User Behavior Analysis – Technical Test

Muh. Rifky Parahian Sopian
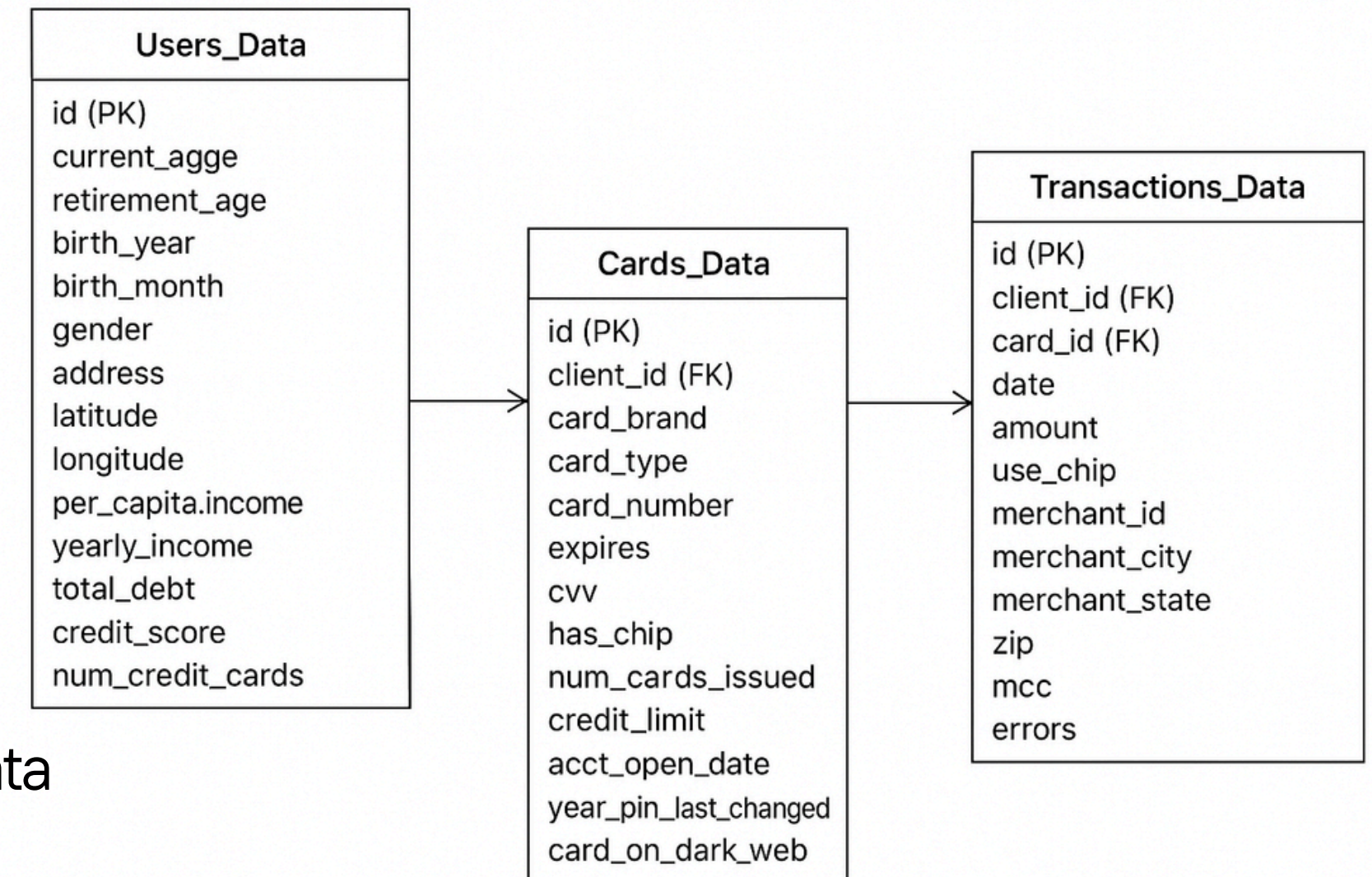
Objective

- Evaluate user behavior using public datasets.

- Perform SQL queries for behavioral analysis.

- Build dashboard in Looker Studio for visualization.

- Provide key insights & recommendations.

*Data Source

- Users_Data
  - id, age, gender, yearly_income, credit_score, etc.
- Cards_Data
  - card_type, card_brand, credit_limit, etc.
- Transactions_Data
  - transaction_id, amount, merchant, date, etc.

Users_Data

id (PK)
current_agge
retirement_age
birth_year
birth_month
gender
address
latitude
longitude
per_capita.income
yearly_income
total_debt
credit_score
num_credit_cards

Cards_Data

id (PK)
client_id (FK)
card_brand
card_type
card_number
expires
cvv
has_chip
num_cards_issued
credit_limit
acct_open_date
year_pin_last_changed
card_on_dark_web

Transactions_Data

id (PK)
client_id (FK)
card_id (FK)
date
amount
use_chip
merchant_id
merchant_city
merchant_state
zip
mcc
errors

Dataset consists of Users_Data, Cards_Data, Transactions_Data

Transactions_Data originally >100k rows

For efficiency & resource limitation → reduced to 10,000 rows

Sample still reflects main transaction patterns

Analysis remains generalizable with subset data

⚠️ Note: Transaction data was reduced to ensure smooth query execution without losing key behavioral patterns.

Methodology

- SQL Queries in BigQuery
  - Create KPI & analytical views.
- Looker Studio Dashboard
  - Visualization of KPIs, trends, and distributions.
- Analysis
  - Identify spending patterns, credit score behavior, card usage, etc.
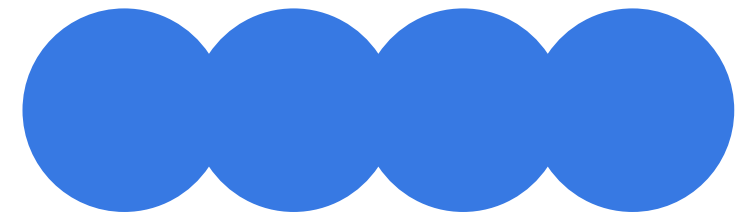
KPI Results - Insight

| Total Users	Total Transactions	Total Spending	Average Spending Per User	Avg. Credit Score
1,073	9,999	$409,190.59	$381.35	714.75

- Total Transactions: 9,999
- Total Spending: $409,190.59
- Average Spending per User: $381.35
- Average Credit Score: 714.75

- Dataset ini mencakup 1.073 pengguna dengan ~10 ribu transaksi, menunjukkan aktivitas transaksi yang cukup tinggi (lebih dari 9x transaksi rata-rata per user).
- Total spending ~$409K memperlihatkan nilai transaksi yang signifikan dalam sampel data.
- Rata-rata spending $381 per user bisa dijadikan benchmark untuk menilai nilai ekonomi pengguna.
- Rata-rata credit score 715 termasuk kategori "Good", artinya mayoritas pengguna memiliki kondisi finansial yang sehat.
- Hasil ini menunjukkan potensi besar untuk analisis perilaku konsumen lebih lanjut, seperti segmentasi pengguna dengan spending tinggi dan hubungan dengan skor kredit.
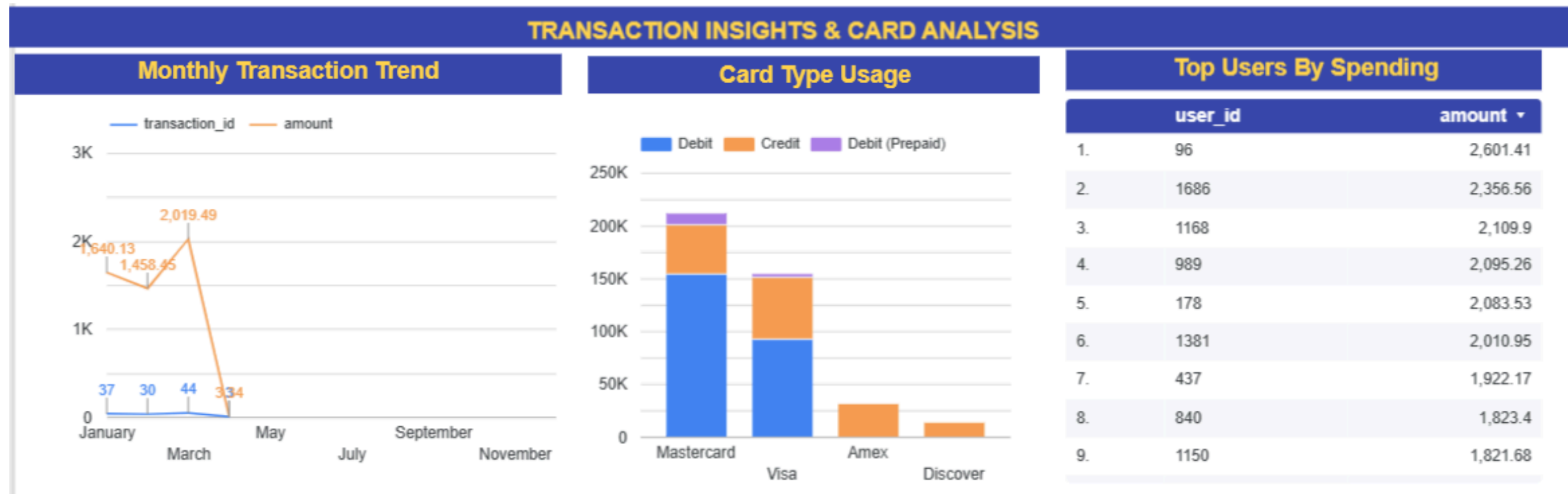
User Insights
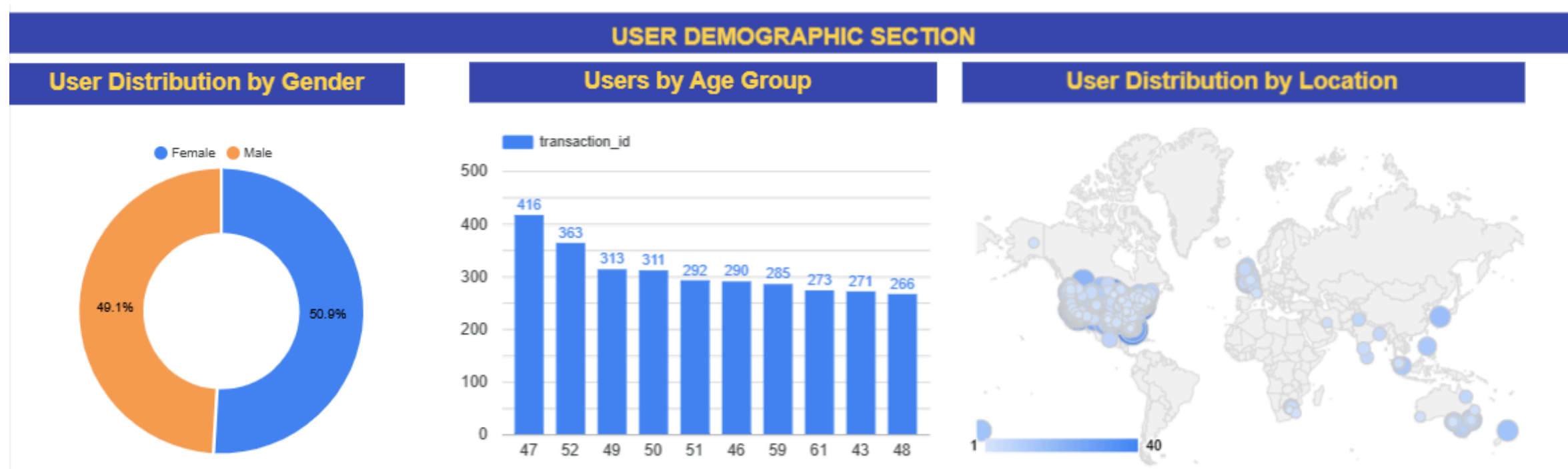
- Gender: Seimbang (Male 50.9% vs Female 49.1%) → strategi bisa netral gender.
- Age: Didominasi usia 40–60 tahun → potensi produk finansial terkait pensiun & investasi.
- Location: Terkonsentrasi di AS, tapi ada sebaran global → peluang ekspansi pasar.

TRANSACTION INSIGHTS & CARD ANALYSIS

- Monthly Transaction Trend: Spending tertinggi di April (~$2,019), lalu turun drastis di Mei → indikasi seasonal effect atau anomali transaksi.
- Card Type Usage: Mastercard & Visa mendominasi, terutama untuk debit, menunjukkan preferensi transaksi non-kredit.
- Top Users by Spending: Beberapa user (ID 96, 1686, 1168) punya spending >$2,000 → segmen high-value customers yang potensial untuk program loyalti.

Overall Insights

User Profile → Distribusi gender seimbang, mayoritas user usia **45–50** tahun, dengan konsentrasi lokasi tertentu.

Financial Behavior → Rata-rata spending per user masih relatif kecil **($381)**, namun ada segmen high spender dengan transaksi >**$2,000.**

Transaction Trend & Cards → Debit card (Mastercard & Visa) paling dominan. Spending sempat puncak di April, lalu turun drastis.

Recommendations

Targeted Marketing → Fokus pada high spender untuk program loyalti & retention.

Card Partnerships → Perkuat kolaborasi dengan Mastercard & Visa karena paling banyak dipakai.

Seasonal Strategy → Analisis faktor penurunan transaksi pasca April, bisa dibuat promo/insentif di bulan berikutnya.

User Engagement → Buat kampanye personalisasi berdasar demografi (usia & lokasi) untuk meningkatkan transaksi rata-rata per user.
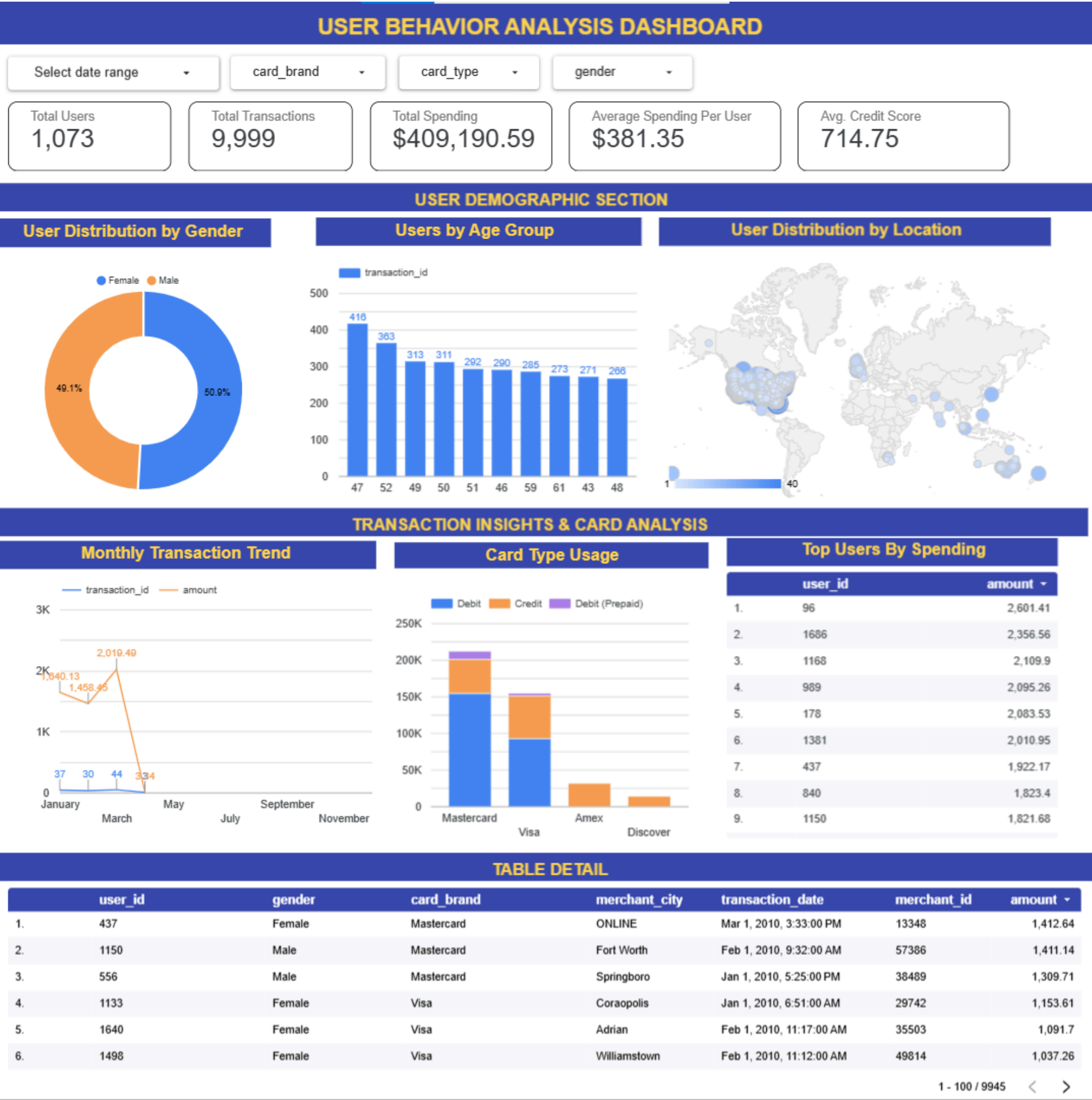
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USER BEHAVIOR ANALYSIS

Looker Studio turns your data into informative dashboards and reports that are easy to read, easy to share, and fully customizable.

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