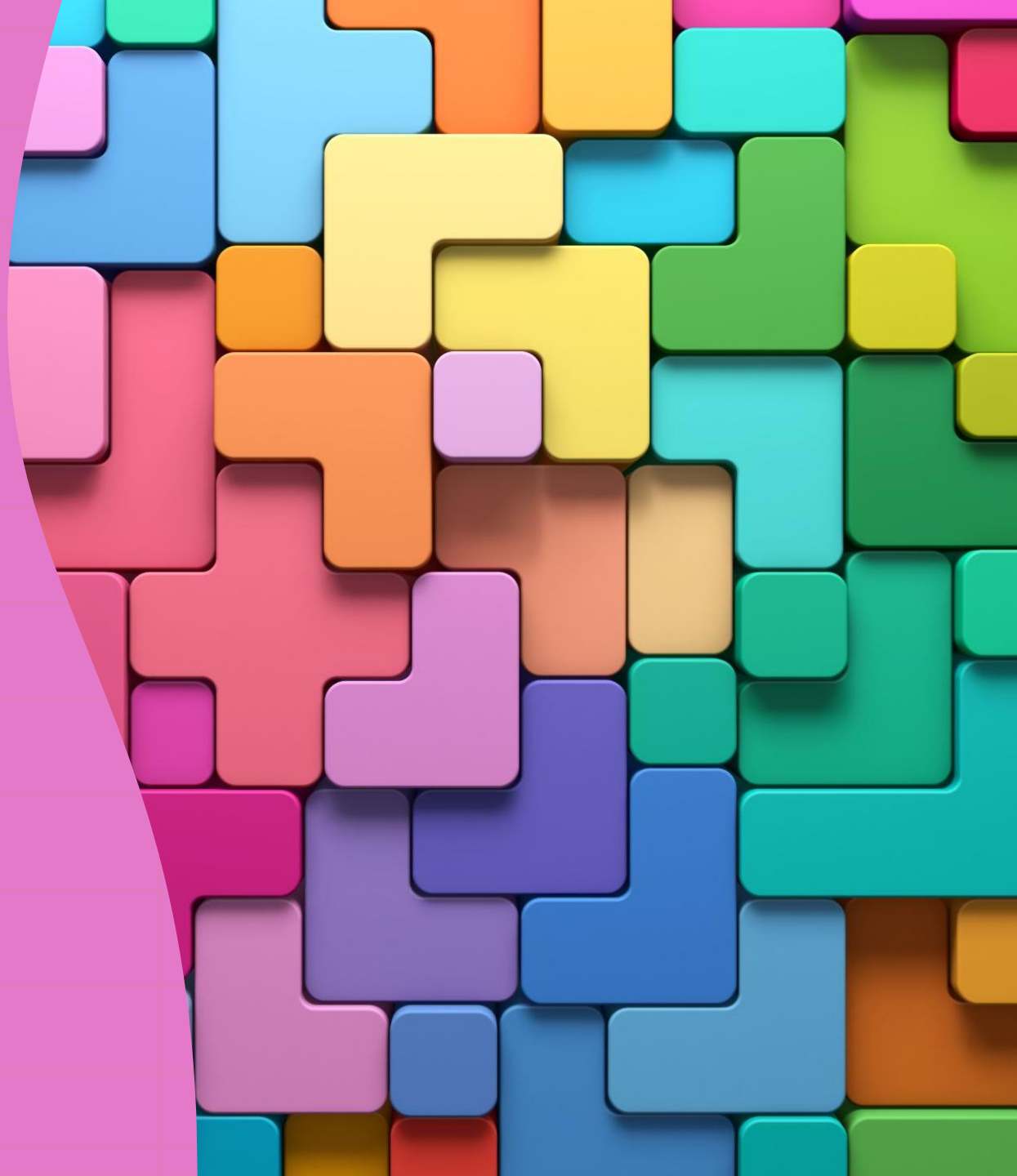
CEDIT CARD ANALYTICS

TOOL USED:

SQL & POWER BI



PROBLEM STATEMENT:

- Organizations often face challenges in accurately tracking and analyzing month-over-month growth in credit card transactions. Inconsistent data collection methods, lack of real-time analytics, and ineffective reporting tools can hinder the ability to derive actionable insights. This can result in missed opportunities for growth optimization and strategic planning.

DATA EXPLORATION:

	itanscation_id integer	city character (50)	transcation_date date	card_type character varying (50)	exp_type character varying (50)	gender character (10)	amount integer
1	1	DELHI	2014-10-29	GOLD	BILLS	F	82475
2	2	GREATER MUMBAI	2014-08-22	PLATINUM	BILLS	F	32555
3	3	BENGALURU	2014-08-27	SILVER	BILLS	F	101738
4	4	GREATER MUMBAI	2014-04-12	SIGNATURE	BILLS	F	123424
5	5	BENGALURU	2015-05-05	GOLD	BILLS	F	171574
6	6	DELHI	2014-09-08	SILVER	BILLS	F	100036
7	7	DELHI	2015-02-24	GOLD	BILLS	F	143250
8	8	GREATER MUMBAI	2014-06-26	PLATINUM	BILLS	F	150980
9	9	DELHI	2014-03-28	SILVER	BILLS	F	192247
10	10	DELHI	20114-09-01	PLATINUM	BILLS	F	67932
11	11	DELHI	2014-06-22	PLATINUM	BILLS	F	280061
12	12	GREATER MUMBAI	2013-12-07	SIGNATURE	BILLS	F	278036
13	13	GREATER MUMBAI	2014-08-07	GOLD	BILLS	F	19226
14	14	DELHI	2014-04-27	SIGNATURE	BILLS	F	254359
15	15	GREATER MUMBAI	2014-08-15	SIGNATURE	BILLS	F	302834
16	16	GREATER MUMBAI	2014-11-28	PLATINUM	BILLS	F	647116

KPIs:

Query Query History

```
1   /*TOTAL NO OF RECORDS*/
2
3   SELECT COUNT(*) AS TOTAL_NO_OF_RECORDS
4   FROM CREDIT_CARD
```

Data Output Messages Notifications

SQL

	total_no_of_records bigint
1	21

Query | Query History

```
1   /*DISTINCT CARD_TYPE*/
2
3   SELECT DISTINCT CARD_TYPE AS DISTINCT_CARD
4   FROM CREDIT_CARD
```

Data Output | Messages | Notifications

SQL

	distinct_card character varying (50)
1	SIGNATURE
2	GOLD
3	SILVER
4	PLATINUM

Query | Query History

```sql
/*NO OF TRANSCATION BY CARD TYPE*/

SELECT  CARD_TYPE ,COUNT(ITANSCATION_ID)AS NO_OF_TRANSCATION
FROM CREDIT_CARD
GROUP BY CARD_TYPE;
```

Data Output | Messages | Notifications

SQL

	card_type character varying (50)	no_of_transcation bigint
1	SIGNATURE	6
2	GOLD	5
3	SILVER	3
4	PLATINUM	7

Query Query History

```sql
/* TRANSCATIONS BY CITY*/

SELECT CITY,COUNT(ITANSCATION_ID) AS TRANSCATION,SUM(AMOUNT)AS TOTAL_TRANSCATION_AMOUNT
FROM CREDIT_CARD
GROUP BY CITY
ORDER BY TRANSCATION DESC;
```

Data Output Messages Notifications

	city character (50)	transcation bigint	total_transcation_amount bigint
1	GREATER MUMBAI	11	3911041
2	DELHI	8	1486462
3	BENGALURU	2	273312

Execute script

F5

```sql
/* TRANSCATIONS BY GENDER*/

SELECT GENDER,COUNT(ITANSCATION_ID) AS TRANSCATION,SUM(AMOUNT)AS TOTAL_TRANSCATION_AMOUNT
FROM CREDIT_CARD
GROUP BY GENDER
ORDER BY TRANSCATION DESC;
```

Data Output | Messages | Notifications

gender character (10)	transcation bigint	total_transcation_amount bigint
F	21	5670815

QUESTIONS FROM STAKEHOLDERS

```sql
/* WRITE A QUERY TO PRINT TOP 3 CITIES WITH HIGHEST SPENDS AND THEIR % CONTRIBUTION OF TOTAL SPENDS?*/

WITH CTE AS(
SELECT CITY,SUM(AMOUNT)AS HIGHEST_SPENDS
FROM CREDIT_CARD
GROUP BY 1
ORDER BY 2 DESC)
,TOTAL_SPEND AS(
SELECT SUM(HIGHEST_SPENDS)AS TOTAL_EXPENSE
FROM CTE)
,PERCENT AS (
SELECT CITY,HIGHEST_SPENDS,ROUND((HIGHEST_SPENDS*1.0/TOTAL_EXPENSE )*100,2)AS PERCENTAGE_SPENDS
FROM CTE AS C
JOIN TOTAL_SPEND AS T
ON 1=1
)
SELECT * FROM PERCENT
```

a Output | Messages | Notifications

SQL

city character (50)	highest_spends bigint	percentage_spends numeric
GREATER MUMBAI ...	3911041	68.97
DELHI	1486462	26.21
BENGALURU ...	273312	4.82

```sql
/*WRITE A QUERY TO PRINT HIGHEST SPEND MONTH AND AMOUNT SPENT IN THAT MONTH FOR EACH CARD TYPE*/
WITH CTE AS(
SELECT CARD_TYPE,EXTRACT(MONTH FROM TRANSCATION_DATE) AS MONTH, AMOUNT
FROM CREDIT_CARD
GROUP BY 1,2,3
ORDER BY 3 DESC),
CTE1 AS(
SELECT CARD_TYPE,MONTH,SUM(AMOUNT)AS TOTAL_AMOUNT
FROM CTE
GROUP BY 1,2),
CTE2 AS(
SELECT  *,DENSE_RANK()OVER(PARTITION BY CARD_TYPE ORDER BY TOTAL_AMOUNT DESC)AS DN
FROM CTE1)
SELECT CARD_TYPE,MONTH,TOTAL_AMOUNT
FROM CTE2
WHERE DN=1;
```

a Output | Messages | Notifications

SQL

card_type character varying (50)	month numeric	total_amount bigint
GOLD	5	1157953
PLATINUM	11	1382682
SIGNATURE	4	743885
SILVER	3	192247

```sql
/*WRITE A QUERY TO PRINT THE TRANSCATION DETAIL FOR EACH CARD TYPE WHEN IT REACHES A CUMULATIVE OF 1000000 TOTAL SPENDS */

WITH CTE AS(
SELECT *,
SUM(AMOUNT)OVER(PARTITION BY CARD_TYPE ORDER BY AMOUNT DESC)AS TOTAL_SPENDS
FROM CREDIT_CARD)
,CTE1 AS(
SELECT ITANSCATION_ID,CITY,TRANSCATION_DATE,CARD_TYPE,EXP_TYPE,GENDER,TOTAL_SPENDS,
DENSE_RANK() OVER(PARTITION BY CARD_TYPE ORDER BY TOTAL_SPENDS DESC)AS RN
FROM CTE)
SELECT ITANSCATION_ID,CITY,TRANSCATION_DATE,CARD_TYPE,EXP_TYPE,GENDER,TOTAL_SPENDS
FROM CTE1
WHERE TOTAL_SPENDS>1000000 AND RN=1;
```

Data Output | Messages | Notifications

	itanscation_id integer	city character (50)	transcation_date date	card_type character varying (50)	exp_type character varying (50)	gender character (10)	total_spends bigint
1	13	GREATER MUMBAI	2014-08-07	GOLD	BILLS	F	1402904
2	2	GREATER MUMBAI	2014-08-22	PLATINUM	BILLS	F	2127257
3	4	GREATER MUMBAI	2014-04-12	SIGNATURE	BILLS	F	1746633

```sql
/*WRITE A QUERY TO FIND CITY WHICH HAS LOWEST PERCENTAGE SPEND FOR GOLD CARD*/

WITH GOLD_AMOUNT AS(
SELECT CITY,CARD_TYPE,SUM(AMOUNT) AS TOTAL,
SUM(CASE WHEN CARD_TYPE='GOLD' THEN AMOUNT ELSE 0 END) AS GOLD_AMT
FROM CREDIT_CARD
GROUP BY 1,2)
SELECT CITY,ROUND(((SUM(GOLD_AMT)*1.0)/SUM(TOTAL))*100,2) AS PERCENT_SPEND
FROM GOLD_AMOUNT
GROUP BY 1
 ORDER BY PERCENT_SPEND ASC
 LIMIT 1;
```

Data Output | Messages | Notifications

	city character (50)	percent_spend numeric
1	DELHI	15.19

```sql
/*WRITE A QUERY TO PRINT 3 COLUMNS:CITY,HIGHEST_EXPENSE_TYPE,LOWEST_EXPENSE_TYPE*/

WITH CTE AS
(SELECT CITY ,EXP_TYPE,AMOUNT,
MAX(AMOUNT)OVER(PARTITION BY CITY ORDER BY AMOUNT DESC)AS HIGHEST_EXPENSE_TYPE,
MIN(AMOUNT)OVER(PARTITION BY CITY ORDER BY AMOUNT ASC)AS LOWEST_EXPENSE_TYPE
FROM CREDIT_CARD)
,CTE1 AS(
SELECT *,ROW_NUMBER()OVER(PARTITION BY CITY ORDER BY HIGHEST_EXPENSE_TYPE DESC )AS DN,
ROW_NUMBER()OVER(PARTITION BY CITY ORDER BY LOWEST_EXPENSE_TYPE ASC ) AS RN
FROM CTE
)
SELECT CITY,HIGHEST_EXPENSE_TYPE,LOWEST_EXPENSE_TYPE
FROM CTE1
WHERE DN=1 AND RN=1
GROUP BY 1,2,3;
```

Data Output | Messages | Notifications

SQL

	city character (50)	highest_expense_type integer	lowest_expense_type integer
1	BENGALURU	171574	101738
2	DELHI	366102	67932
3	GREATER MUMBAI	986379	19226

```sql
/*WRITE A QUERY TO PRINT PERCENTAGE CONTRIBUTION SPENDS BY FEMALE?*/

SELECT EXP_TYPE,
ROUND((SUM(CASE WHEN GENDER='F'THEN AMOUNT ELSE 0 END)*1.0/SUM(AMOUNT))*100,2) AS PER_FEMALE_CONTRIBUTION
FROM CREDIT_CARD
GROUP BY 1
ORDER BY 2 DESC;
```

Data Output | Messages | Notifications

SQL

	exp_type character varying (50)	per_female_contribution numeric
1	BILLS	100.00

```sql
/*WHICH CARD AND CITY  COMBINATION SAW HIGHEST MONTH OVER MONTH GROWTH IN JAN 2014?*/
WITH YM AS(
SELECT EXTRACT(MONTH FROM TRANSCATION_DATE) AS MONTH,EXTRACT(YEAR FROM TRANSCATION_DATE) AS YEAR,CARD_TYPE,CITY,AMOUNT
FROM CREDIT_CARD),
TOTAL AS(
SELECT MONTH,YEAR,CARD_TYPE,CITY,SUM(AMOUNT) AS TOTAL_AMT
FROM YM
GROUP BY 1,2,3,4
),
PREVIOUS_AMOUNT AS(
SELECT MONTH,YEAR,CARD_TYPE,CITY,TOTAL_AMT,
LAG(TOTAL_AMT,1,0)OVER(PARTITION BY CARD_TYPE,CITY ORDER BY YEAR,MONTH)AS PREV_AMT
FROM  TOTAL),MOM AS
(SELECT MONTH,YEAR,CARD_TYPE,CITY ,(TOTAL_AMT-PREV_AMT)AS MOM_GROWTH
FROM PREVIOUS_AMOUNT),CTE AS(
SELECT CARD_TYPE,CITY, MONTH,YEAR,MOM_GROWTH,
ROW_NUMBER()OVER(PARTITION BY CARD_TYPE,CITY ORDER BY  MOM_GROWTH DESC  )AS RN
FROM MOM)
SELECT CARD_TYPE,CITY, MONTH,YEAR,MOM_GROWTH
FROM CTE
WHERE YEAR=2014 AND RN=1;
```

	card_type character varying (50)	city character (50)		month numeric	year numeric	mom_growth bigint
1	GOLD	DELHI	...	10	2014	82475
2	PLATINUM	DELHI	...	6	2014	280061
3	SIGNATURE	DELHI	...	4	2014	620461
4	SIGNATURE	GREATER MUMBAI	...	6	2014	298454
5	SILVER	BENGALURU	...	8	2014	101738
6	SILVER	DELHI	...	3	2014	192247

```sql
/*DURING WEEKENDS WHICH CITY HAS HIGHEST TOTAL_SPEND TO TOTAL NO OF TRANSCATION RATIO?*

WITH CTE AS(
SELECT CITY,EXTRACT(DOW FROM TRANSCATION_DATE)AS WEEKDAY,SUM(AMOUNT)AS TOTAL_SPEND,
ROUND(SUM(AMOUNT)*1.0/COUNT(1),2) AS RATIO
FROM CREDIT_CARD
GROUP BY 1,2)
SELECT CITY,RATIO
FROM CTE
WHERE WEEKDAY IN (0,6)
GROUP BY 1,2
ORDER BY 2 DESC;
```

ata Output | Messages | Notifications

city character (50)	ratio numeric
GREATER MUMBAI ...	459721.67
DELHI ...	267210.00
DELHI ...	67932.00

```sql
/*WHICH CITY TOOK LEAST TO REACH ITS 5TH TRANSCATION AFTER THE FIRST TRANSCATION IN THE CITY?*/

WITH CTE AS(
SELECT *,
ROW_NUMBER()OVER(PARTITION BY CITY ORDER BY TRANSCATION_DATE,ITANSCATION_ID)AS RN
FROM CREDIT_CARD),
CTE1 AS(
SELECT CITY,(MAX(TRANSCATION_DATE))-(MIN(TRANSCATION_DATE))AS NO_OF_DAYS
FROM CTE
WHERE RN=1 OR RN=5
GROUP BY CITY
HAVING COUNT(1)=2
ORDER BY NO_OF_DAYS
)
SELECT * FROM CTE1
```

a Output | Messages | Notifications

SQL

city character (50)	no_of_days integer
DELHI	164
GREATER MUMBAI	217

DASHBOARD

CREDIT CARD ANALYTICS

YEAR: All | MONTH: All | QUATER: All | DAY: All

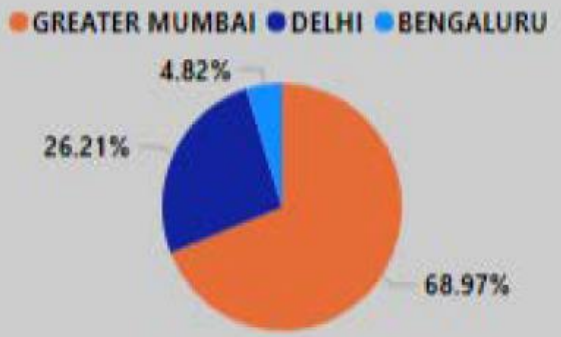
CITY: All | CARD TYPE: All | WEEK DAY: All

DISTINCT CARDS	TOTAL RECORDS	DISTINCT CITIES	TOTAL TRANSCATION
4	21	3	6M

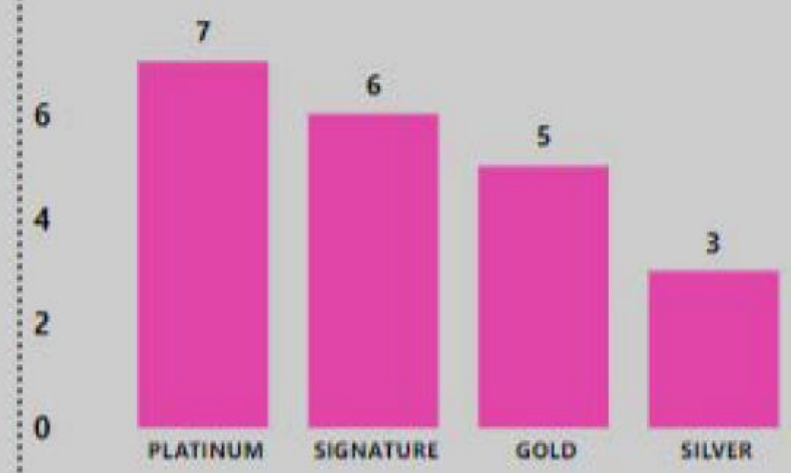
CITY HAS LOWEST % SPEND FOR GOLD CARD

DELHI	15.19

TOTAL TRANSCATION BY CITY



NO OF TRANSCATIONS BY CARD TYPE



INSIGHTS & RECOMMENDATIONS:

1. AS seen from pie chart **BENGALURU** has least transcation of **4.82%** followed by highest from **GREATER MUMBAI of 69%.**
2. **To increase transcation by city we have follow some strategies:**
   - local Promotions
   - Geotargated ads
   - Local business
   - Events & Sponsership
   - Localozed customer service
   - User Friendly aps
   - Analyze Spending Patterns
   - Adjust Strategies
   - Expand merchant network
   - Local Sponsorship
   - Social Media

As seen from Bar Chart **PLATINUM card** has highest no of transcations followed by **SIGNATURE.**

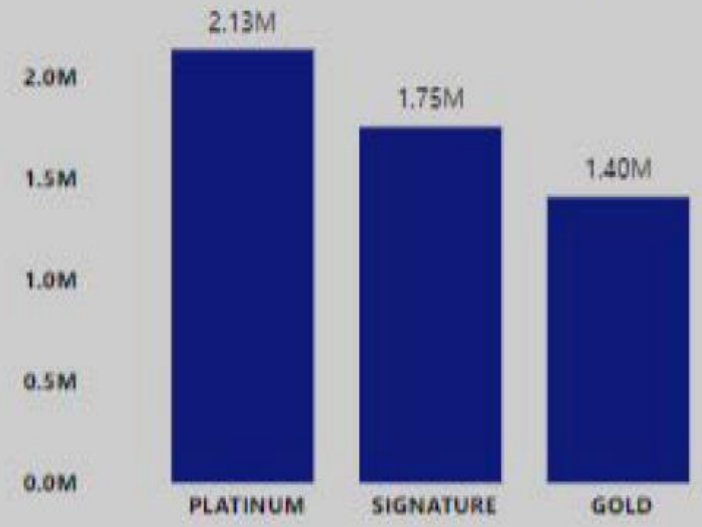
To increase this we have some strategies:

- Good understanding of customer base
- Effective Incentives & Promotions
- Collabarate with banks or credit card companies
- Use digital marketiong strategies
- Use co branding opportunities
- Ensure payment system supports wide range of cards
- Adjust fees and policies

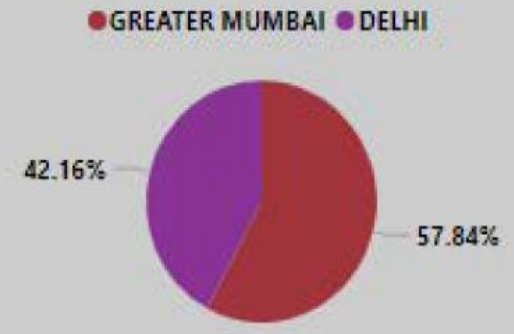
EXPENSE TRENDS IN CITIES

city	LOWEST EXPENSE	HIGHEST EXPENSE
BENGALURU	101738	171574
DELHI	67932	366102
GREATER MUMBAI	19226	986379
Total	**188896**	**1524055**

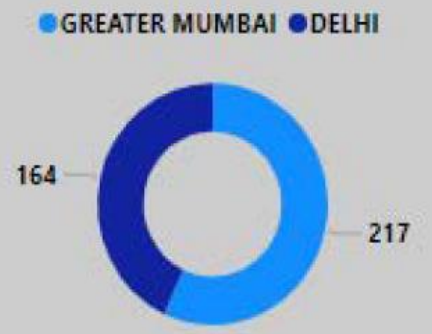
TRANSCATION DETAILS FOR EACH CARD TYPE(WHEN TOTAL SPENDS> 1000000)



CITY HAS HIGHEST TOTAL SPEND TO TRANSCATION RATIO DURING WEEKEND



CITY TOOK LEAST NO OF DAYS TO REACH ITS 5th TRANSCATION FROM 1st



MONTH OVER MONTH GROWTH IN 2014

card_type	city	Month	Year	Mom_growth
GOLD	DELHI	10	2014	82475
SILVER	BENGALURU	8	2014	101738
SILVER	DELHI	3	2014	192247
PLATINUM	DELHI	6	2014	280061
SIGNATURE	GREATER MUMBAI	6	2014	298454
Total		37	12084	1575436

INSIGHTS & RECOMMENDATIONS:

As seen from table **Month over Month growth in 2014 card type SIGNATURE city DELHI has maximum growth and minimum of card type GOLD city DELHI.**

To increase MOM growth yearly we have to follow some strategies:

- Review the performance of each card type over the past months
- Identify trends
- Identify different customer segments that prefer specfic card type
- Gather Feedback
- Incentives and rewards
- Financial education
- Target Campaigns
- Referral programs
- Easy application process
- Implement tools that can analyze customer behaviour and feedback for ongoing improvements
- Loyalty Programs
- BE prepared to adjust strategies based on what data shows about growth or decline
- Create informative content

By combining these strategies we can enhance MOM growth rate of any card type..Always remain

CITY WITH HIGHEST SPEND AND % OF TOTAL SPEND

HIGHEST TRANSCATION BY MONTH