

---

**Dataking Ltd.**

Eva Polakova, Betka Bohinikova, Michael Flury, Stefan Schultze

# Credit card customer analysis



---

## Table of contents



- 01 **Data exploration**
- 02 **Client assumptions**
- 03 **Methodology**
- 04 **Results & Insights**
- 05 **Recommendations**



---

## 01 – Data exploration

- **Dataset received from the credit card company**
- **8'500 customers over a 6-month period**

---

## 02 – Client assumptions

**Amount  
of purchases**

01

**Number  
of purchases**

02

**N. and amount  
of installments**

03

**Cash advance  
usage**

(cash withdrawals vs. limit)

04

---

## 03 – Methodology

Final data processing after having run various analysis to evaluate different models and select the optimal flow

---

### KNN Imputer

Filling missing data points based on similar customers

---

### Log scaling

Scaling data for analysis computation and visualization

---

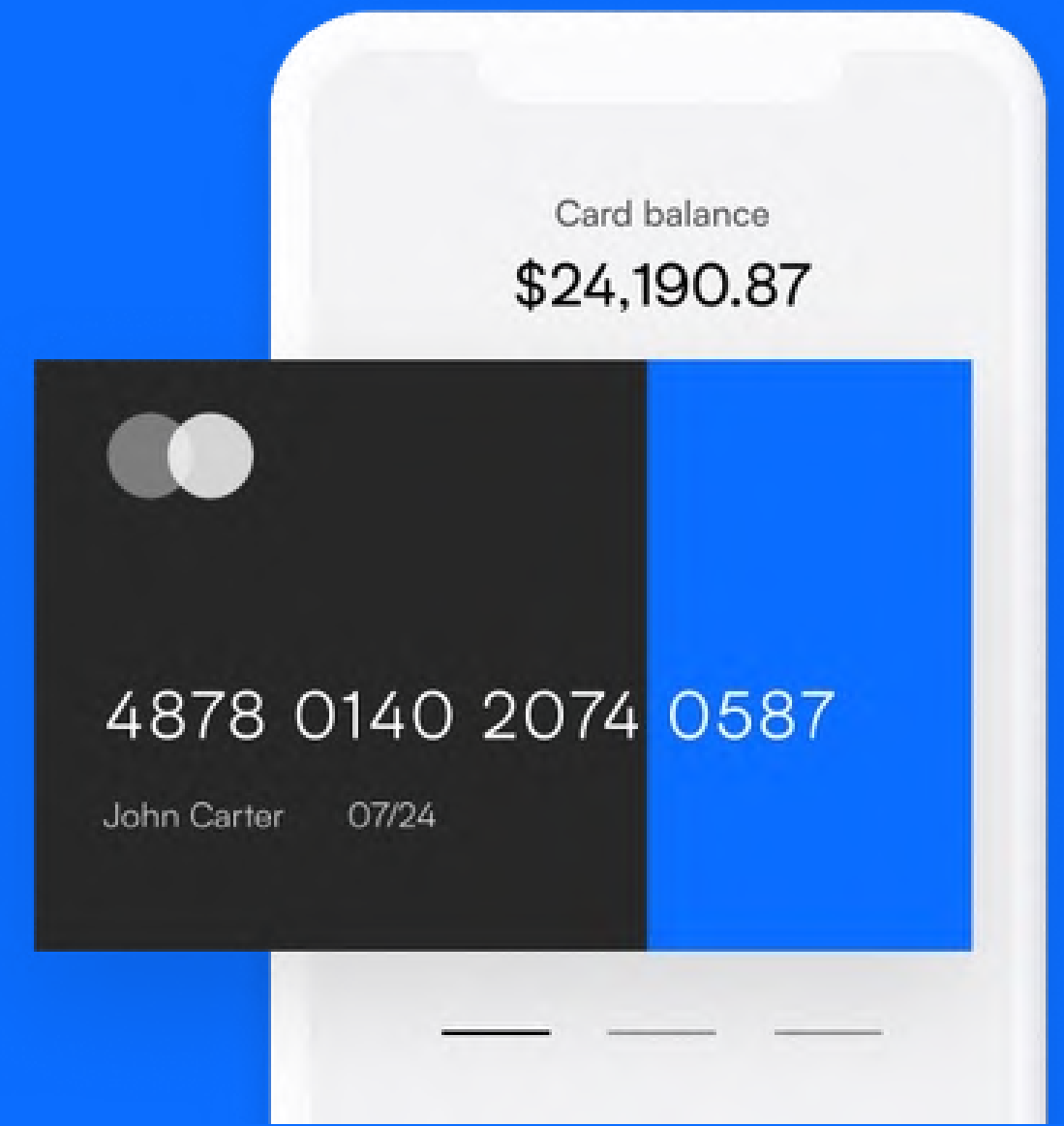
### K-mean w/ K=7

Identifying and splitting data into 7 distinct customer groups



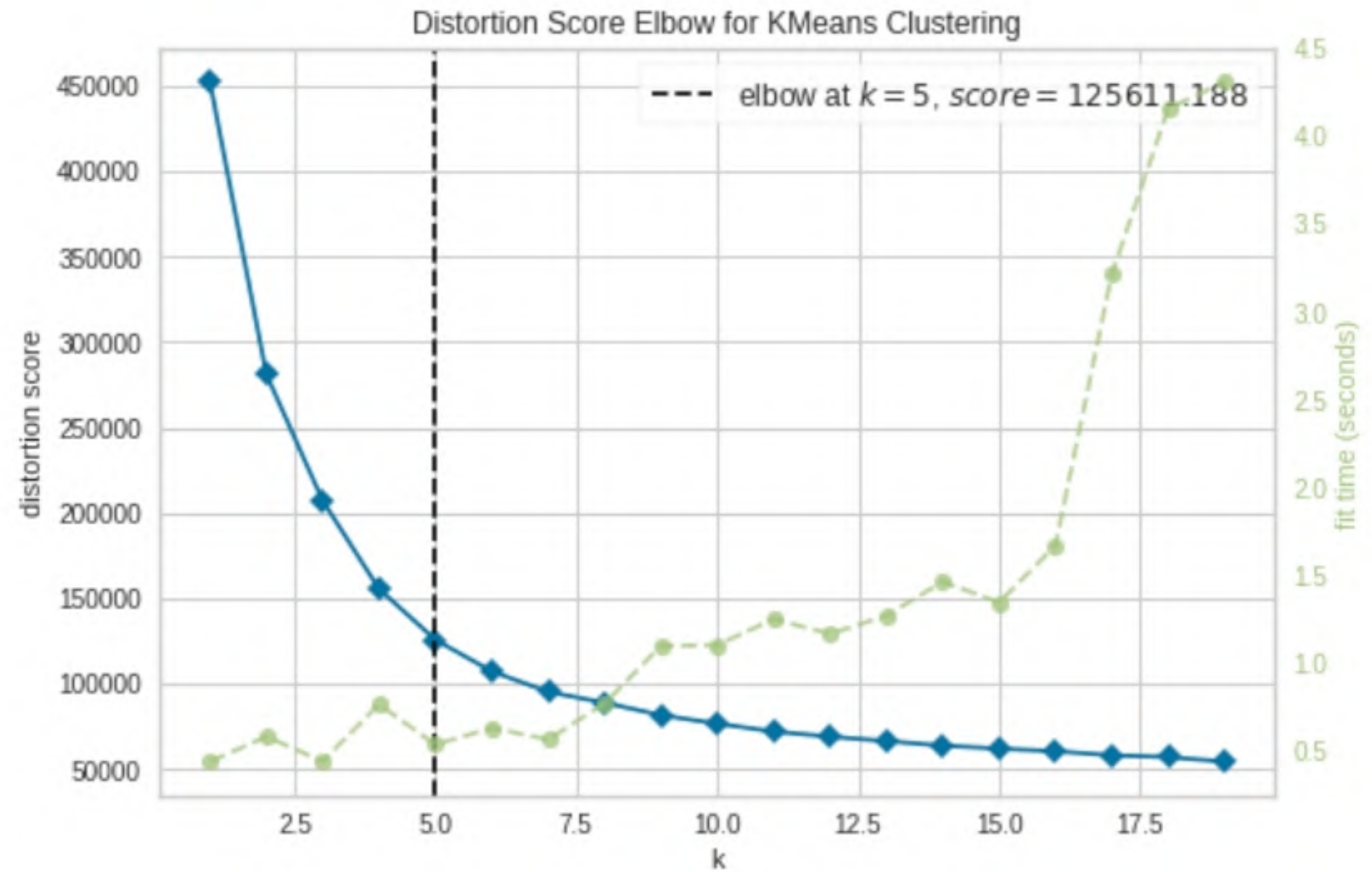


# Results & Insights



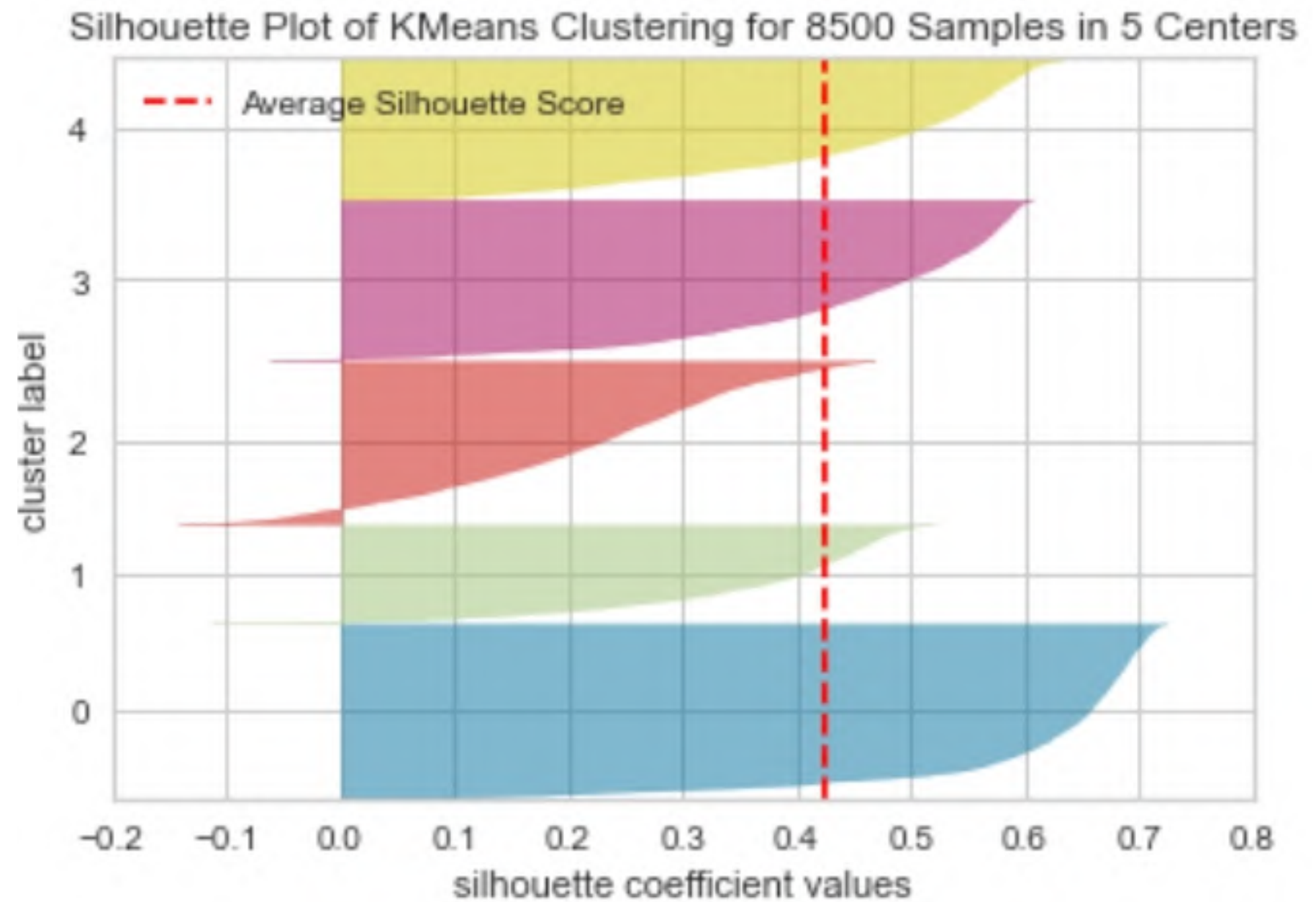
## Number of clusters based on metrics

- Distortion Score Elbow for KMeans Clustering
- K = 5 suggested



## Silhouette Plot of KMeans K=5

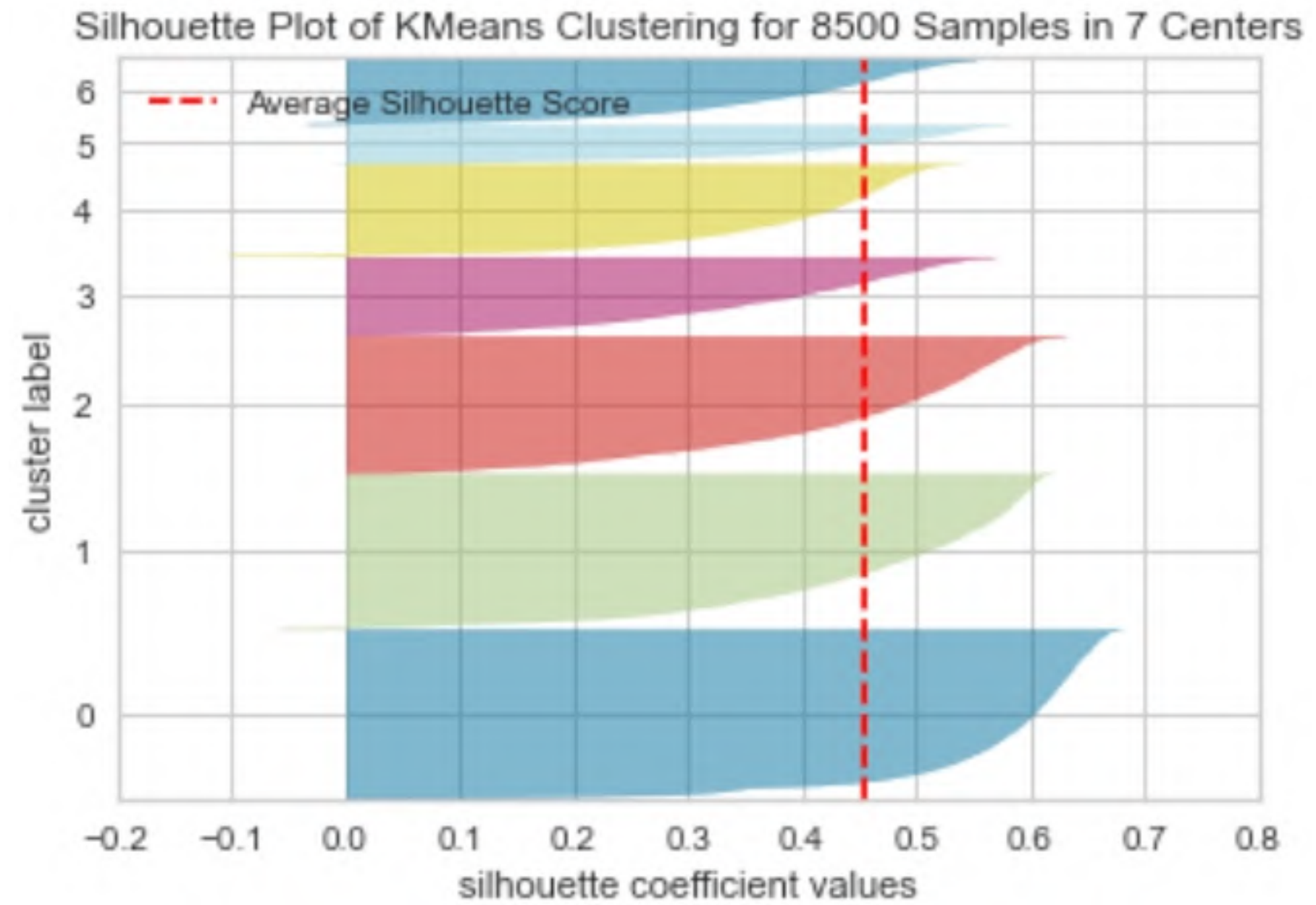
- K = 5 used as suggested
- 8500 samples in 5 centers





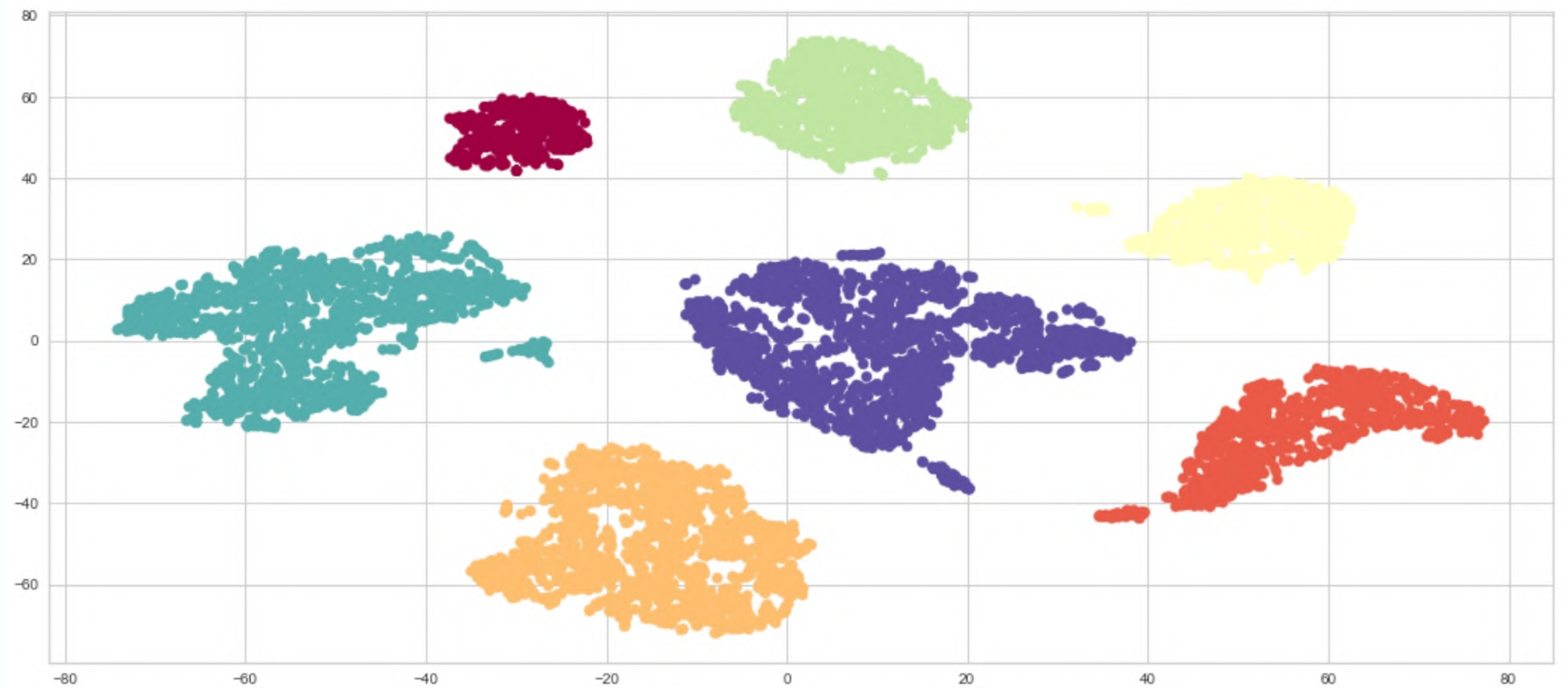
## Silhouette Plot of KMeans K=7 trial

- K increased to 7 centers
- 7 well-defined clusters and increased avg. Silhouette Score



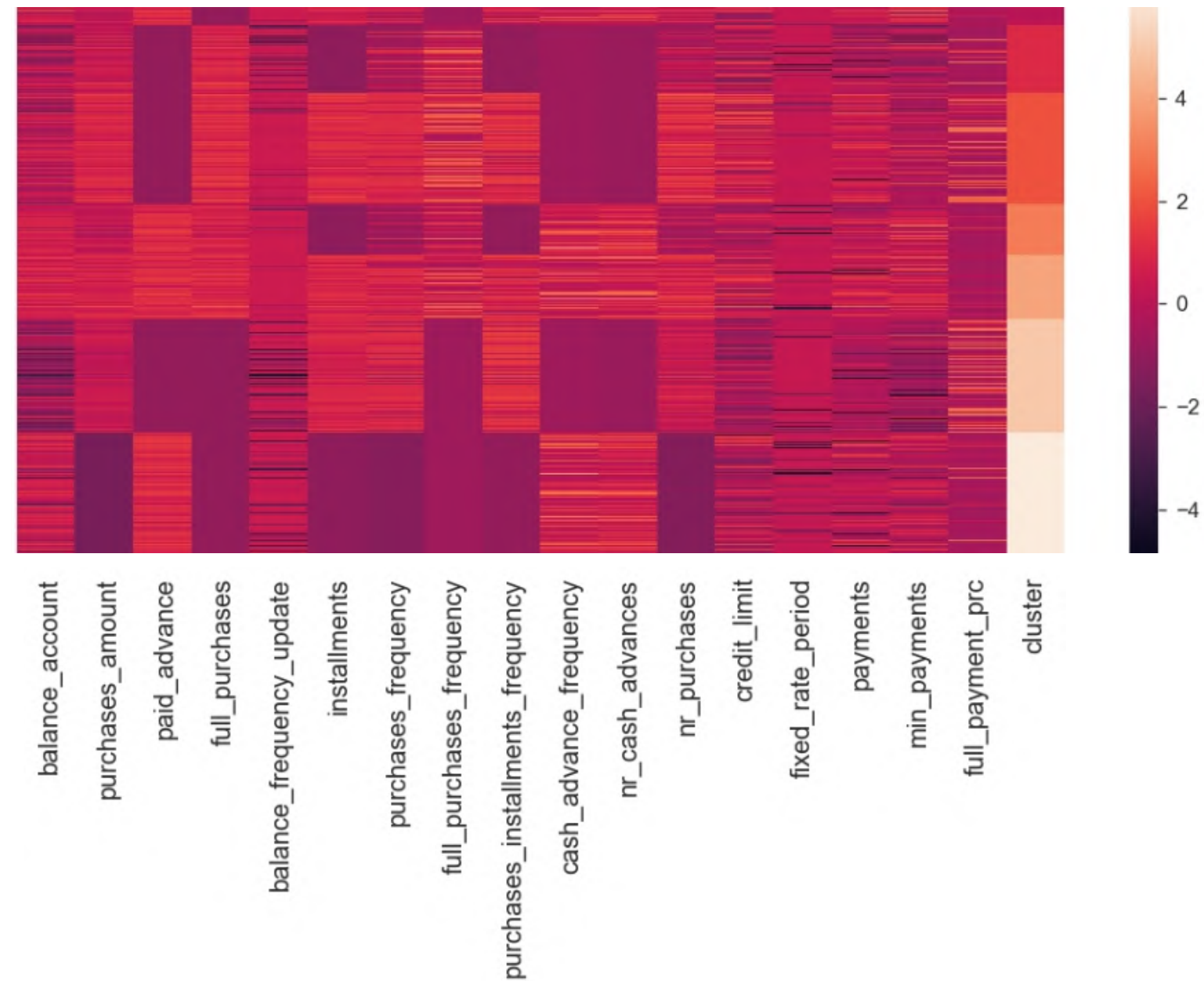
## Number of clusters based on the t-SNE dimensions reduction

- T-distributed Stochastic Neighbor Embedding



## Impact and trends on features between groups

- Establishing features' impact patterns across clusters



# Median values for each cluster group



	payments	balance_account	purchases_frequency	paid_advance	installments	credit_limit
cluster						
0	1103.456741	1623.282654	0.750000	1138.809200	345.000	3000.0
1	575.274883	236.481788	0.250000	0.000000	0.000	3000.0
2	1331.051757	531.975089	0.916667	0.000000	544.865	5000.0
3	1078.964657	1621.219401	0.166667	1147.361897	0.000	3500.0
4	1731.376133	2072.246033	0.875000	1154.315716	448.275	5000.0
5	417.861072	55.805523	0.833333	0.000000	320.720	2500.0
6	753.943080	1446.673726	0.000000	1194.998121	0.000	3000.0

# Mean values for each cluster group



	payments	balance_account	purchases_frequency	paid_advance	installments	credit_limit
cluster						
0	1846.022868	2544.252752	0.660126	1991.545721	549.960507	4279.262673
1	1208.364801	761.359360	0.354487	0.017852	0.056318	4395.566998
2	2269.780063	1217.935823	0.811853	0.000000	965.507684	5674.518588
3	1922.230347	2367.306169	0.275377	2025.045649	0.209325	4678.774232
4	2982.191308	2873.682941	0.780566	2098.981946	776.013365	5849.487538
5	749.609176	400.433289	0.703541	0.000000	534.825759	3111.118897
6	1658.448869	2142.214798	0.001154	1983.197969	0.066278	4039.144513



---

## O5 – Recommendations

### Customer type 0

- Uses CC mainly to withdraw cash
- Never does purchases
- Uses installments

### Recommendation

- May apply for credit limit increase

### Customer type 1

- Often max out the CC
- Doesn't use installments

### Recommendation

- Share installments options and advantages

---

## Recommendations

### Customer type 2

- Often max out the CC
- Purchases frequently
- Uses installments

### Recommendation

- Good customer
- No recommendation needed

### Customer type 3

- Uses CC mainly to withdraw cash
- Doesn't use installments

### Recommendation

- Launch points program to increase the number of purchases

---

## Recommendations

### Customer type 4

- Uses CC mainly to withdraw cash
- Uses CC to make purchases
- Uses installments

### Recommendation

- Good customer
- No recommendation needed

### Customer type 5

- Often max out the CC
- Does not make purchases
- Uses installments

### Recommendation

- Increase credit limit if eligible

---

## Recommendations

### Customer type 6

- Uses CC mainly to withdraw cash
- Does not make purchases
- Does not use installments

### Recommendation

- Show how installments work
- Advertise loans at low interest rate

---

**Dataking Ltd.**

Eva Polakova, Betka Bohinikova, Michael Flury, Stefan Schultze

[data@king.ai](mailto:data@king.ai)

# Thank you