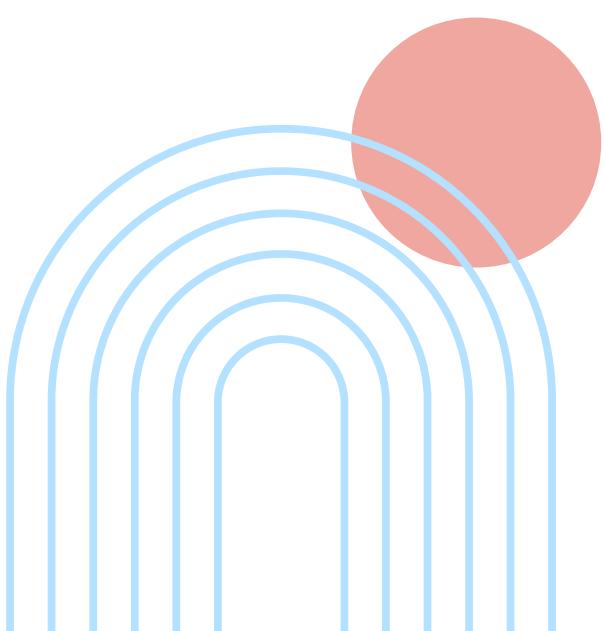


**TURTLE  
GAMES**

# Driving Customer Loyalty Through Data

USING DATA TO GUIDE SMARTER LOYALTY AND MARKETING DECISIONS

**Presented By:** Data Analyst, Annora Ng

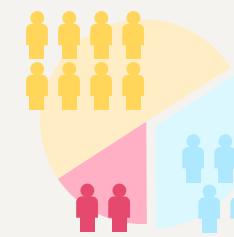


# What Drives Customer Loyalty at Turtle Games?

*Key Project Objectives:*



Understand how customers **earn** and engage with **loyalty points**



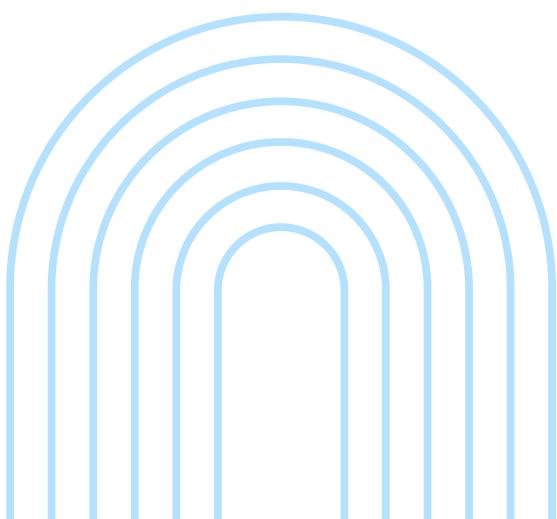
Segment customers into groups to identify **targetable segments**



Leverage **customer review text** data to inform marketing and business decisions



Use descriptive statistics to assess loyalty points data for **predictive modeling**



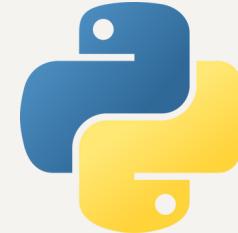
# Dataset & Tools Used

*Our Dataset: Who, What, and How?*

## Dataset

- **Content:** 2,000 entries from [turtle\\_reviews.csv](#)
- **Key Variables:** Age, Gender, Remuneration, Spending Score, Education, Loyalty Points, Review, Summary

## Tools

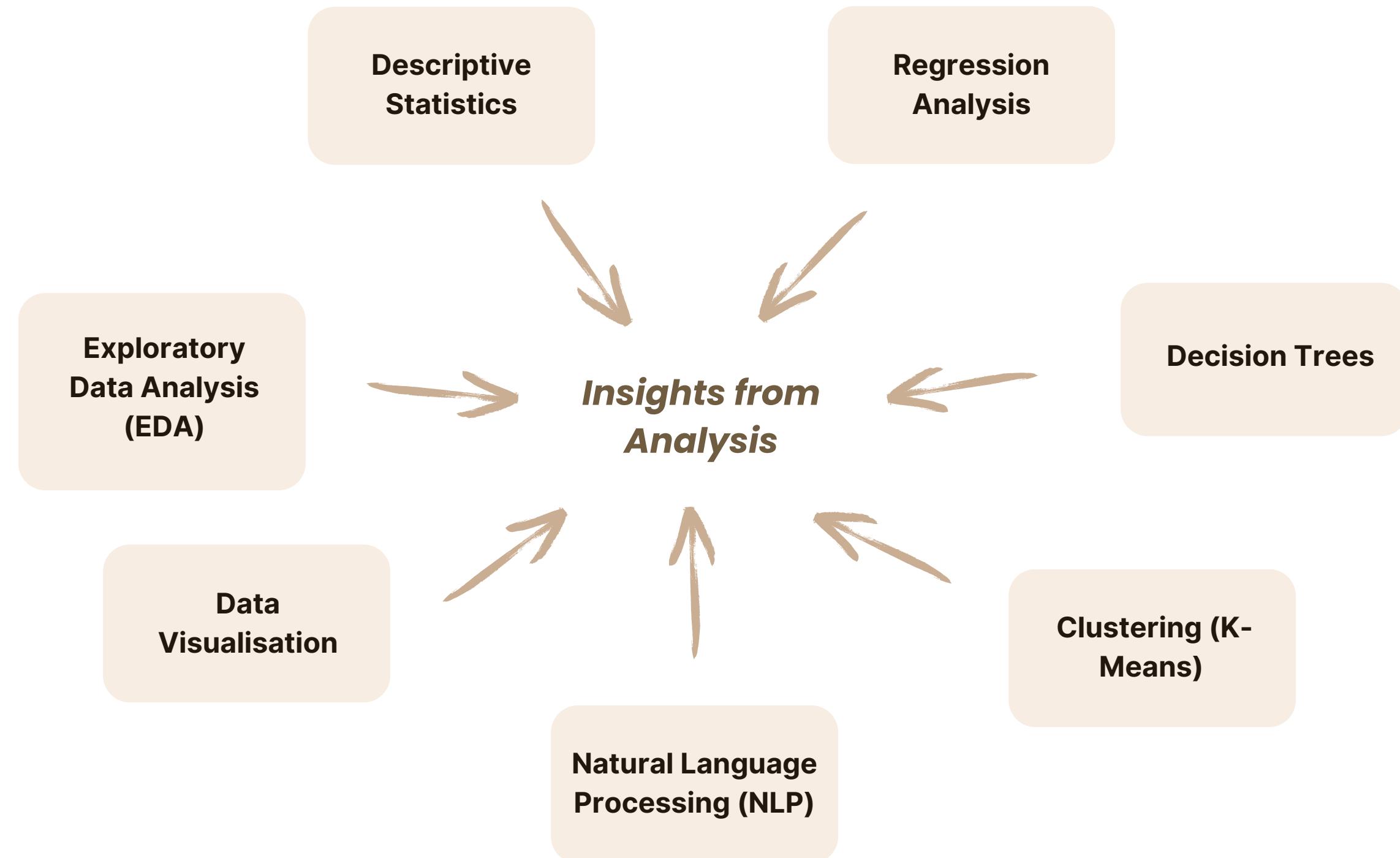


**Python:** Used for basic descriptive statistics, decision tree modelling, sentiment analysis



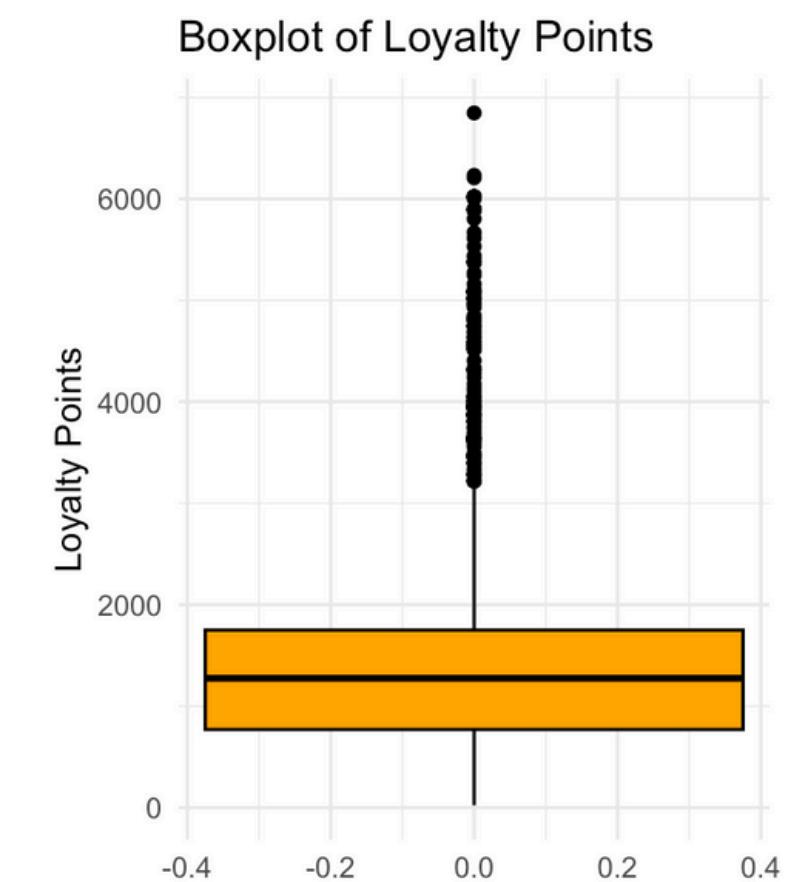
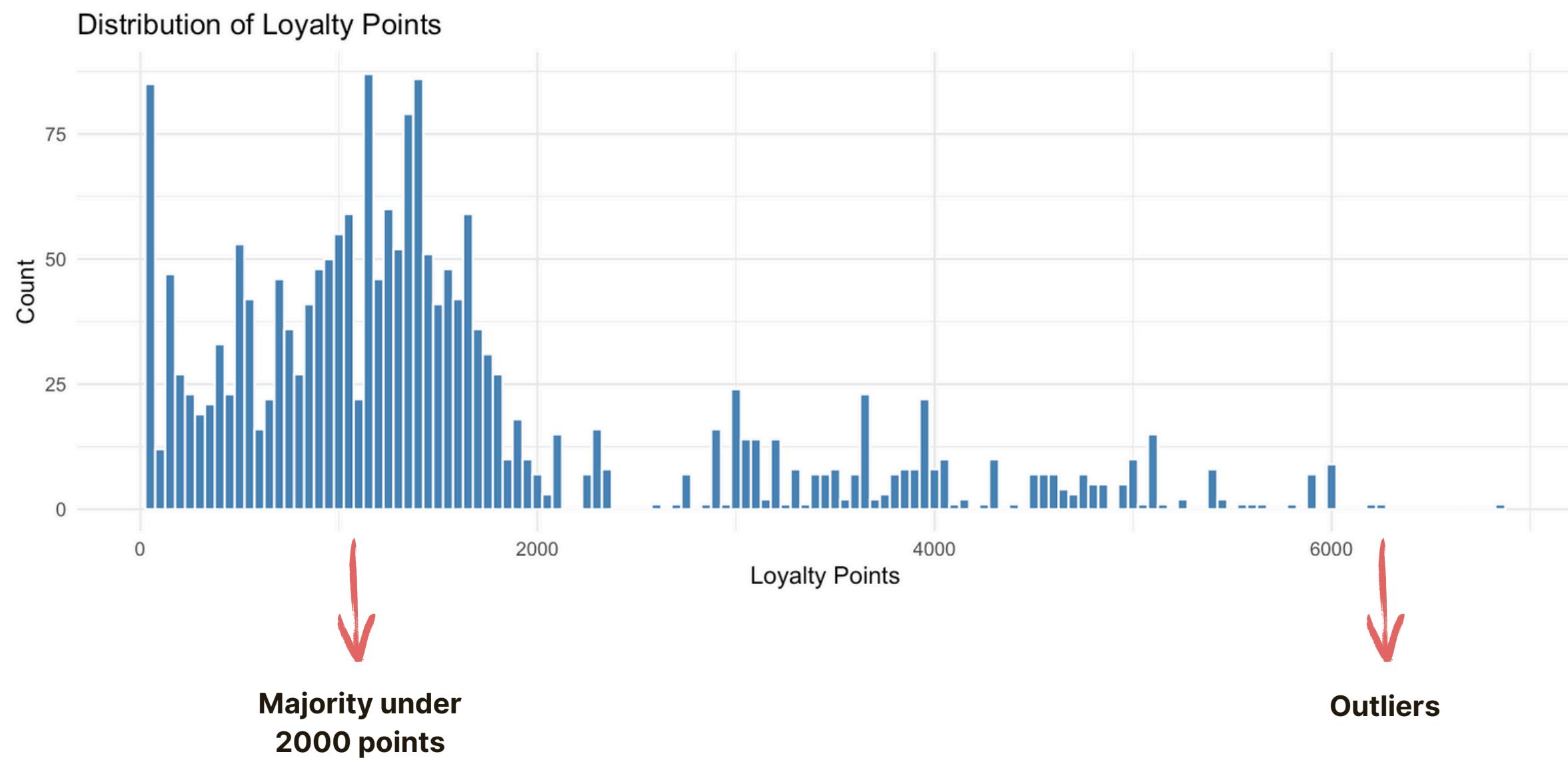
**R:** Exploratory Data Analysis, Multiple Linear Regression

## Analytical Approach



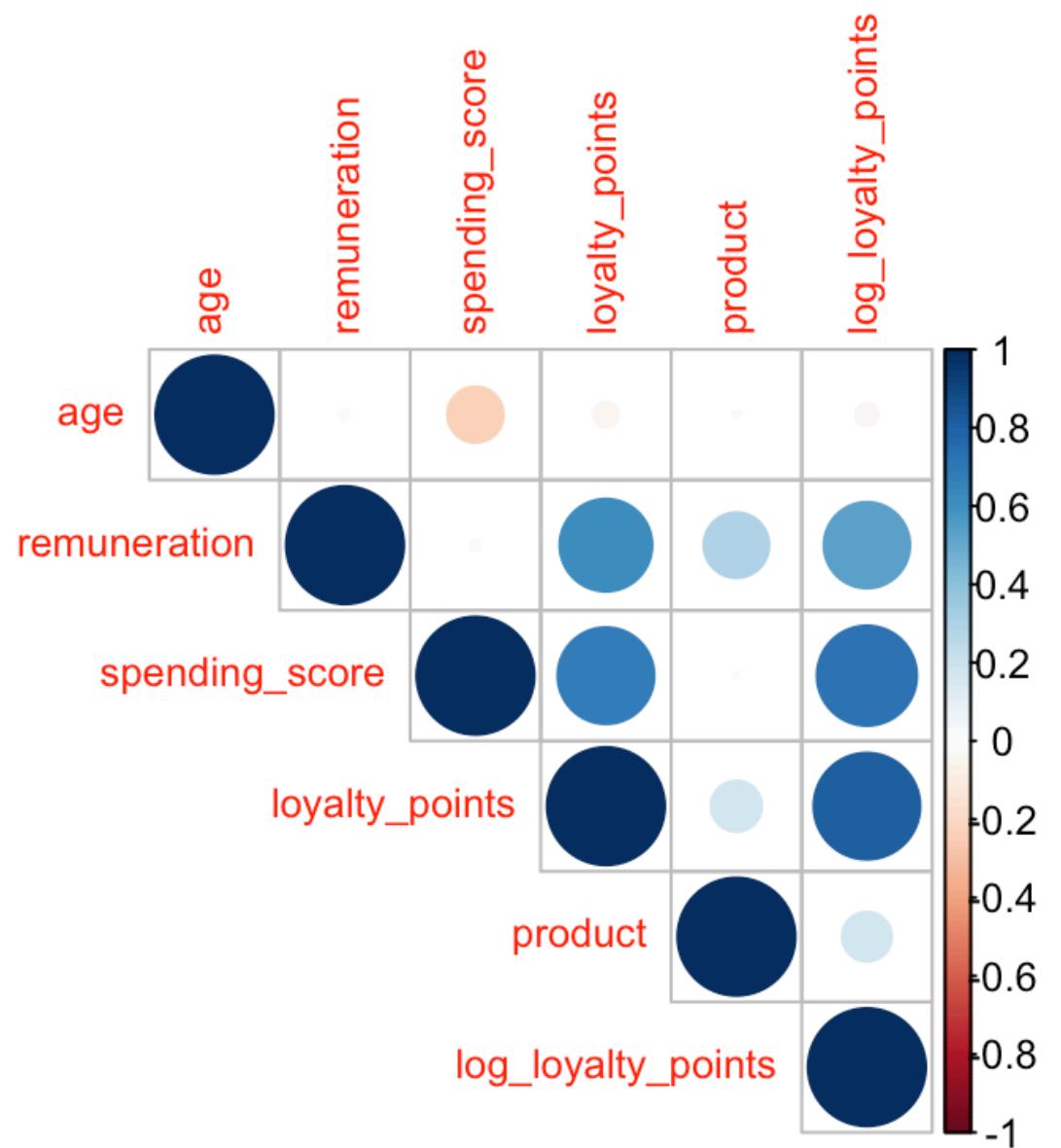
# How are Loyalty Points Distributed?

*Most customers earn low points, with a few outliers*



# What influences Loyalty Points?

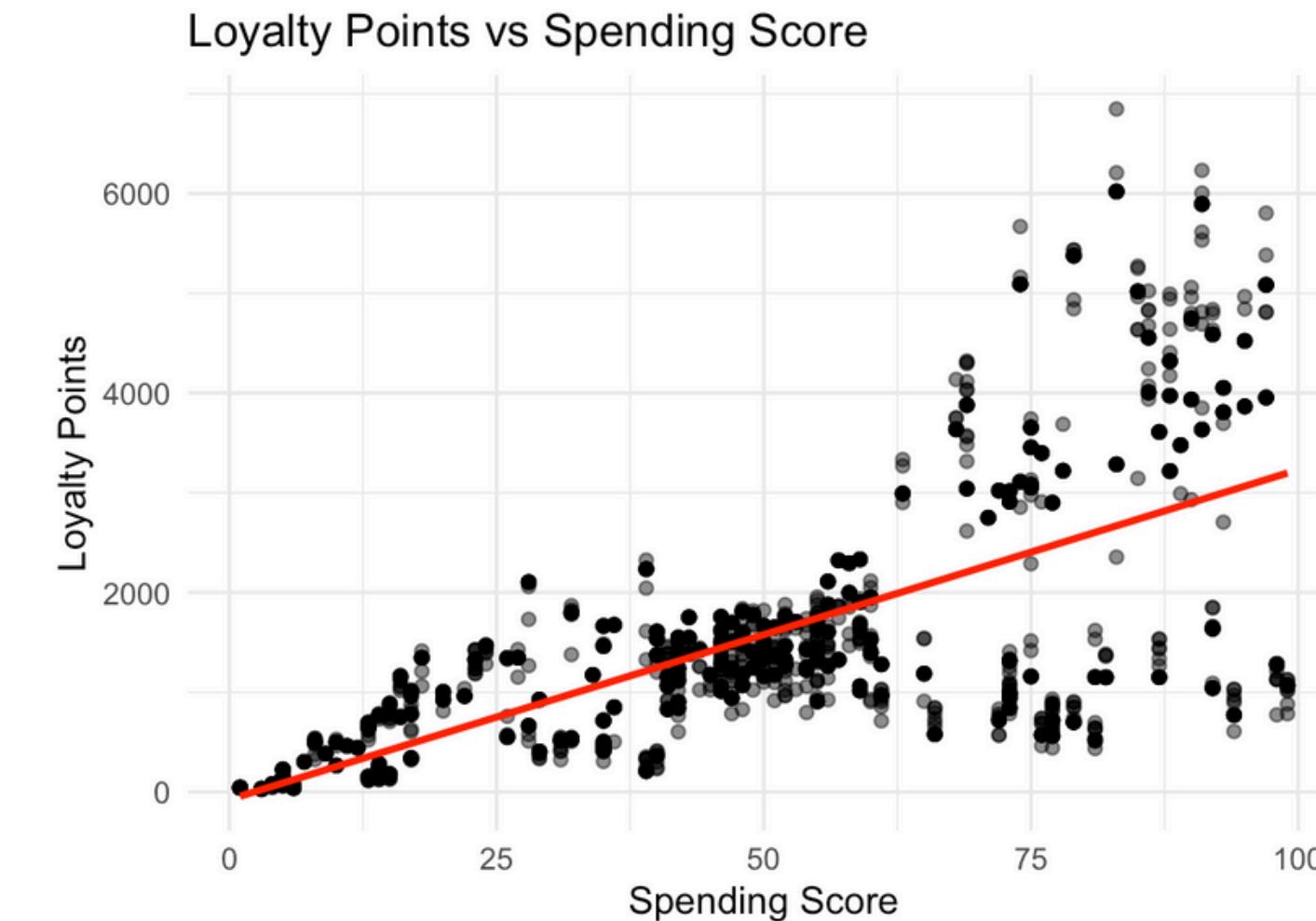
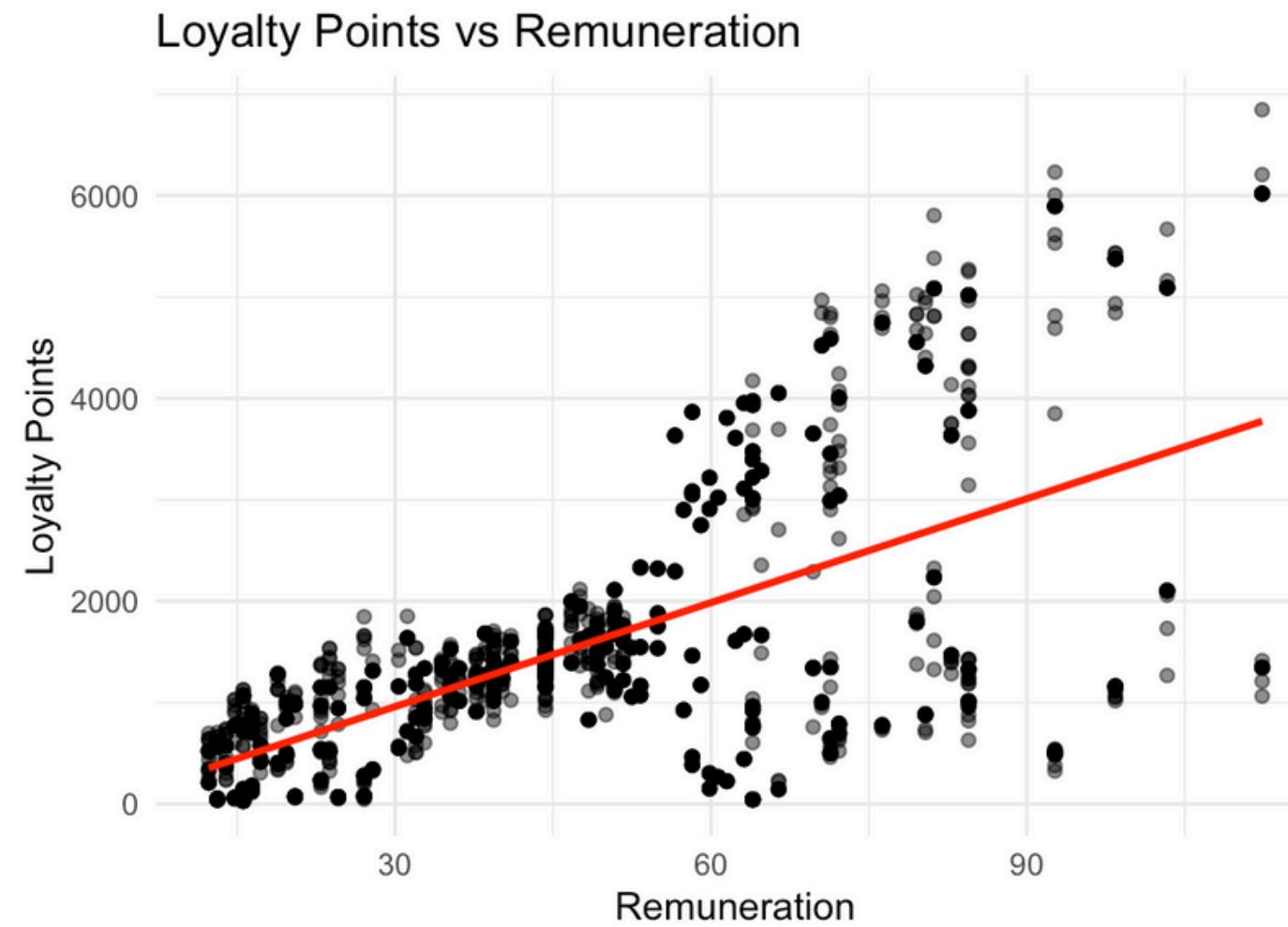
*Strongest Predictors: Spending Score, Remuneration*



- Dark blue, large circles → strong positive correlation
- Light or small circles → weak or no correlation

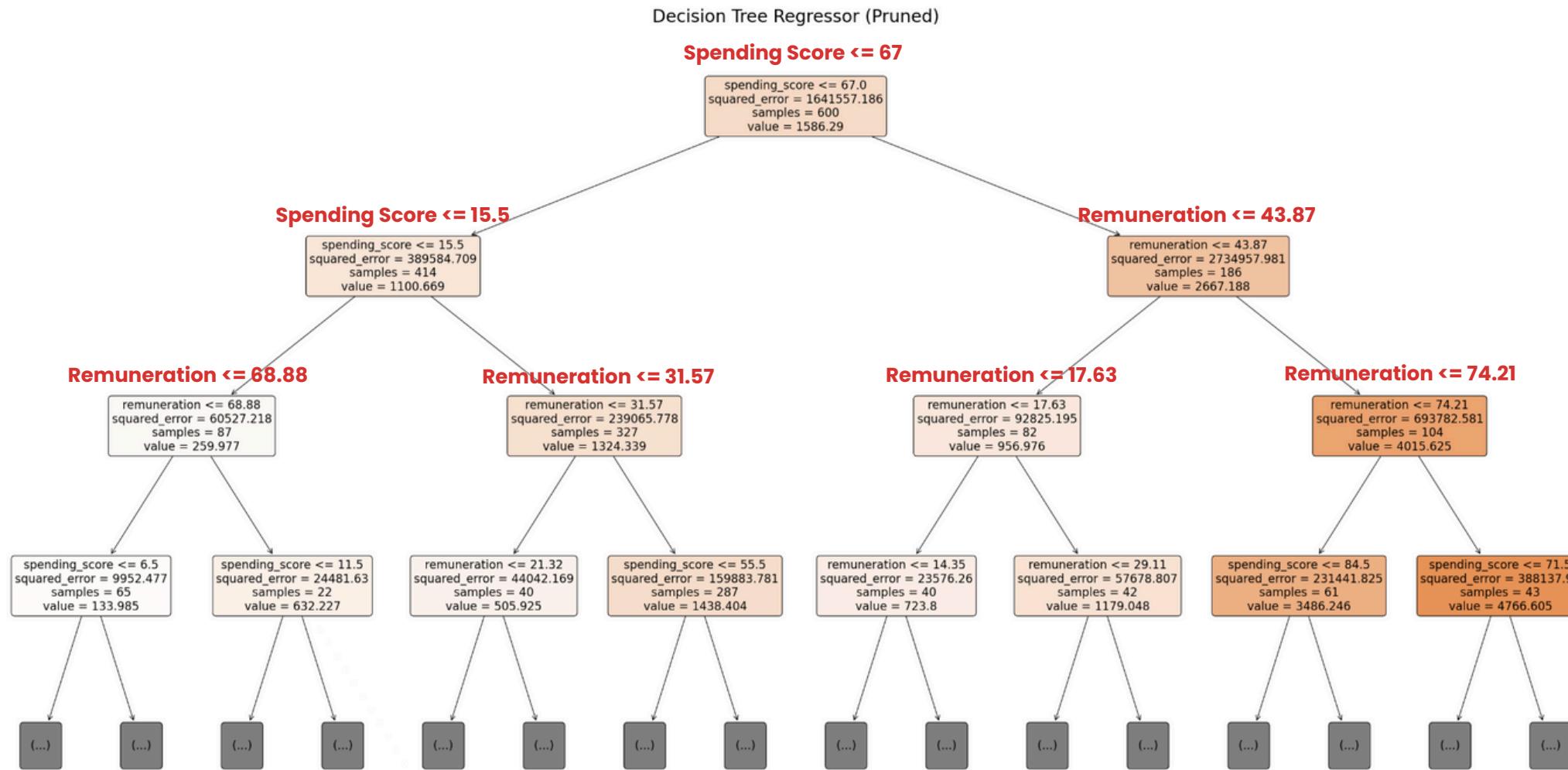
# Visualising Predictors

*Loyalty Points vs Key Variables*



# Visualising Loyalty Drivers with a Decision Tree

*Spending score and remuneration consistently split customers into high and low loyalty earners*



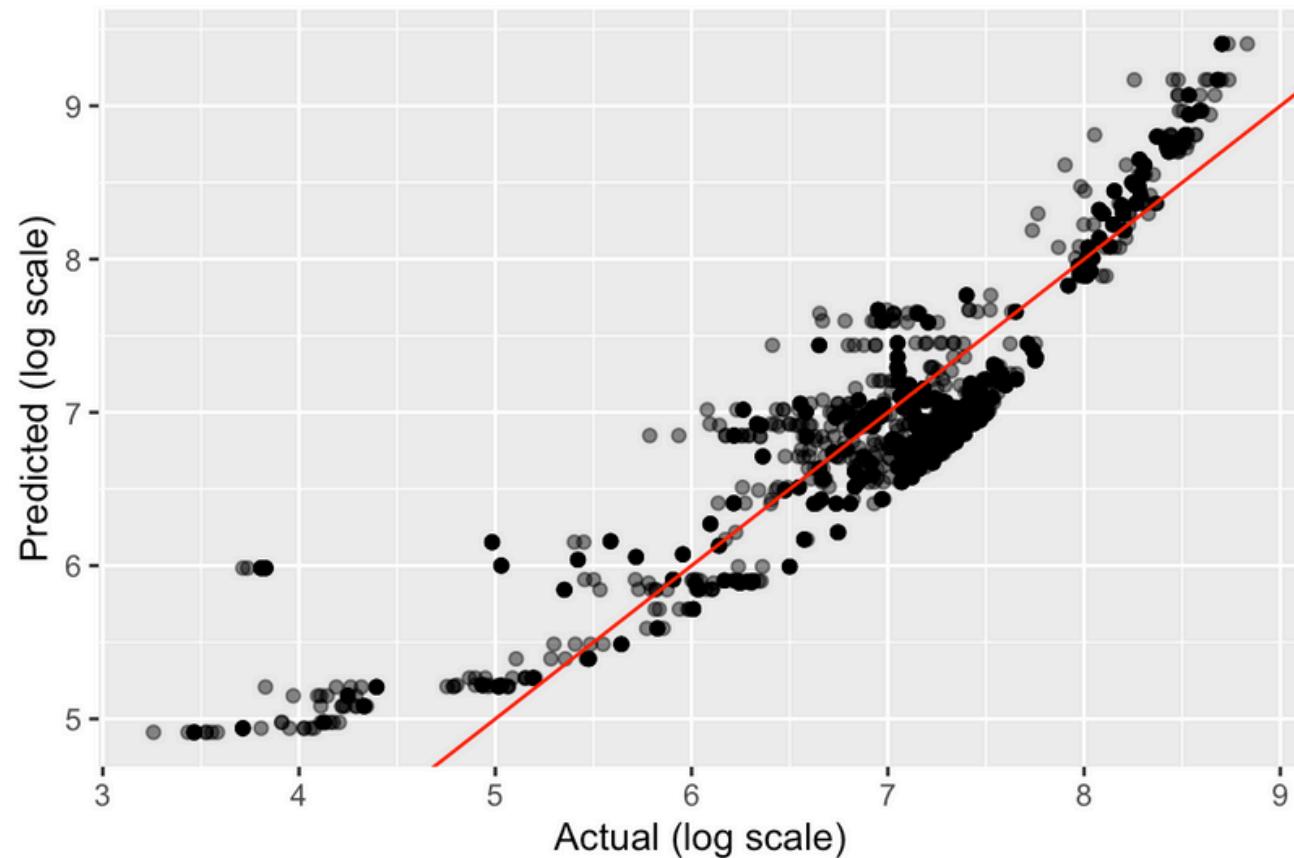
This pruned regression tree shows how customer traits influence loyalty points.

Splits at the top of the tree reinforce key predictors: behaviour, not demographics, drives loyalty outcomes.

# Predicting Loyalty Points Using Regression

*Spending score and remuneration are statistically strong predictors of loyalty*

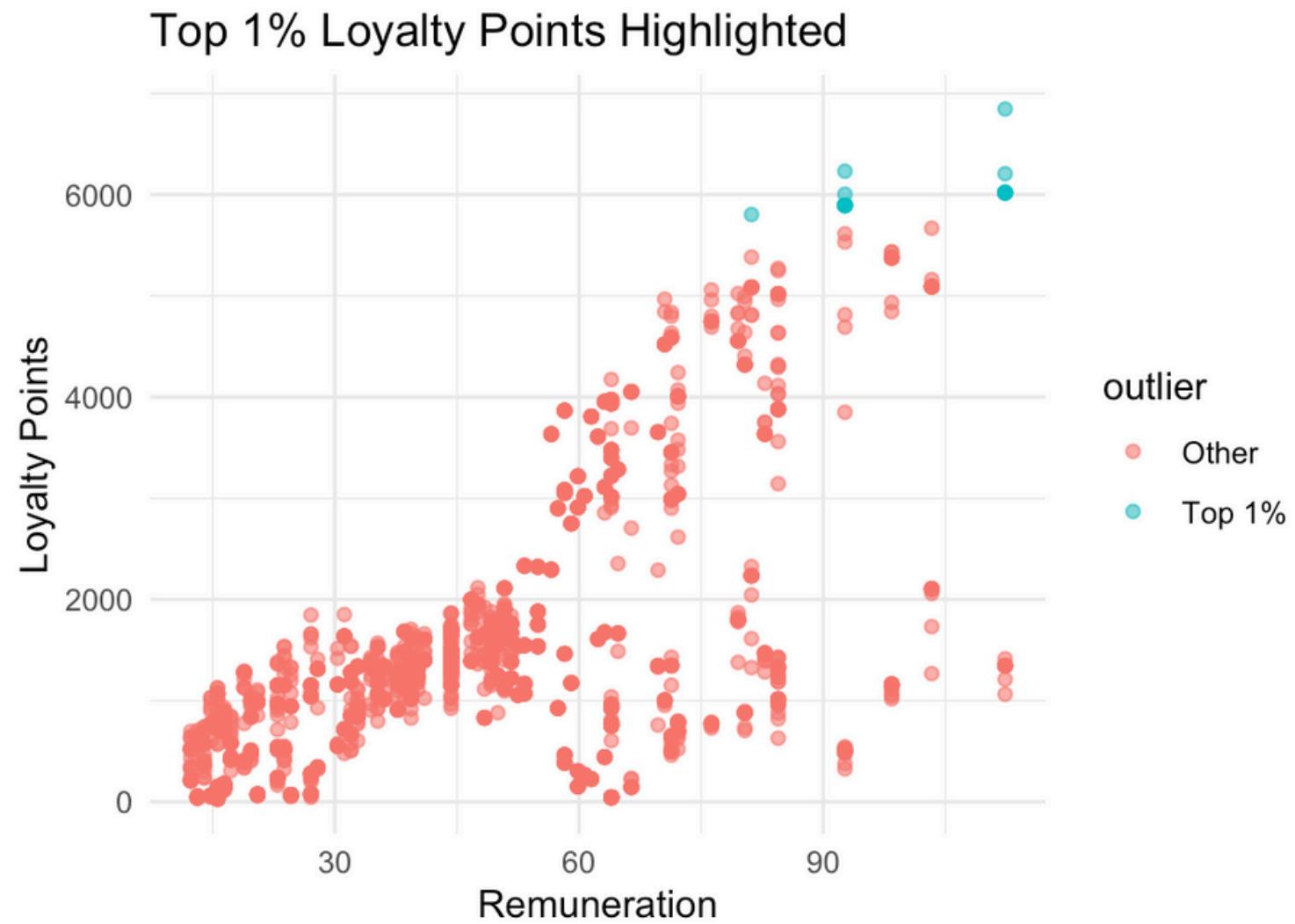
Predicted vs Actual (Log Loyalty Points)



- Tight clustering around the red line indicates strong model performance
- Spending score and remuneration explain ~80% of the variance in loyalty points (Adjusted R<sup>2</sup> = 0.7997)

# Understanding the Top 1% of Loyalty Earners

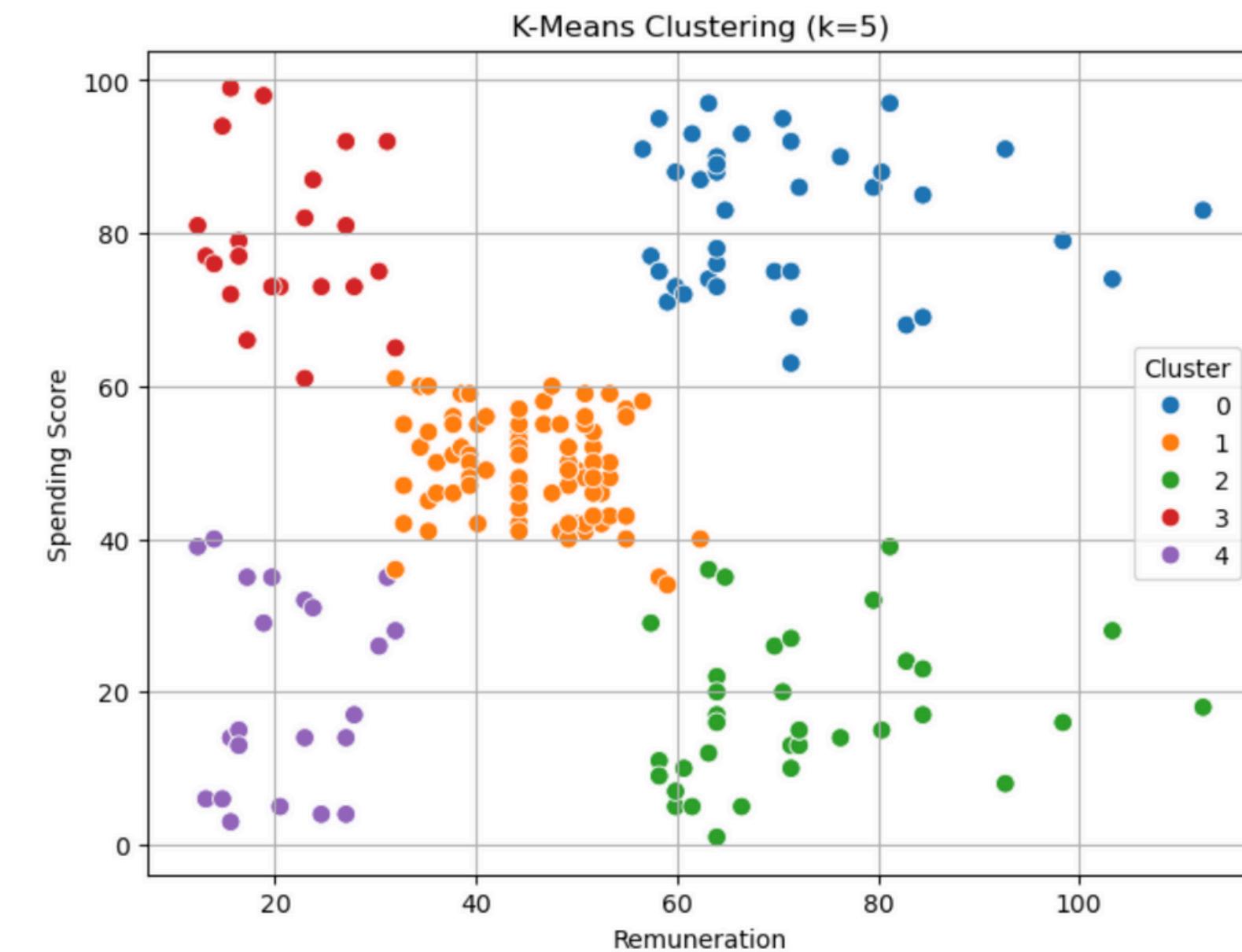
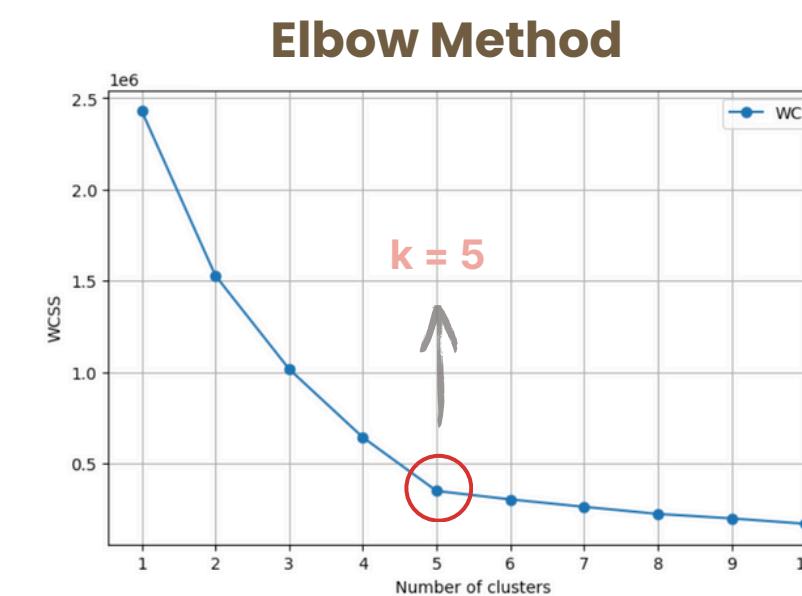
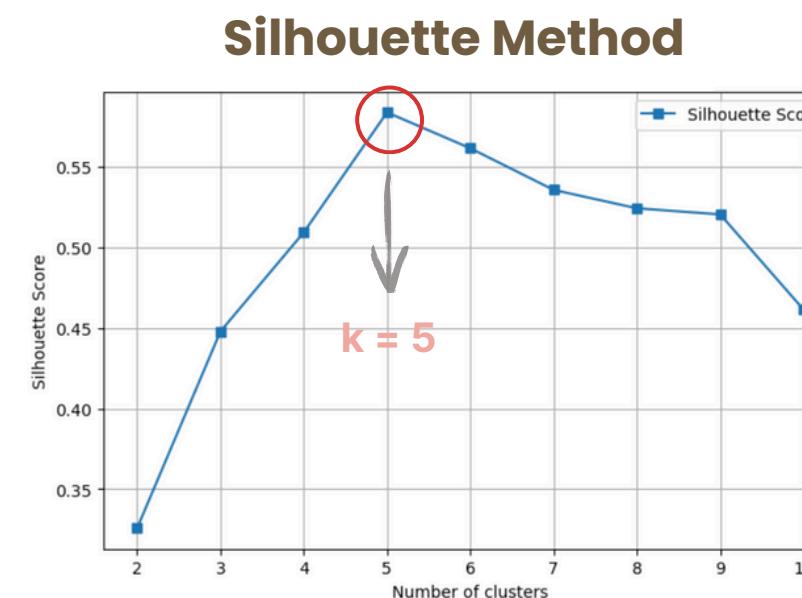
*High-income, high-spending customers generate the most loyalty points*



The top 1% of customers (by loyalty points) cluster in the high-remuneration, high-spending zone. These users should be prioritised in a premium loyalty tier.

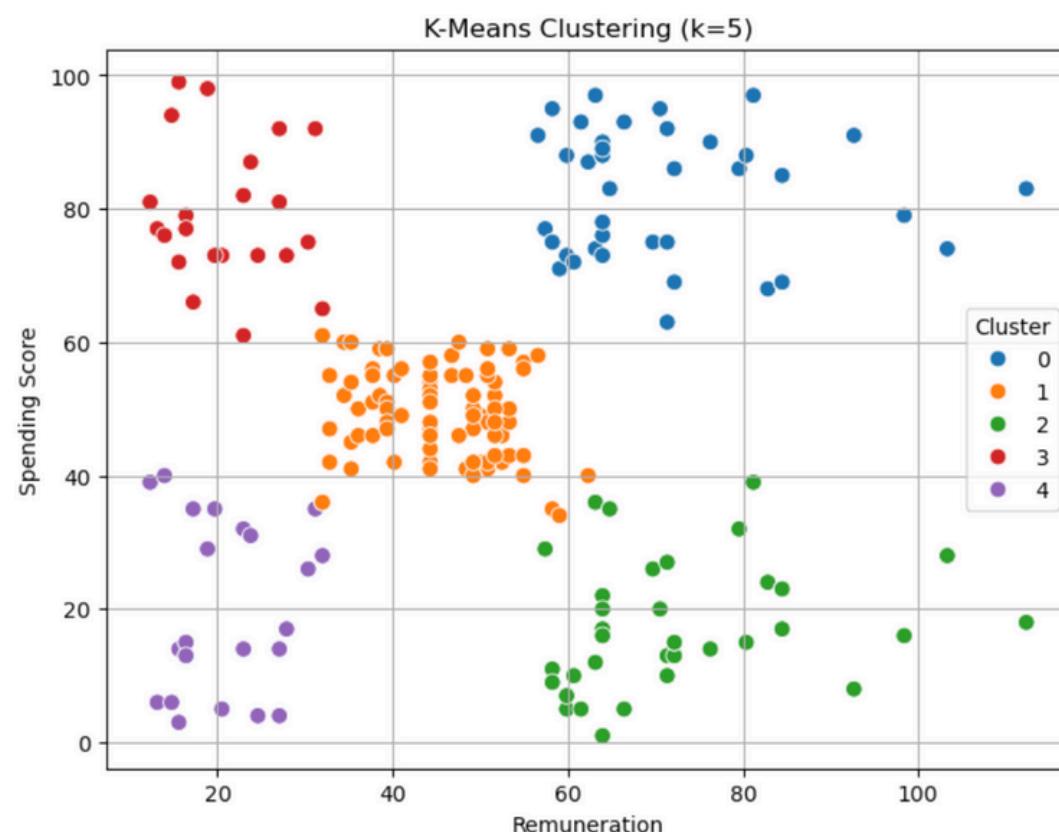
# Segmenting by Income & Spend

5 Key Clusters identified based on income and spending behaviour



# Customer Profiles & Strategy

*Targetting Strategies for each Customer Segment*



Cluster	Profile	Recommended Action
0	High income, high spend	Premium perks
1	Mid income/spend	Maintain general offers
2	High income, low spend	Upsell + bundles
3	Low income, high spend	Volume-based rewards
4	Low income, low spend	Low-cost nudges

# Insights from Customer Reviews

*Review contains more contextual and functional terms than Summary*

# Word Cloud for Reviews



More diverse vocabulary hinting at how the products are used or perceived

## Word Cloud for Summary

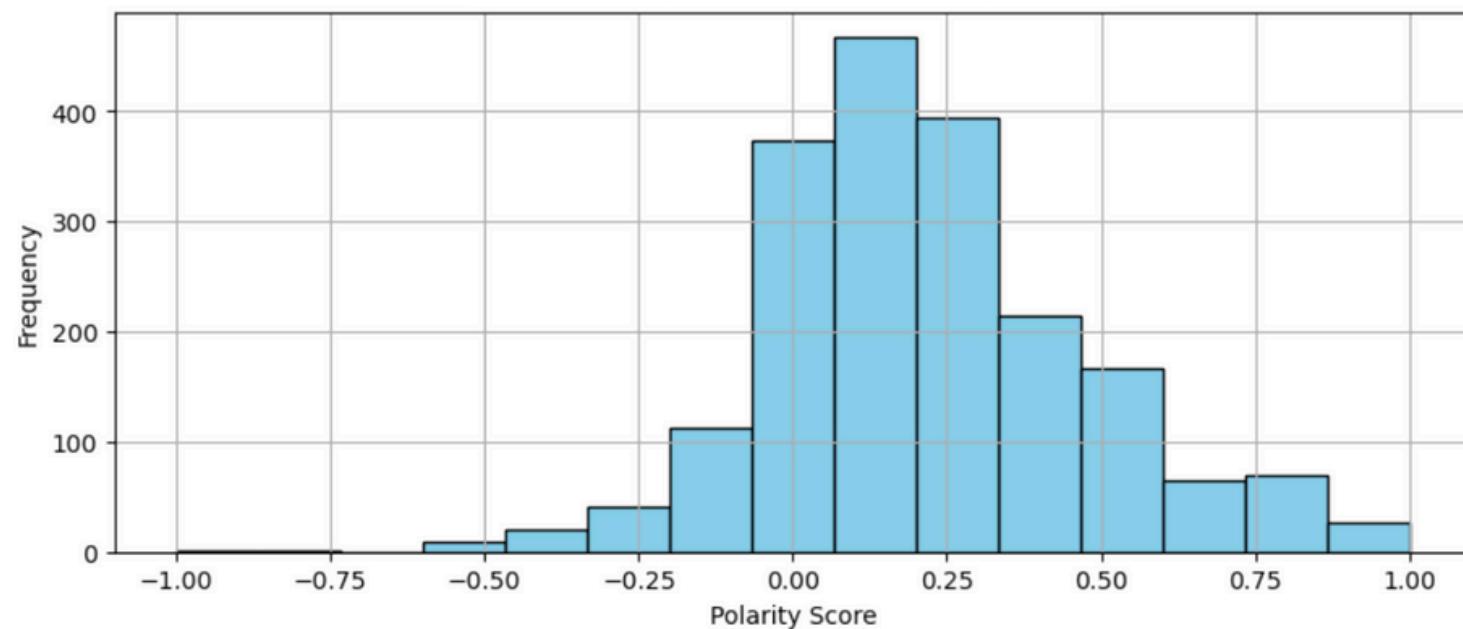


Keywords suggest overall satisfaction and product appreciation

# Sentiment Patterns

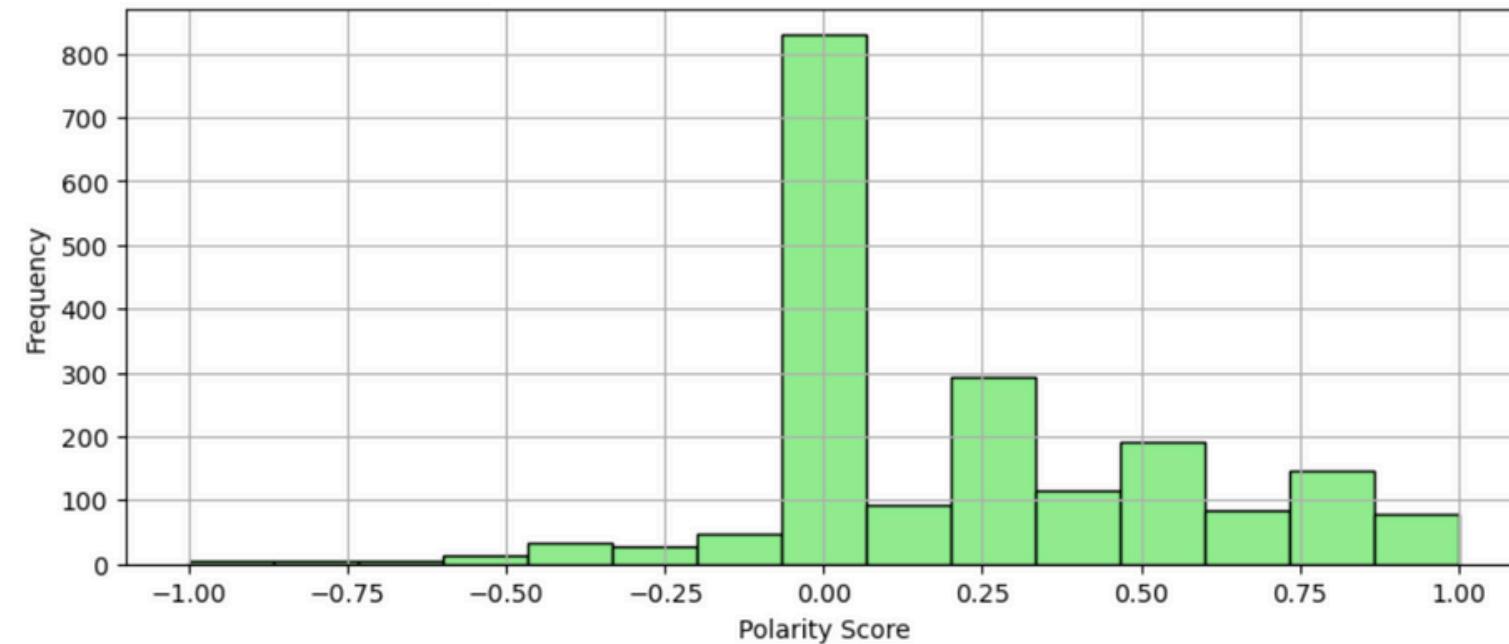
*Review sentiment skewed slightly positive*

**Histogram of Review Polarity**



Majority between 0 and 1

**Histogram of Summary Polarity**



Majority clustered at 0

# What Drives Positive and Negative Sentiment

*Reviews reveal themes in satisfaction and frustration*

## Top 20 Positive Reviews

	review	review_polarity
790	perfect	1.0
1726	excellent toy to simulate thought	1.0
194	awesome gift	1.0
1967	perfect for tutoring my grandson in spelling	1.0
1177	awesome addition to my rpg gm system	1.0
1168	best set buy 2 if you have the means	1.0
524	perfect just what i ordered	1.0
1715	awesome toy	1.0
1720	it is the best thing to play with and also min...	1.0
621	wonderful for my grandson to learn the resurre...	1.0
1135	awesome set	1.0
1609	this was perfect to go with the 7 bean bags i...	1.0
1401	one of the best board games i played in along ...	1.0
609	delightful product	1.0
1301	its awesome	1.0
7	came in perfect condition	1.0
165	awesome book	1.0
591	wonderful product	1.0
933	awesome	1.0
496	excellent activity for teaching selfmanagement...	1.0

- Perfect for tutoring grandson
- Best thing to play with
- Wonderful for grandson
- Excellent for teaching

## Top 20 Negative Reviews

	review	review_polarity
208	booo unles you are patient know how to measur...	-1.000000
182	incomplete kit very disappointing	-0.780000
1804	im sorry i just find this product to be boring...	-0.583333
364	one of my staff will be using this game soon s...	-0.550000
1524	expensive for what you get	-0.500000
117	i bought this as a christmas gift for my grand...	-0.500000
230	i found the directions difficult	-0.500000
290	instructions are complicated to follow	-0.500000
301	difficult	-0.500000
227	this was a gift for my daughter i found it di...	-0.500000
174	i sent this product to my granddaughter the po...	-0.491667
347	my 8 yearold granddaughter and i were very fru...	-0.446250
538	i purchased this on the recommendation of two ...	-0.440741
306	very hard complicated to make these	-0.439583
824	was a gift for my son he loves the game	-0.400000
803	this game is a blast	-0.400000
989	if you like me used to play dd but now you and...	-0.400000
1827	jun game	-0.400000
1446	you can play the expansions one at a time or a...	-0.400000
806	i bought this for my son he loves this game	-0.400000

- Instructions/Directions hard to follow
- Incomplete Kit
- Hard, Complicated to make

# Summary of Key Trends and Findings

*These trends enable smarter targeting, improved loyalty tiering, and more relevant messaging.*

## Loyalty is driven by spending behaviour

- Remuneration and spending score are strong predictors of loyalty points
- Demographics like age, gender, education are less relevant

1

## Five clear customer segments

- High-income, high-spending group earns most loyalty points
- Each customer segment should be targeted with different marketing strategies for optimal marketing spend

2

## Sentiment analysis shows review > summary

- Reviews are richer in useful product feedback
- Summaries are generic and add little business value

3



# Analytical Improvements

*With deeper technical knowledge or more data, our team could:*

**Test alternative regression models** (e.g. Lasso, Ridge) for improved accuracy and feature selection

**Apply cross-validation** to fine-tune and validate decision tree performance

**Explore other clustering methods** like hierarchical clustering or DBSCAN (if more behavioural data was available) for more nuanced segments

**Compare sentiment tools** — VADER and TextBlob showed similar results

**Use topic modelling** to identify common themes in customer reviews

**Track loyalty trends over time** if customer IDs and timestamps were available

However, even within scope, the patterns we uncovered are strong enough to support immediate action.



# What can Turtle Games do?

*Data-backed actions for better marketing and retention*

## Loyalty Programme Targeting

- Allocate **70% of loyalty campaign budget** to customers with **remuneration and spending score  $\geq 60$** 
  - These customers drive the highest loyalty point accumulation
- Create a **premium-tier loyalty scheme** for the **top 1% earners** (loyalty points  $> 4000$ )
  - Exclusive bundles, early access, and high-tier rewards
- Trigger **churn-prevention campaigns** for customers with **remuneration  $\geq 70$**  but **loyalty points  $< 1000$** 
  - High spenders, currently under-engaged

# What can Turtle Games do?

*Data-backed actions for better marketing and retention*

## Sentiment & Feedback Strategy

- Drop the **summary field** from ongoing sentiment analysis
  - Low value, repetitive terms like “great”, “five stars”
- Use **review sentiment polarity** to track monthly sentiment trends
  - Focus especially on negative reviews  $< 0$  for fast response and quality control

2



# What can Turtle Games do?

*Data-backed actions for better marketing and retention*

## Segment-Based Campaigns

- Use K-means cluster profiles to guide campaign themes:
  - High income + low spend → **Upsell with bundles**
  - Low income + high spend → **Reward loyalty with volume discounts**
  - Low income + low spend → **Low-cost nudges only**
- Redirect **40% of digital ad spend** to customers with **spending score  $\geq 60$**  but **loyalty points  $< 2000$** 
  - Encourage programme participation and conversions

3



# Next Steps for Better Future Insights

*Extend value with new data and advanced models*

## Add additional customer data for future data collection

- Include visit frequency, product category, customer ID, and purchase channel in the dataset
- Enables deeper segmentation and path-to-purchase insights



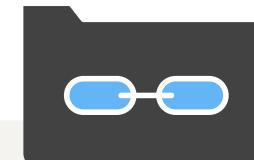
## Begin loyalty churn prediction

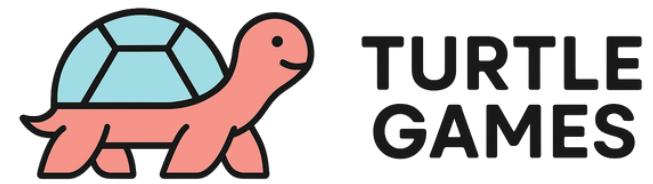
- Train models to flag high-potential customers at risk of dropping off
- Allows timely retention strategies



## Link sentiment to product types

- Tag reviews to specific product categories (e.g. family games vs solo play)
- Helps identify product-level satisfaction trends





# THANK YOU

I welcome any questions or feedback.

