

# Transaction Behavior (2010–2019)

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# **Project Background**

This dataset simulates real-world payment card activity and user information, containing three integrated tables:

- Transaction detailed records of each payment made by clients, including date, amount, merchant, payment channel, and merchant category code (MCC).
- **Cards** product-level details for each card, such as brand, type, credit limit, chip capability, and potential risk flags (e.g., card\_on\_dark\_web).
- **Users** demographic, geographic, and financial profiles of cardholders, including age, gender, income, credit score, and debt level.

By linking these tables, we can build a complete view of user activity: **who** is transacting, **what** products they are using, **where** they spend, and **how** they interact with merchants.

In a financial services or brokerage context, understanding these patterns is essential for:

- Monitoring adoption of secure payment methods
- Detecting potential fraud or risk signals
- Supporting product and marketing strategy with data-driven insights

# **Project Objectives**

The purpose of this analysis is to **explore and summarize user behavior** through the integration of transaction, card, and user profile data, with a focus on generating actionable insights for business and risk management.

Specifically, the analysis aims to:

- 1. **Quantify activity** Measure overall transaction volume, value, and active user counts over time.
- 2. **Identify usage patterns** Compare channel preferences (Chip vs Swipe) and spending across merchant categories (MCC).
- 3. **Segment customers** Analyze transaction behavior by demographics (age, gender), card type, and credit score bands.
- 4. **Provide a monitoring framework** Create Looker Studio dashboards for ongoing tracking of KPIs, trends, and risk indicators.

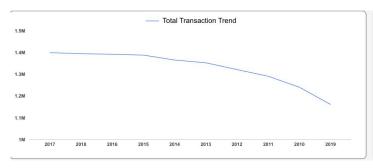
# **Executive Summary**

- 1. Total transactions: 13.3M
- 2. Total value: \$571.84M
- Average ticket: \$42.98
- 4. **Avg monthly active users: ~1,175** (max **1,207**)

# By channel (share of total):

- **Swipe: 52.4%** txns | **50.2%** value
- Chip: 35.9% txns | 34.2% value
- Unknown: 11.7% txns | 15.6% value

## **Trend Over Time**





# **Findings**

- Peak activity by transactions: 2017 (≈ 1.40M txns; \$59.63M value; avg ticket \$42.61).
- Lowest year in sample: 2019 (≈ 1.16M txns; \$49.51M value).
- Average ticket is **stable (~\$43)** across years; declines in volume drive value shifts more than ticket size.

## Insights

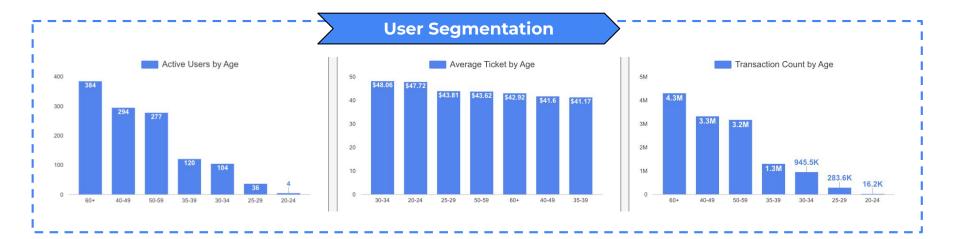
- 1. Stable transaction volume over the years, but active user base is relatively small, indicating high concentration of transactions per user.
- 2. Ticket size remains modest, suggesting most transactions are for low to mid-value purchases.

## **Channel Performance**



- 1. **Swipe dominates** volume and value (operational dependence on card-present swipes).
- 2. **Chip** share is sizable; continuing to promote chip usage should help security/chargeback posture without hurting average ticket (**Chip avg ticket similar to Swipe** in aggregates).
- 3. **Unknown channel** contributes **15.6%** of value—worth investigating classification/data-quality or specific flows mapped as "Unknown".

## **User Segmentation (Age)**



# **Insights**

- 1. **Highest average ticket** age bands: **30–34 (\$48.06)**, **20–24 (\$47.72)**, **25–29 (\$43.81)**.
- 2. Largest value contributors (due to volume): **60+ (\$184.2M)**, **50–59 (\$137.9M)**, **40–49 (\$137.8M)**.
- 3. Takeaway: older cohorts drive **total value** via frequency/size, while **30–34** delivers **highest spend per txn**.

Younger adults (25–34) may spend more per transaction despite lower total user counts. Indicates a **high-value segment** worth targeting.

### **When Users Transact**

#### When Users Interact

Hour	Transaction Count
7 PM	953.5K
6 PM	943.7K
2 PM	901.8K
8 PM	900.7K
9 PM	887.8K
3 PM	880.5K
4 PM	876.4K
5 PM	871.5K
11 PM	864.7K
10 PM	858.0K
1 PM	758.9K
12 AM	482.2K
1 AM	472.6K
2 AM	457.4K
4 AM	424.5K
3 AM	423.6K
5 AM	418.9K
12 PM	183.0K
6 AM	158.9K
7 AM	140.6K
8 AM	115.6K
11 AM	115.0K
9 AM	112.8K
10 AM	103.5K

# Insights

- 1. **Peak hour: 19:00–19:59** with **953k** txns (avg ticket **\$39.14**).
- 2. Evening usage suggests **after-work consumption**; align campaigns/ops to evening peaks.

Indicates potential **online/night-time activity**, possibly linked to specific industries or demographics (shift workers, nightlife, e-commerce).

# **ACTIONABLE RECOMMENDATIONS**

Objective Executive Summary Trend Over Time Channel When Users Performance Transact Recommendations

## **Expand Active User Base to Drive Long-Term Growth**

## Insights

Users aged **18–34** have the **highest average ticket** (\$48–\$50) but are **underrepresented** in active user count.

Majority of transactions come from older segments, indicating **untapped younger market potential**.

#### **Business Benefit:**

- ✓ Increases overall transaction volume
- ✓ Improves lifetime value through early customer acquisition
- ✓ Diversifies user base, reducing dependency on older segments

### **Step by Step Actionable Recommendations**

How

## Launch targeted acquisition campaigns for younger segments (18–34)

Step	Description
1	Identify top cities with high transaction value & low penetration in 18–34 age group.
2	Partner with merchants popular among younger audiences and offer exclusive promotions.
3	Track campaign impact on active user count and adjust targeting for optimal ROI.

Objective Executive Summary Trend Over Time Channel When Users Performance Transact Recommendations

## **Optimize Channel Strategy to Increase Security & Modernization**

## Insights

**Swipe** accounts for almost half of transactions and value.

Chip & contactless adoption remains moderate, posing potential **security risks** and **missed efficiency gains**.

#### **Business Benefit:**

- Enhances payment security
- ✓ Improves transaction processing speed
- ✓ Aligns with industry modernization trends

## **Step by Step Actionable Recommendations**

## How

## Incentivize migration to chip & contactless payments

Step	Description
1	Educate merchants & customers on security and speed benefits.
2	Offer transaction fee discounts for chip/contactless usage.
3	Track channel adoption rates and fraud reduction over 6 months.



**Interactive** 

**Dashboard** 

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