

KPI's of Consumer Electronics

By Jaime Aguilar



The Problem

How may KPIs such as Lifetime Customer Value, and Cost per Customer Acquisition be determined for consumer electronics, so that a Company may fully characterize and understand its customer base for driving greater growth in its marketing purposes?

Dataset 1

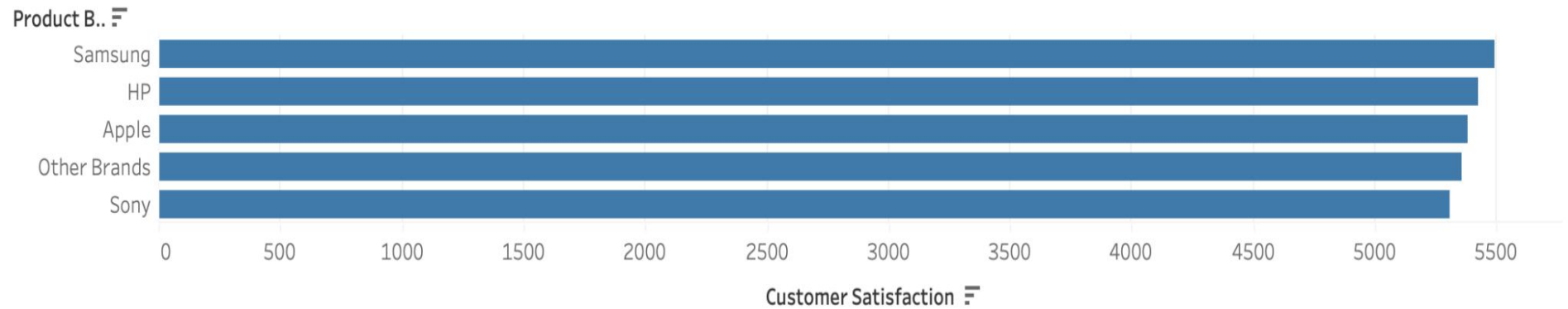
This dataset is synthetic and made for educational and hypothetical purposes to document consumer electronics sales alongside consumer characteristics, for an intended business intelligence analysis that aims to seek inferences from its consumers. The KPI of interest is Lifetime Customer Value.

Dataset 2

ABC Electronics is a hypothetical electronics e-commerce company. This dataset is synthetic and made for educational and hypothetical purposes to document electronics sales alongside with consumer characteristics, for an intended business intelligence analysis that aims to seek inferences from its consumers. The KPI of interest is cost of customer acquisition (CAC).

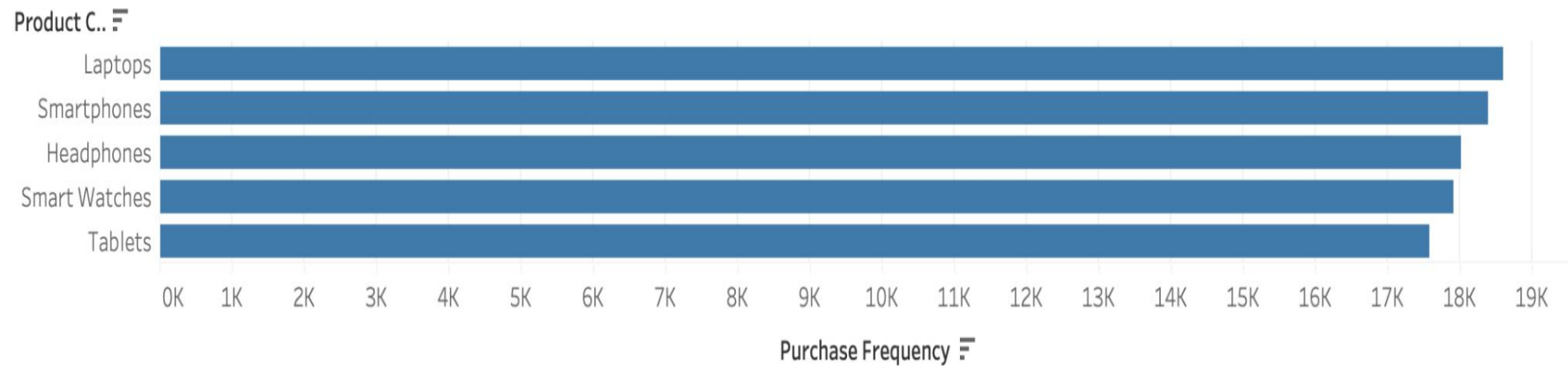
Results

Product Brands with the Highest Customer Satisfaction



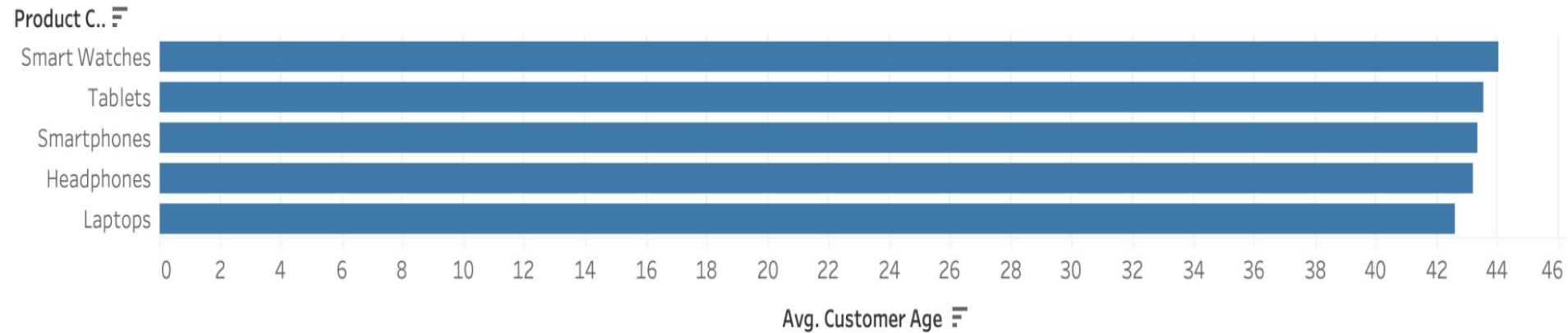
Results

Most Sold Product Categories



Results

Age Segmentation of Electronics



Results

Default Linear Regression:

MSE: 1.0413

R^2 : -0.0003

Random Forest Regressor (Tuned):

Best Parameters: {'max_depth': None, 'min_samples_leaf': 1, 'min_samples_split': 2, 'n_estimators': 200}

MSE: 0.0002

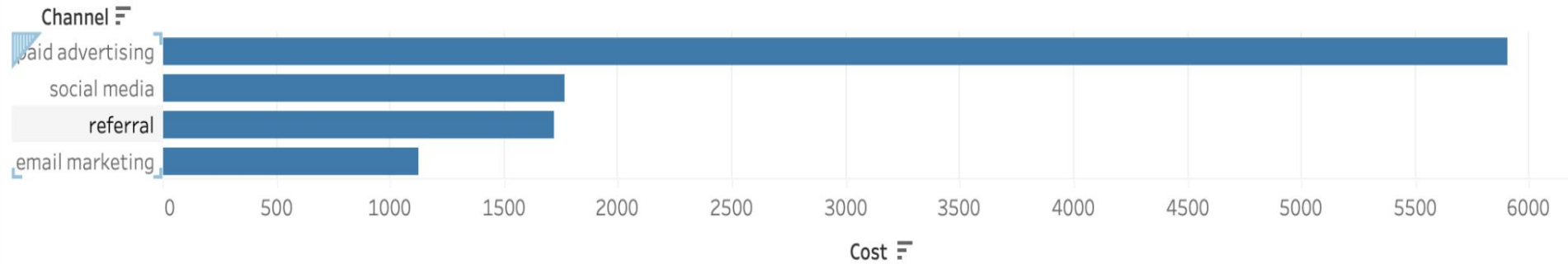
R^2 : 0.9998

Results

AssignedCategory	Actual LCV (Unscaled)	Predicted LCV (Unscaled)
Laptops	2.028258e+08	2.027701e+08
Smart Watches	1.901177e+08	1.900759e+08
Smartphones	1.832840e+08	1.831955e+08
Tablets	2.021540e+08	2.021617e+08

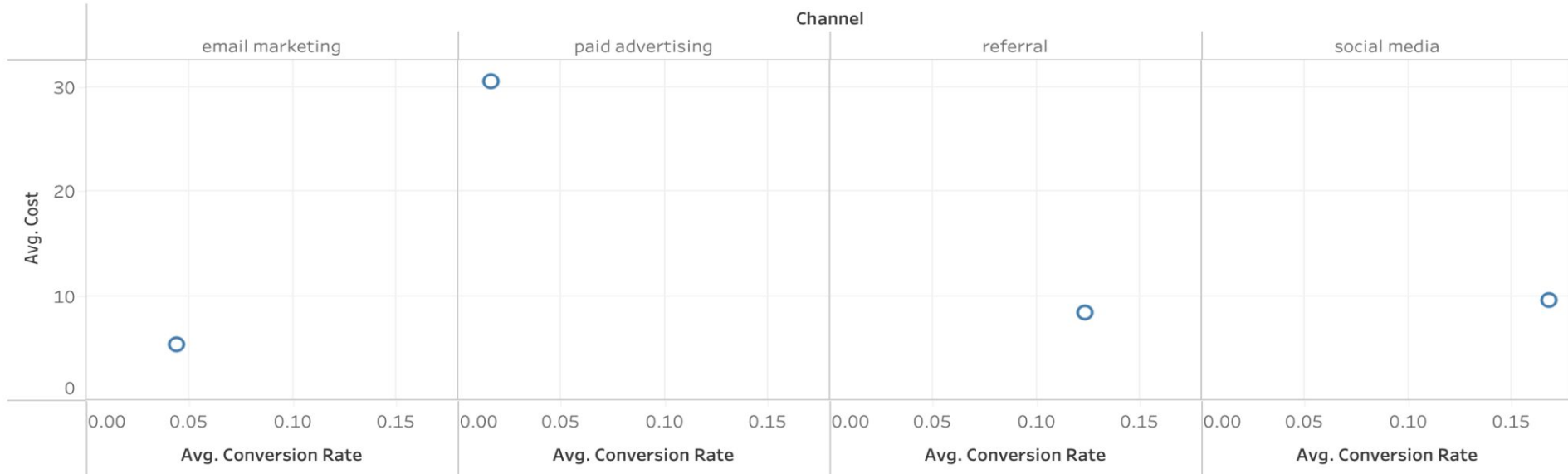
Results

Lowest Cost Aquisition Channels



Results

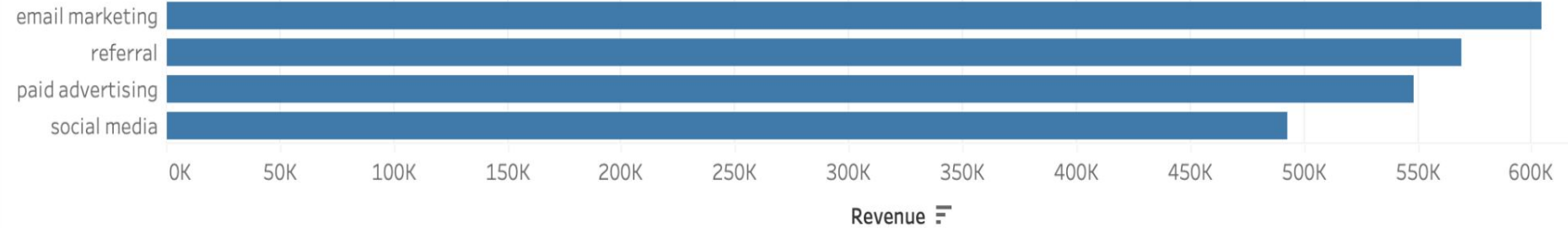
Lowest Cost Highest Conversion Rate Channels



Results

Revenues per Channel

Channel



Results

Model Performance (CAC Prediction) in Dollars:

MSE: 0.00 dollars²

R²: 1.0000

Cross-Validation MSE in Dollars: 0.00

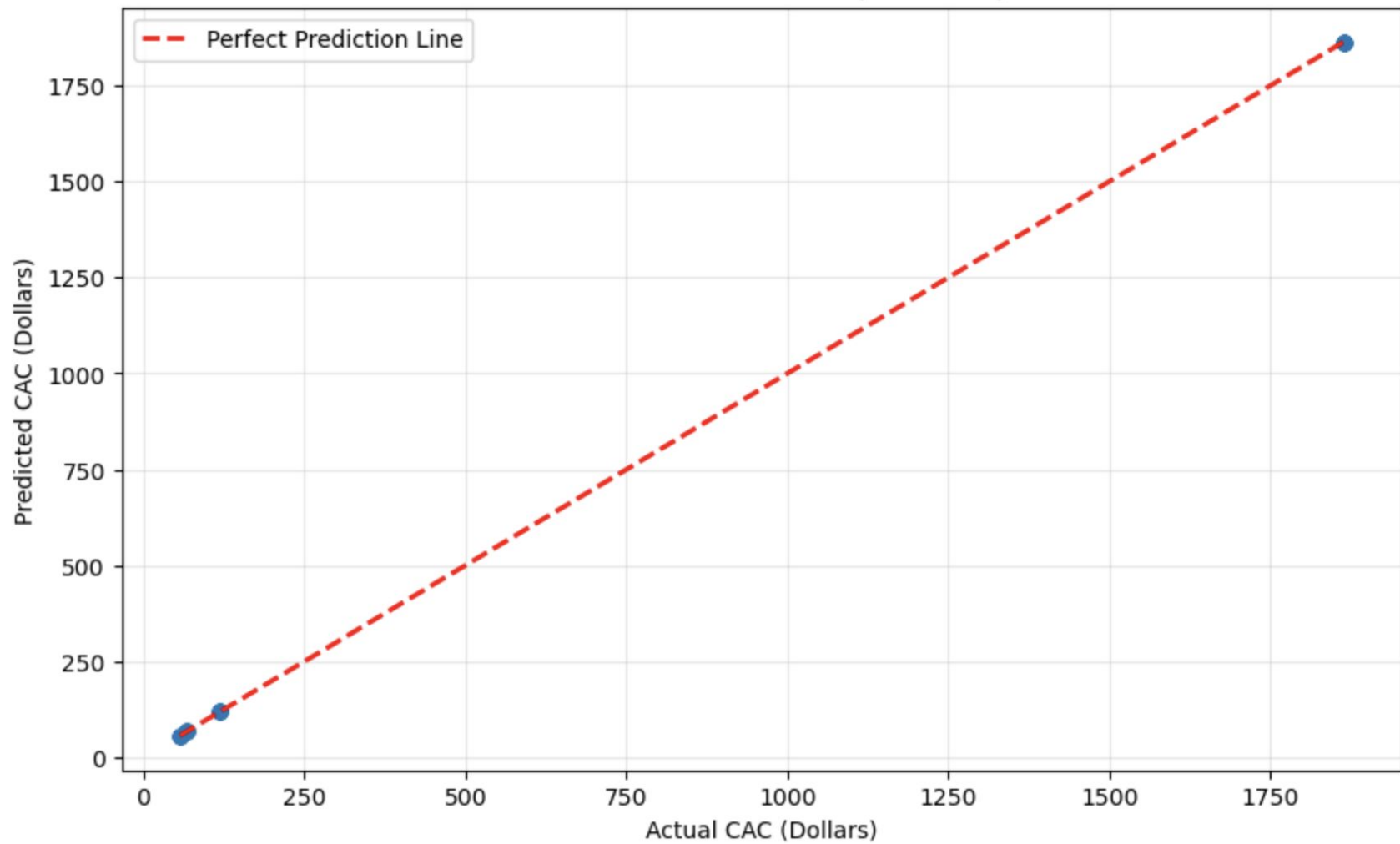
Best Parameters from RandomizedSearchCV: {'model__xgb__n_estimators': 200, 'model__xgb__learning_rate': 0.01, 'model__rf__n_estimators': 100, 'model__rf__max_depth': 3, 'model__gb__n_estimators': 200, 'model__gb__max_depth': 5}

Future CAC Predictions (First 10 in Dollars): [67.56529433 56.96161856 56.96161856 67.56529433 1863.37502211
56.96161856 119.71694365 119.71694365 56.96161856 67.56529433]

Results

```
count      800.000000
mean       514.547619
std        764.026287
min         56.961619
25%        67.565294
50%        119.716944
75%        119.716944
max        1863.375022
Name: cac, dtype: float64
```

Actual vs Predicted CAC (in Dollars)



Recommendations

- Laptops and tablets are the highest LCV category
- Referrals and social media have lowest CAC
- Younger people tend to buy laptops
- Incentivize Current Customers with referrals or discounts on products
- Grow organic audiences on social media through algorithmic strategy
- Sell more laptops to younger people, such as Apple or HP to drive more brand loyalty, by targeting prospecting to where their attention goes, such as social media and college towns for retail.

Thank You