

# Churn Analytics for B2B Card Payments Services



## **The B2B Client: Card Payments Services**

Award-winning, low-cost merchant services and card payment solutions trusted by over 60,000 small businesses in the UK

## **BUSINESS OBJECTIVE**

- To analyze merchant behavior patterns affecting churn rate.

## **RESEARCH OBJECTIVES**

1. To identify homogeneous groups within merchant accounts for determining similar pattern of transactions & churn behavior from past data
2. To determine the median Survival rate at overall level & among top 5 business categories
3. To identify Top 10 Thompson Category with respect to Churn count
4. To identify Top 10 Counties with respect to Churn count
5. To explore association between the Churn Status and Business Category
6. To determine association between the Churn Status and Counties

## Data Description - 1

1. Opportunity Id: Unique identifier for an individual deal.
2. Locator Id: Unique identifier for a specific Merchant (Merchants can have multiple Opportunities)
3. Post Code District: Used to analyze data based on geographic area
4. Thompson Code: Business type identifier
5. Thompson Category: Description of business identifier
6. Open Date: Date account opened with bank
7. Live Date: Date first transaction occurred
8. Seller User Id: ID of sales person. (For analysis by seller)
9. Dept Name: Department of sales person (For analysis by sales department)
10. Churn Date: Date that customers account was closed
11. Cancel Date: Date that customers account was closed with bank

## Data Description - 2

12. Churn Reason: Reason for account closure.
13. Year - Transaction Reporting Year.
14. Month - Transaction Reporting Month.
15. Debit Sales - £ volume of Debit sales in the month defined
16. Debit Transactions - Number of Debit sales in the month defined
17. Debit Returns - £ volume of Debit return transactions in the month.
18. Debit Return Trans - Number of Debit return transactions in the month.
19. Credit Sales - £ volume of Credit sales in the month defined
20. Credit Transactions - Number of Credit sales in the month defined
21. Credit Returns - £ volume of Credit return transactions in the month.
22. Credit Return Trans - Number of Credit return transactions in the month.

## SOLUTION # 1: RISK STRATIFICATION

	Clusters			
Status	Low Risk	Medium Risk	High Risk	Grand Total
Active	19	1,936	27,988	29,943
Churn	3	118	10,464	10,585
<b>Grand Total</b>	<b>22</b>	<b>2,054</b>	<b>38,452</b>	<b>40,528</b>

**ML Technique: *k-means Cluster Analysis***

## HIGH RISK CLUSTER ATTRIBUTES

1. This cluster consist of High risk members whose average Debit Sales of GBP 50,320, Debit transactions of 1,346, Credit sales of GBP 22,721 & Credit transactions of 319 respectively.
2. The Average Tenure in the system is about 21 months.
3. Churn is predominantly across postal codes EI, NWio, CRo, EC1V, HP13.
4. Top Thompson Categories churning are Take Away Food Shops, Public Houses, Bars & Inns, Restaurants — Other, Restaurants — Indian, Garage Services.
5. The top reasons contributing to churn are closed — customer cancel & FDMS collections, Fraud.

## MEDIUM RISK CLUSTER ATTRIBUTES

1. Medium risk members signify merchants who have an average Debit Sales of GBP 550,534, Debit transactions of 12,630, Credit sales of GBP 295,993 & Credit transactions of 3,956 respectively.
2. The Average Tenure in the system is about 33 months.
3. Churn is predominantly across postal codes ECiV, HA8, CH3, ECIA, M3.
4. Thompson Categories churning are Public Houses, Bars & Inns, Restaurants — Other, Hotels, Convenience Stores, Restaurants — Indian are having maximum churn count.
5. The top reasons contributing to churn are closed — customer cancel & FDMS collections, FDMS cancel due to sponsor change.

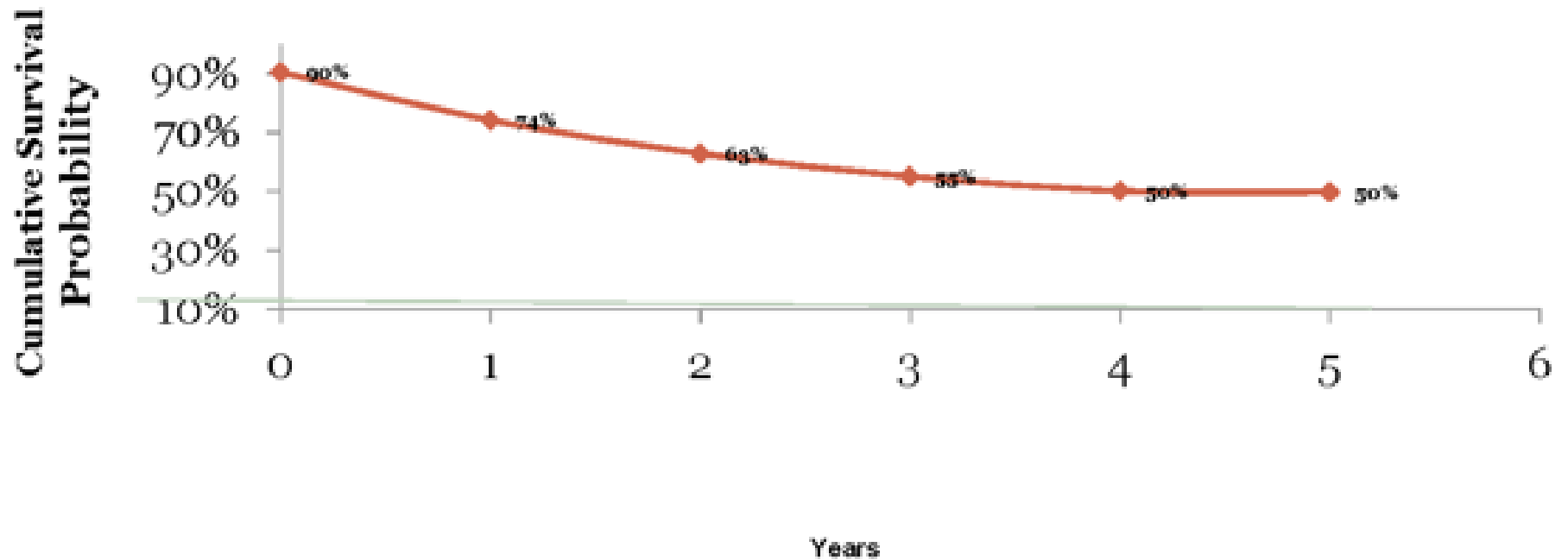


## LOW RISK CLUSTER ATTRIBUTES

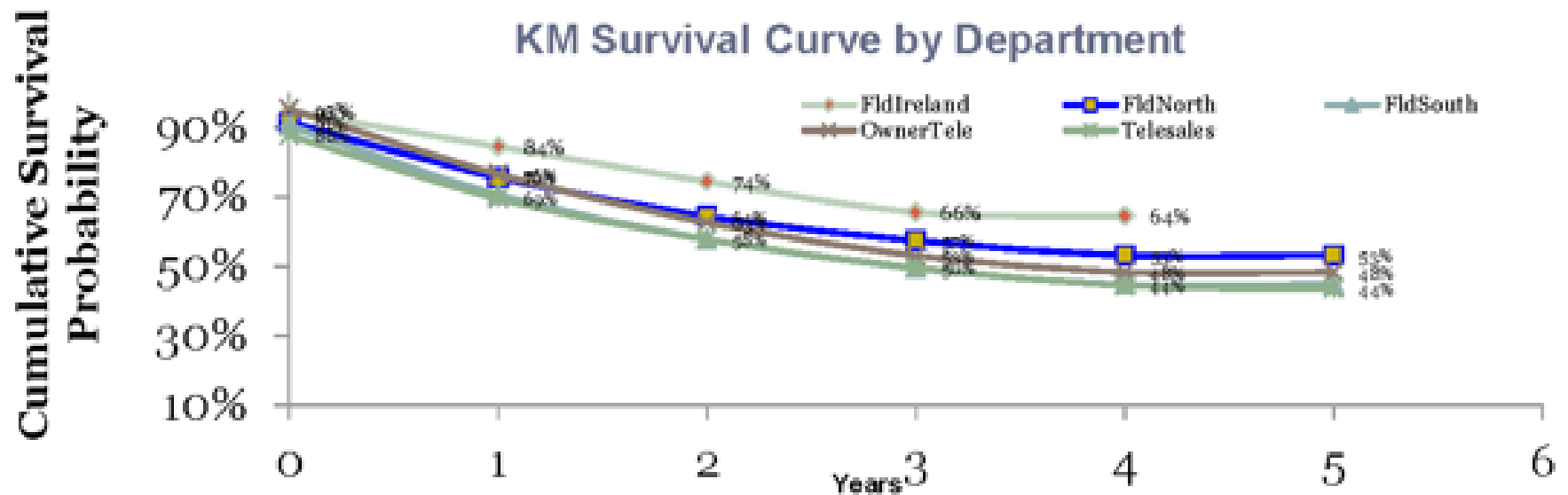
1. This cluster consist of low risk members which signify merchants who have an average Debit Sales of GBP 1,188,024, Debit transactions of 22,468, Credit sales of GBP 899,341 & Credit transactions of 8,674 respectively.
2. The Average Tenure in the system is about 29 months.
3. Churn is predominantly across postal codes - HA9, LS8 and WC2R. . Hotels are contributing towards high churn rate.
4. The top reason contributing to churn is closed — customer cancel.

# SOLUTION # 2: SURVIVAL ANALYSIS

## KM Survival Curve - Overall



## KM Survival Curve by Department



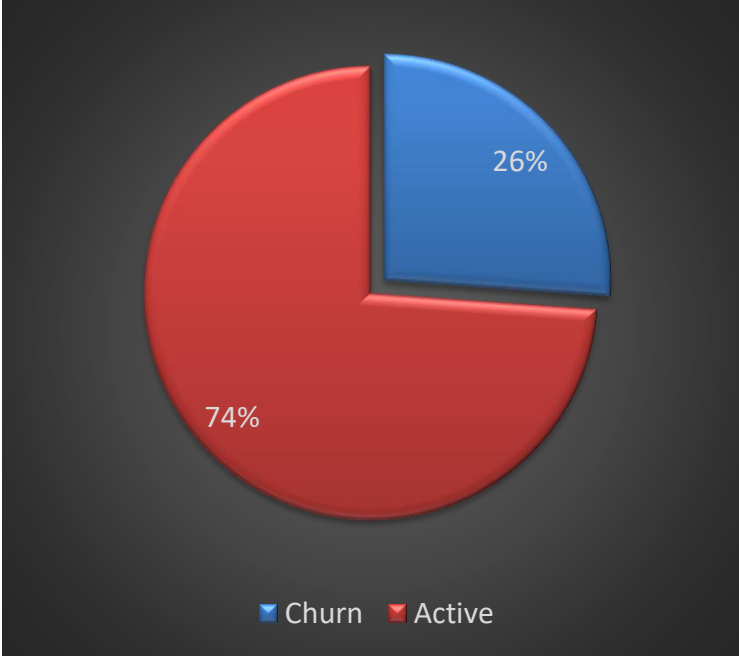
## SURVIVAL ANALYSIS INFERENCE

1. 50% of the merchants accounts on an average are surviving till 5 years.
2. After Year 2, the survival rate is falling below the median rate.
3. The average Survival rate varies across departments by 4 to 5 years.
4. The Churning pattern across top 5 business departments e.g. FldIreland, Fldnorth, FldSouth, ownertele & Telesales are similar.

# SOLUTION # 3: CHURN STATUS WITH RESPECT TO THOMPSON CATEGORY

There is a significant relationship b/w the Churn Status and categories ( $p < 0.05$ )

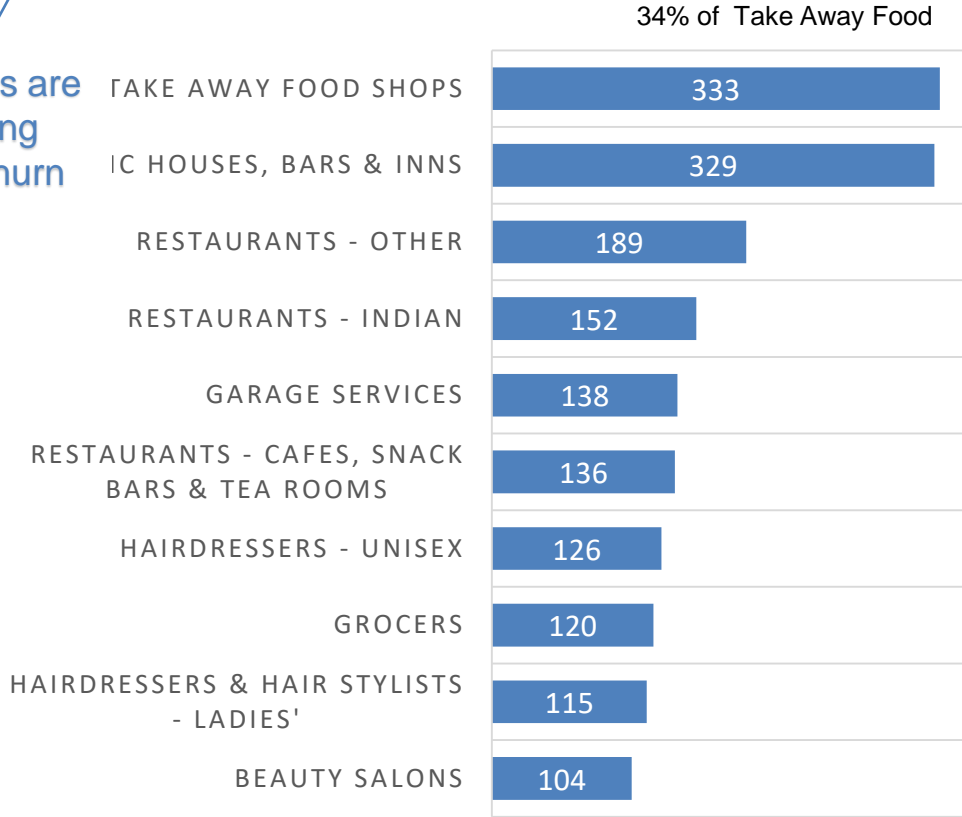
Overall



Total Merchant Accounts : 40,528

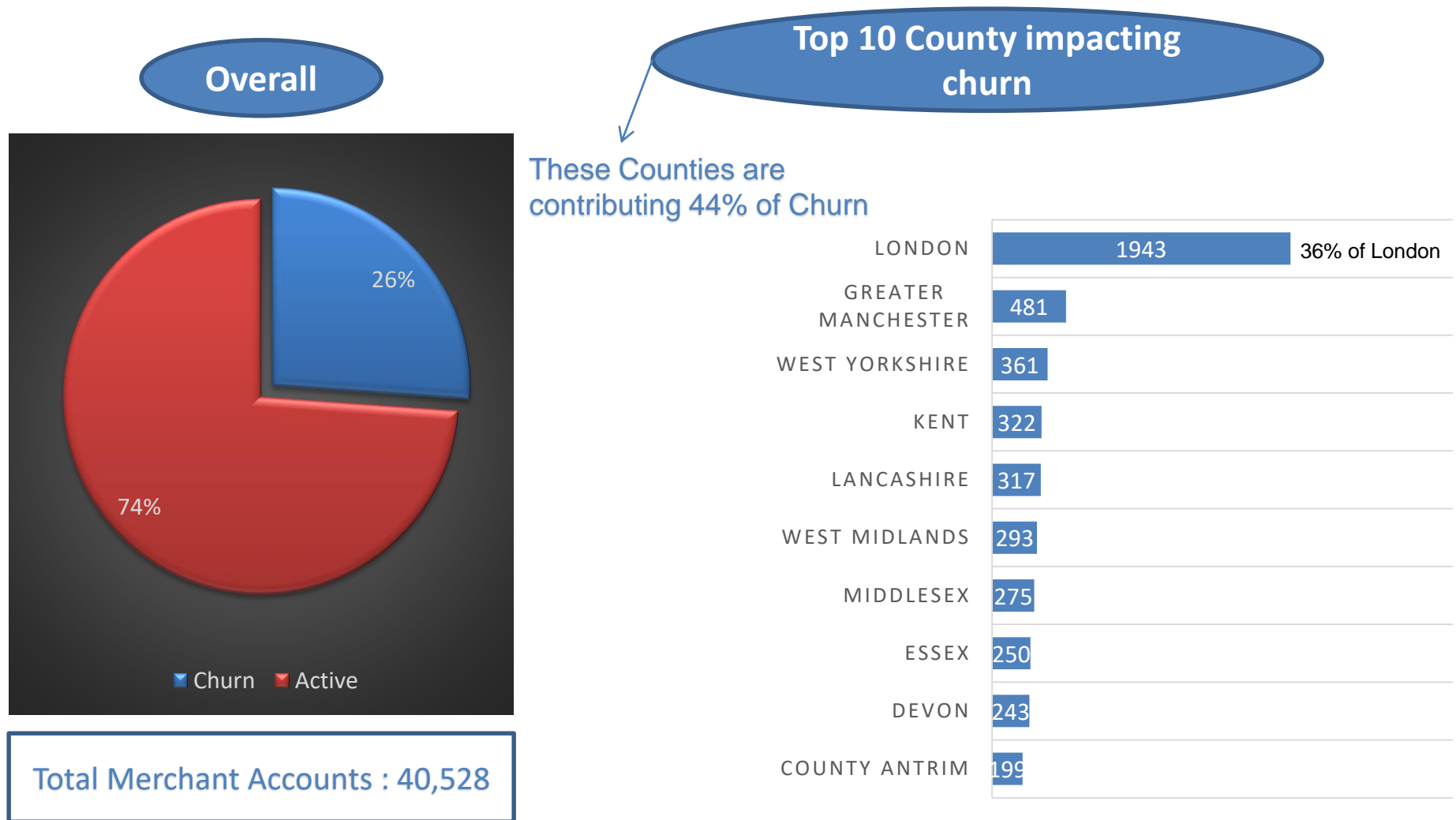
Top 10 Thompson Category

These Categories are Contributing 16% of Churn



# SOLUTION # 4: CHURN STATUS WITH RESPECT TO COUNTY

There is a significant relationship b/w the Churn Status and Counties ( $p < 0.05$ )



## NEXT STEP: VARIABLES FOR BETTER PREDICTION OF CHURN RATE

1. Socio Economic Class data — demographics of merchants profiles.
2. Percentage of commission earned by the client from Debit & Credit transactions basis merchant transactions.
3. Credit limit line allowed by the client to its merchants.
4. Data on any special privileges/allowances given to specific merchants category based on revenue earned.
5. If any complaints received from merchants regarding technical snaps.
6. Data on competitor's machine used at the merchant locations.
7. Classify the **Thompson Category** in to 4 groups (Small size, Lower mid-size, Upper mid-size, Large size)
8. Credit Score of merchant.
9. 30% of Thompson Category data are missing.

**THANK YOU**