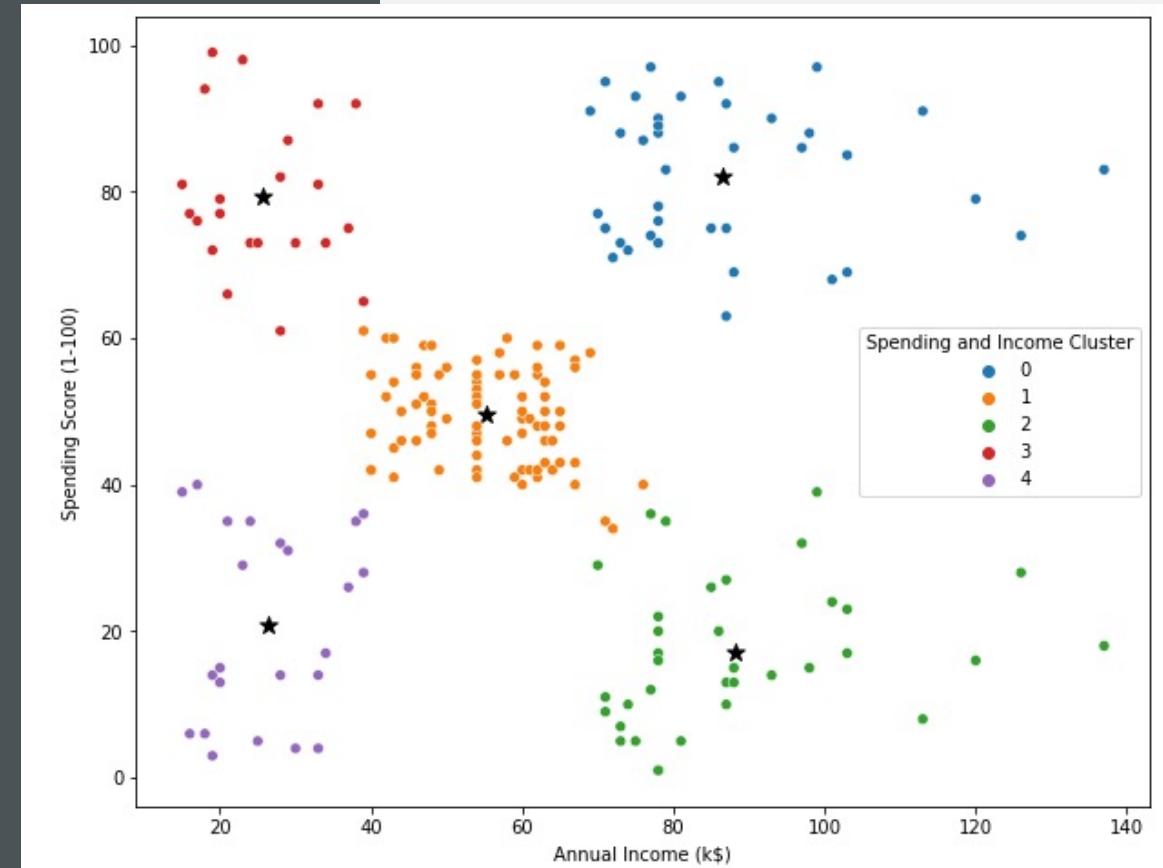


# RESULTS

- HIGHEST SPENDING SCORE: CLUSTER 0 (BLUE) AND CLUSTER 3 (RED)

CLUSTER 0	CLUSTER 3
AVERAGE INCOME: \$86.500	AVERAGE INCOME: \$25.200
AVERAGE AGE: 32.6 YEARS	AVERAGE AGE: 25.3 YEARS
SPENDING SCORE: 82.1	SPENDING SCORE: 79.4
53.8% FEMALES	59.1% FEMALES

- CLUSTER 1 HIGHEST FREQUENCY OF SAMPLE:
  - 42.7 YEARS, \$55,300 AV. INCOME AND SPEND SCORE OF 49.5



Spending and Income Cluster	Age	Annual Income (k\$)	Spending Score (1-100)
0	32.692308	86.538462	82.128205
1	42.716049	55.296296	49.518519
2	41.114286	88.200000	17.114286
3	25.272727	25.727273	79.363636
4	45.217391	26.304348	20.913043

## RECOMMENDATIONS

### **TARGET HIGHEST SPENDING SCORE DEMOGRAPHICS AS FOLLOWS:**

- CLUSTER 1:
  - ONGOING / REGULAR TARGETED CAMPAIGN
- CLUSTER 3:
  - FOCUSED CAMPAIGN BASED ON SPENDING HABITS
  - DETAILED ANALYSIS OF ACTUAL SPENDING HABITS OF CLUSTER 3 TO BE UNDERTAKEN

### **TARGET CLUSTER 2 AS FOLLOWS:**

- ONGOING / REGULAR CAMPAIGN
- MODEST MARKETING BUDGET



- LIMITED SAMPLE SIZE OF 200
- SPENDING SCORE METHOD OF CALCULATION UNKNOWN
  - SEASONALITY OF DATA SAMPLE UNKNOWN
- METHOD OF CUSTOMER SEGMENTATION MAY NOT BE OPTIMAL
- FURTHER DATA NEEDED TO IDENTIFY ACTUAL PURCHASES OF CUSTOMERS
  - ANALYSIS DOES NOT CONSIDER CLV, FREQUENCY OR RECENCY

## LIMITATIONS

# REFERENCES

Kevin Craft – Github Repository:

- [https://github.com/Kevin-Craft/Marketing\\_Customer\\_Segmentation](https://github.com/Kevin-Craft/Marketing_Customer_Segmentation)

Project provided by:

- Example project provided by: <https://www.absentdata.com/>
- Data Source: [https://github.com/Gaelim/Mall-Customer-Segmentation/blob/main/Mall\\_Customers.csv](https://github.com/Gaelim/Mall-Customer-Segmentation/blob/main/Mall_Customers.csv)