

# Blackwell Electronics e-Commerce Report

Report and Analysis by Team Alpha



# MISSION

To use data mining methods to explore the customer transaction data collected from recent online and in-store sales to infer any insights and conclusions about customer purchasing behavior





## OUR DATA

Blackwell Electronics provided demographic data about customers transactions including:

- Age of customers
- Region
- Amount spent per transaction
- Number of items bought per transaction
- Type of purchase: IN-STORE or ONLINE



# DATA MINING OBJECTIVES

- Understand customer buying patterns in each region. Which regions spend the most/least
- Investigate the relationship between number of items purchased and amount spent
- Understand if there are differences in the age of customers between regions
- Conclude If we can predict the age of a customer in a region based on other demographic data
- Understand the correlation between age of a customer and if the transaction was made online or in the store
- Investigate if any other factors predict customer purchase methods



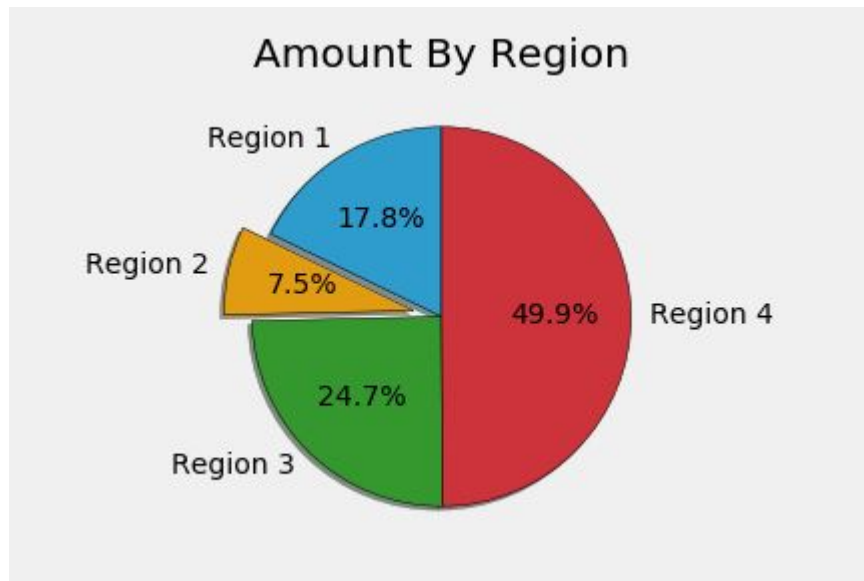
# Exploring Customer Transactional Data

Which regions spend the most/least

- ✓ Customers in Region 4 spend more than other regions while customer in region 2 spend the least

What accounts for the massive difference in regional spending?

- Items?  
Does one region buy more items than another?
- Region?  
Why does Region 4 spend more than Region 2?
- Age?  
Do older customers spend more than younger customers?





# Exploring Customer Transactional Data

## Relationship between Number of Items Purchased and Amount Spent

Region	Items	Average Transaction amount
1	4.5	\$745
2	4.5	\$252
3	4.5	\$917
4	4.5	\$1284

### Outliers

Region 2:  
Max amt: \$500 per transaction

Region 4:  
Min amt: \$660 per transaction



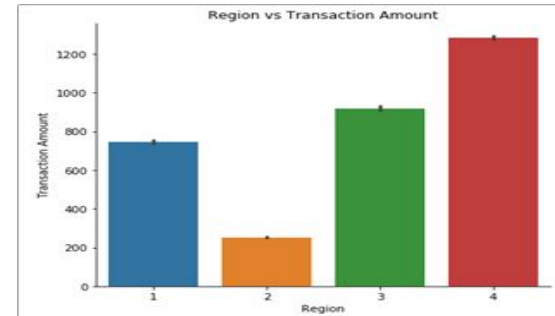
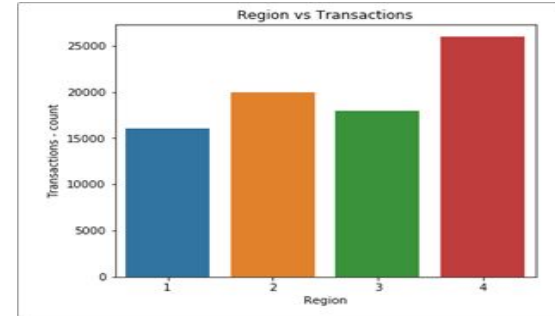
Based on the analysis performed there is not a direct relationship between number of items purchased and amount spent.



# Exploring Customer Transactional Data

## Understanding Customer Buying Patterns in each Region

- Customers in Region 4 tend to do more transactions and spent more than customers in other regions.
- Customers in Region 2 do more transactions than customers in Regions 3 and 1.
  - The average amount spent per transaction of customer in Region 2 is lower than the average amount spent per transactions in Region 3 and Region 1.



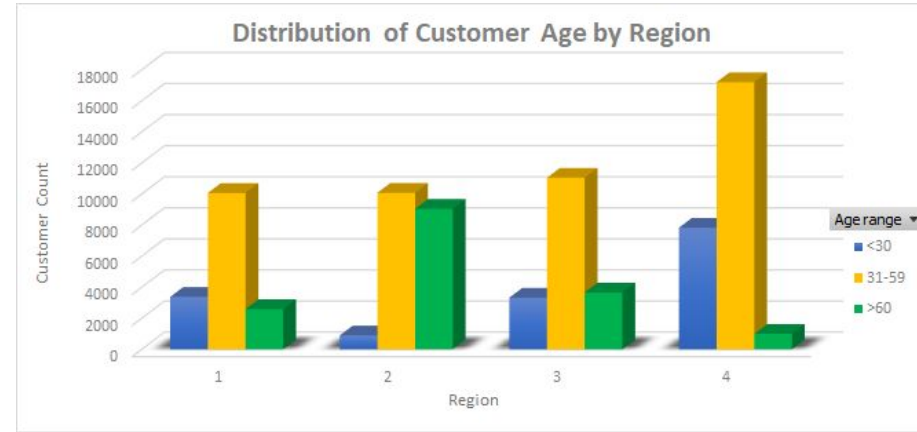
- ✓ Blackwell customers in Region 2 are doing a comparable number of transaction with other regions. However, they are spending less.
- ✓ Customers in Region 2 tends to buy only “low cost” items.



# Exploring Customer Transactional Data

## Differences in the Age of Customers between Regions

- Blackwell Customers' Age Range goes from 18 to 85 years old.
- Region 1 and 3 has a similar distribution of age.
- Region 4 has the highest amount of customers under 59 years old and the lowest count of customers above 60 years old.
- Region 2 has the highest count of customers above 60 years old (being the average age 56 years old) and the lowest count of customers under 30.
- The distribution of customers between 31 and 59 years old is similar for Regions 1, 2 and 3.

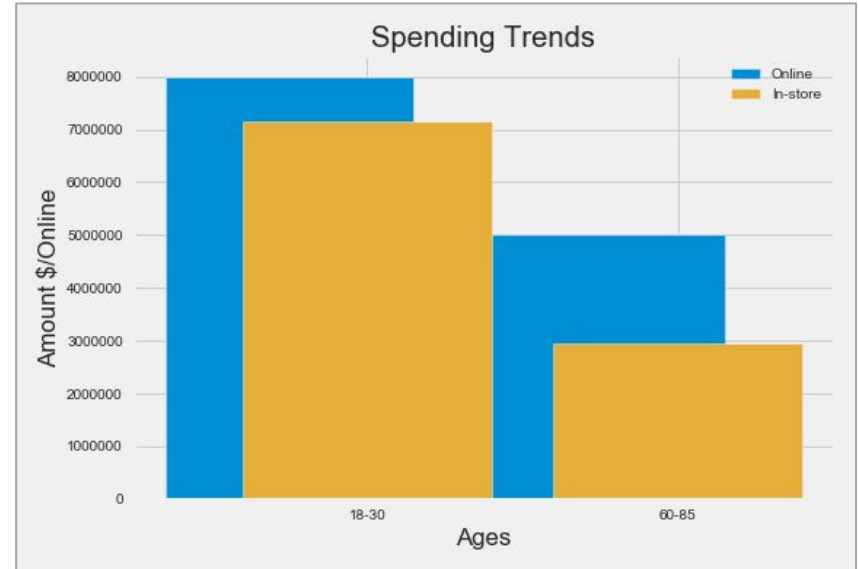
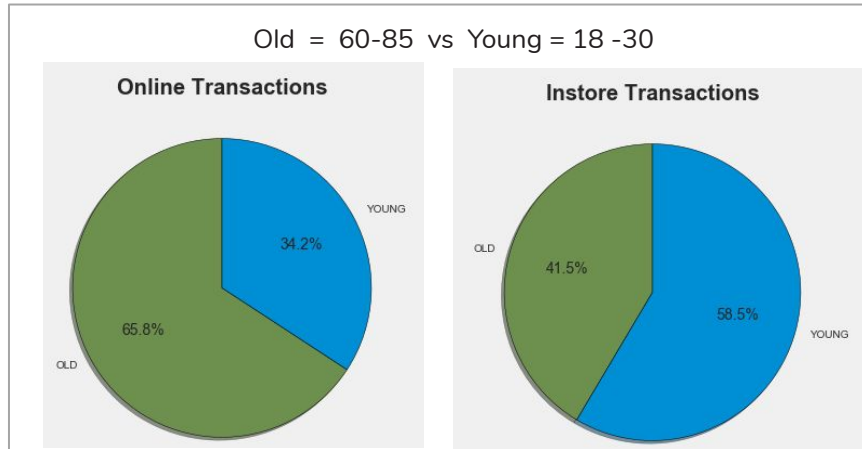


- ✓ The result of the investigation shows that is not possible to predict the age of a customer in a region using the demographic data provided.



# Exploring Customer Transactional Data Customer Purchasing Insights - Online vs In-store

- Are customers who shop online younger than customers who shop in-store? What age group is spending more?



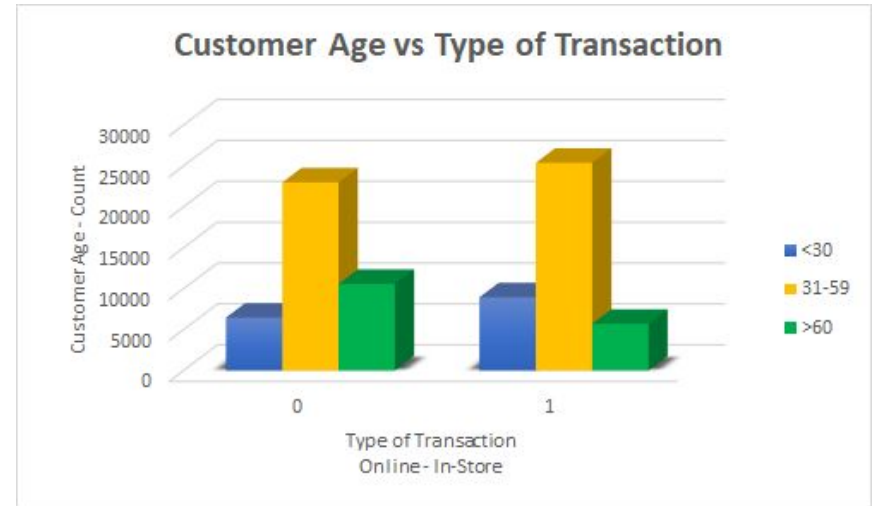
- ✓ Younger online customers spent almost \$3 million more than the Older group despite being outnumbered 2:1. In either case, the young are spending more on electronics



# Customer Demographics Investigation

Correlation between age of a customer and type of transaction (online vs in-store)

- ✓ The analysis shows that there is no correlation between the age of a customer and whether or not a customer will purchase items in store or online
- ✓ The age of a customer is not a relevant factor to predict the type of transaction.





# Customer Demographics Investigation

## Factors to predict customer purchase methods

- ✓ The analysis performed shows that Region and Amount of transaction are the most relevant variable to predict whether a customer will shop in online or in-store. As our model shows customers making more online purchases for higher priced items

Customers who are more likely to buy Online:

- Customers in Region 2
- Customers in Region 3 who spent more than 1000 per transaction
- Customers in Region 4 who spent more than 2000 per transaction

Customers who are more likely to buy In- store:

- Customers in Region 1
- Customers in Region 3 who spent less than 1000 per transaction
- Customer in Region 4 who spent less than 2000 per transaction





# RECOMMENDATIONS



## Marketing Recommendations

- Age based campaigns:
  - Increase sales of <30 demographic group in Region 2
  - Push >60 in Region 2 to buy higher dollar electronics
  - Target >60 across regions 1, 3 and 4 to increase sales volume



## Future Questions Data Mining Can Answer

- Will a store in region 2 do well
- Why in Region 1 customers buy mostly in store
- Types of items purchased, products offered, competitors, It will allow to make more accurate analysis
- Leverage gender, interests/buying trends to create personalized loyalty campaigns
- Predict items likely to be purchased by specific customers