Business Insight – Markov Chain Report

Executive Summary

- Referral is the strongest driver of conversions; focus more budget and effort here.
- Organic Search drives traffic but converts poorly; landing pages and targeting need improvement.
- Direct and Paid Search show steady performance; worth optimizing further.
- Display, Social, and Affiliates work better for awareness than conversion.

Transition Matrix Insights

User Starting Points

- Most users start with **Organic Search (54.73%)**
- Other common entry points: **Direct (15.48%)**, **Referral (15.39%)**, **Social (8.72%)**
- Very few users begin with Affiliate, Display, or Paid Search

Channel Conversion Rates

- Referral → Conversion: **6.19%** (highest)
- Direct → Conversion: **2.00%**
- Display → Conversion: **2.56%**
- Organic Search → Conversion: **0.37%**
- Paid Search → Conversion: **1.43%**

Drop-off Rates

- Affiliates → Null: **94.23%**
- Direct → Null: **83.50%**
- Display → Null: **69.23%**
- Organic Search → Null: **92.79%**
- Social → Null: **96.71%**

Repeated Channel Loops

- Display → Display: **23.08%**
- Direct → Direct: **11.25%**
- Affiliates → Affiliates: **5.77%**

Key Insights

1. More than half of users start with Organic Search, but 92.79% drop off. Possible reasons: poor landing pages, slow site speed, or weak content.
2. Referral traffic converts best, with the highest conversion rate.
3. Social and Affiliates perform poorly, with high drop-offs and low conversions.
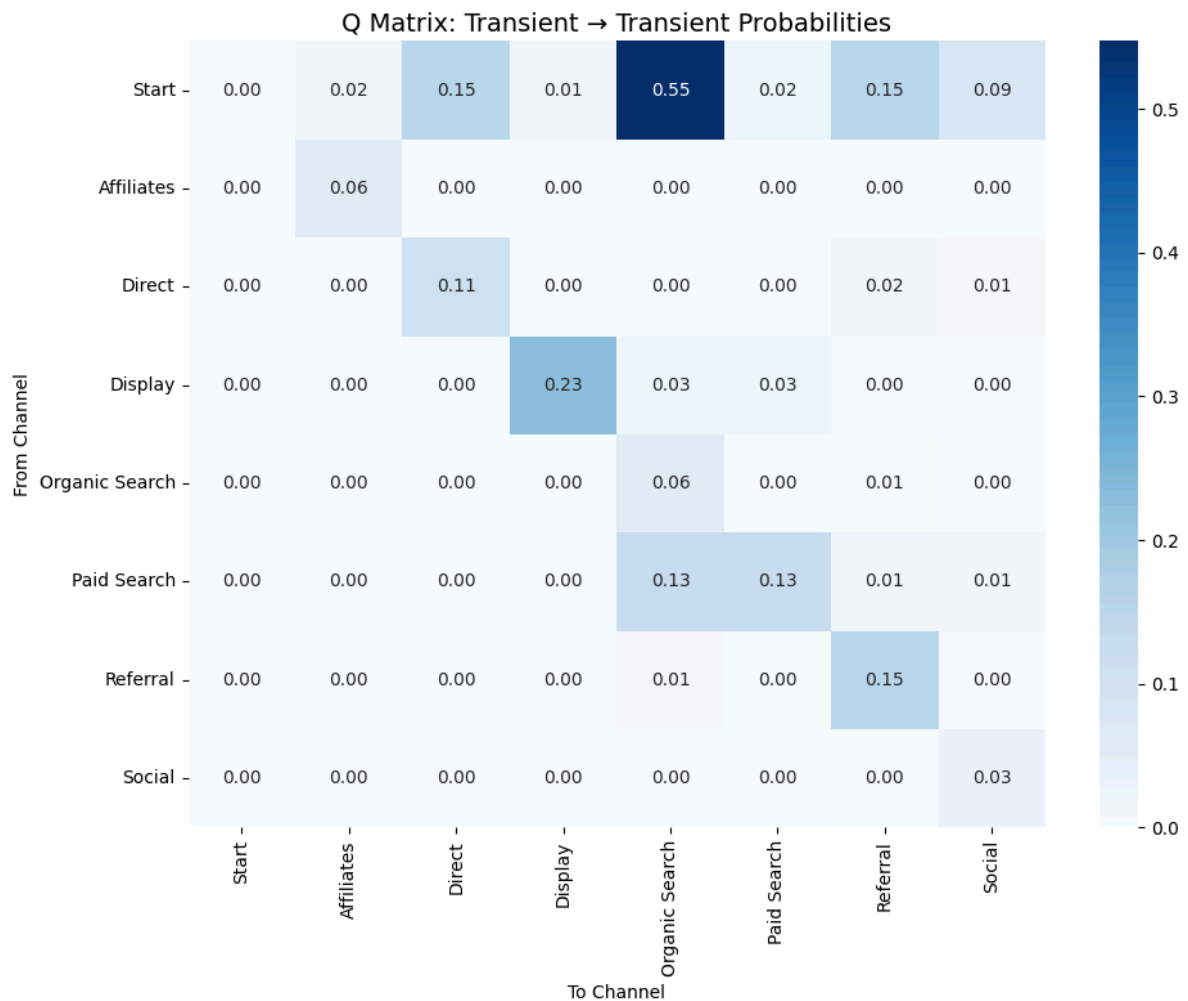4. Display and Direct show potential but have low starting traffic.

Q Matrix Insights

Figure 1: Q Matrix – Transient to Transient Probabilities

- Paid Search → Organic Search (13%): Many users move from paid ads to organic search, likely to research further. Better alignment between ads and organic content could help.
- Referral → Organic Search (1%): Some referred users continue exploring via organic search.
- High self-looping in Display, Direct, and Affiliates may suggest users are stuck or hesitant to take the next step.
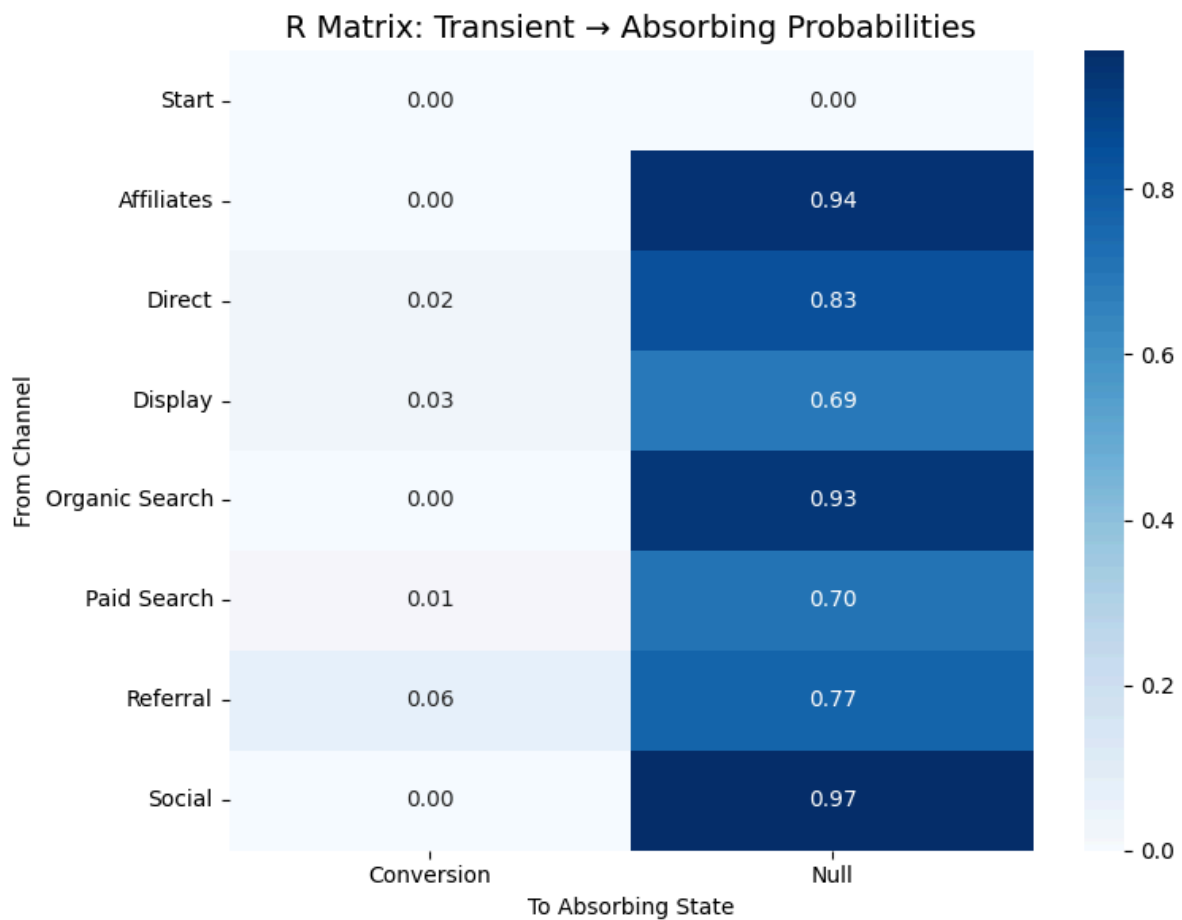
R Matrix Insights

R Matrix: Transient → Absorbing Probabilities

From Channel	Conversion	Null
Start	0.00	0.00
Affiliates	0.00	0.94
Direct	0.02	0.83
Display	0.03	0.69
Organic Search	0.00	0.93
Paid Search	0.01	0.70
Referral	0.06	0.77
Social	0.00	0.97

To Absorbing State

Figure 2: R Matrix – Transient to Absorbing Probabilities

- Referral drives the most conversions. Find out why it works well and allocate more budget to it.
- Organic Search brings traffic but does not convert — landing pages likely need fixing.
- Social and Affiliates may support awareness but need optimization.
- Direct traffic shows brand awareness but includes untraceable sources; deeper analysis with tools like Mixpanel is needed.
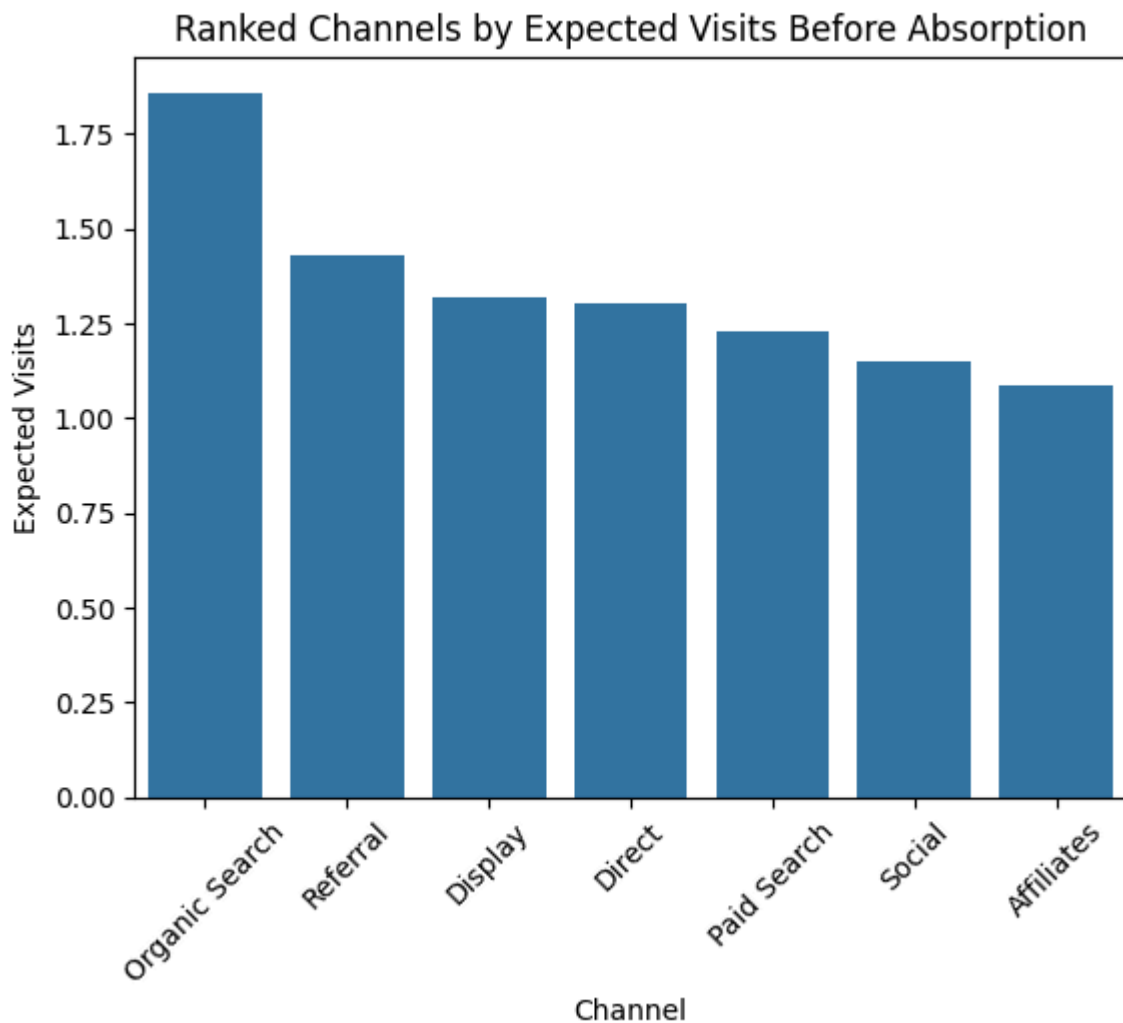
N Matrix and Channel Ranking

Ranked Channels by Expected Visits Before Absorption

Figure 3: Ranked Channels by Expected Visits

Channel Roles in the User Journey

Each value shows the average number of visits before conversion or drop-off.

- Organic Search: A major touchpoint — users return often, but conversion is low.
- Referral: Strong engagement and high conversion — high-value channel.
- Display: Users spend more time here, likely due to retargeting or visuals.
- Direct: Reflects brand familiarity, but conversion paths need improvement.
- Paid Search: Frequent revisits, showing ad recall or research behavior.
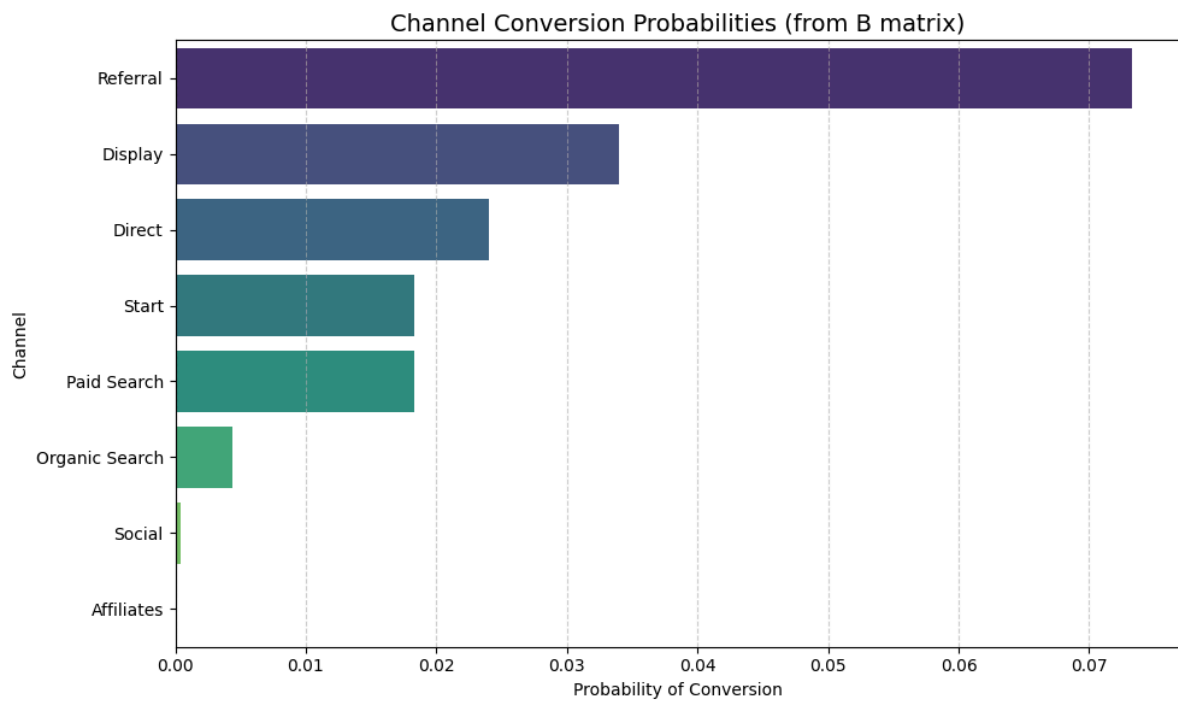- Social: Good for awareness, weak for conversions.

B Matrix Insights

Figure 4: Channel Conversion Probabilities (B Matrix)

- Referral strongly drives users toward conversion.
- Organic Search and Social bring traffic but don't lead to conversions.
- Display and Paid Search show conversion potential but need optimization.
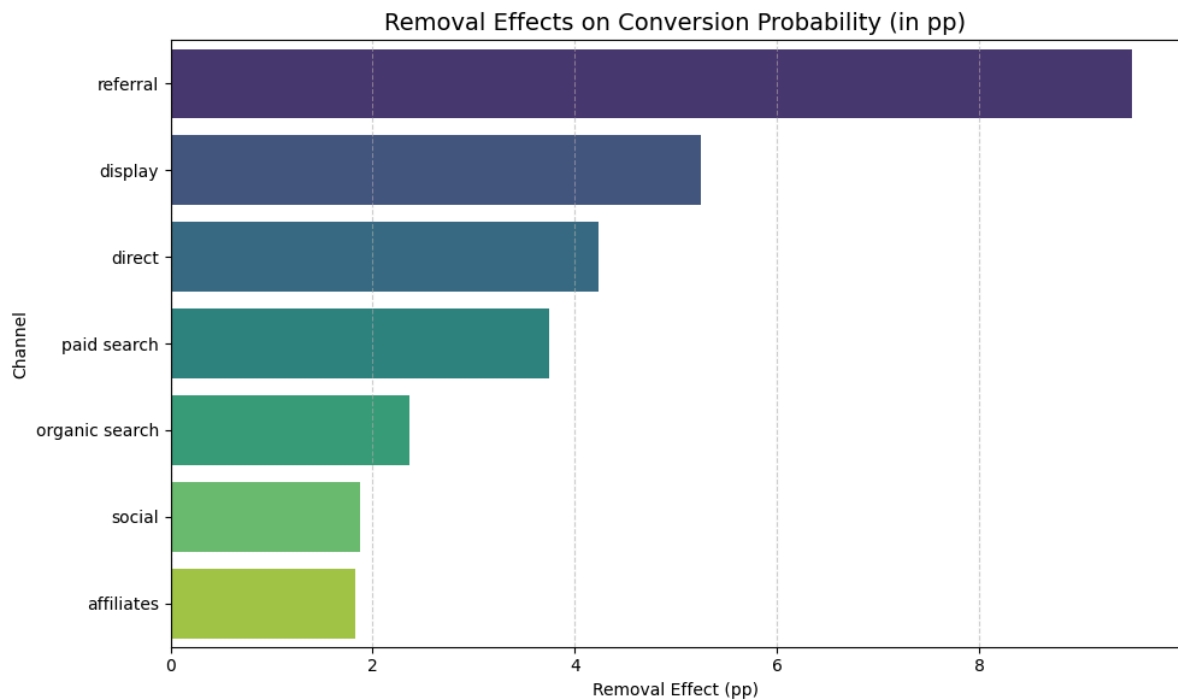
Channel Removal Effects

Figure 5a: Removal Effects – Demo Chart

- Referral is essential for conversions; invest in partnerships, influencers, and referral incentives.
- Display and Direct may not convert directly but keep users moving — retargeting helps.
- Paid Search brings in high-intent traffic.
- Organic Search is an important conversation starter in multi-touch journeys.
- Social and Affiliates are low impact but should not be removed entirely.
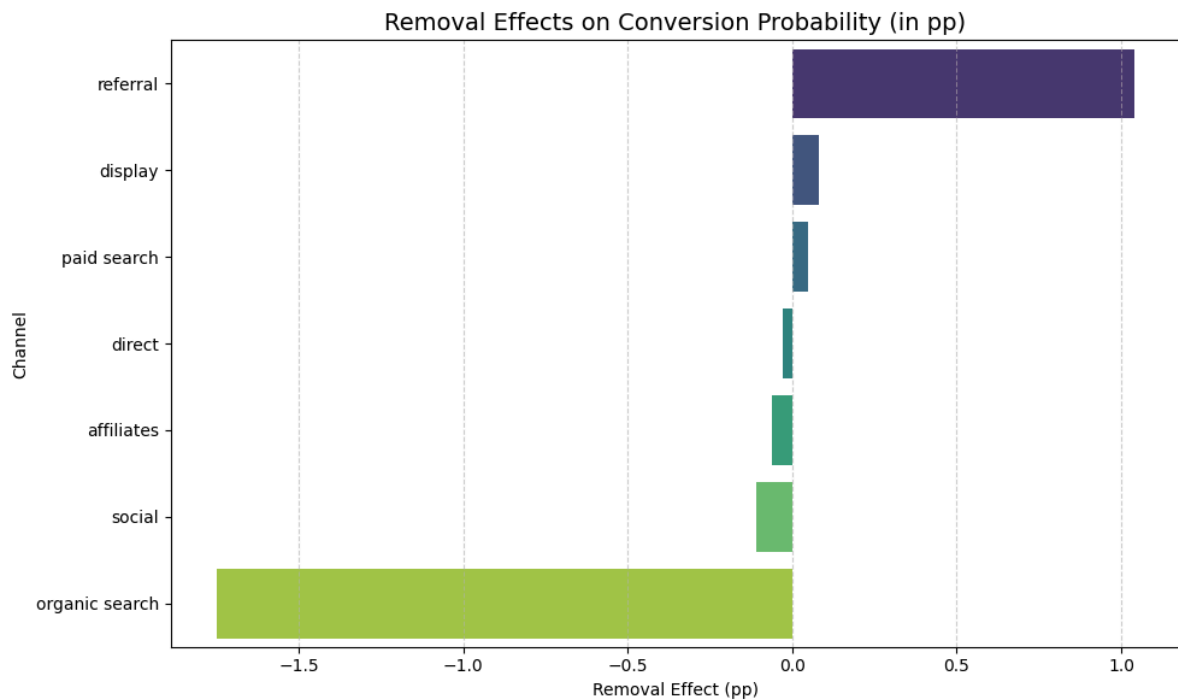
Monte Carlo Simulation Insights

Figure 5b: Removal Effects – Simulated Chart

- Referral is the dominating channel. Invest more in partnerships, influencers, or referral incentives.
- Direct and Paid Search are solid performers — worth maintaining and optimizing.
- Organic Search needs optimization. Although it drives the most traffic, it may not align with conversion goals (low-intent visitors, poor landing pages).
- Display, Affiliates, and Social may work better for awareness. They add value with tighter targeting and clearer CTAs.