

12/12 UnTattoo EDA (Python/Pandas)

Problem Statement:

The UnTattoo Parlor, a specialized multi-session service provider, faces a significant challenge in **maximizing Customer Lifetime Value (LTV)** due to two primary data gaps:

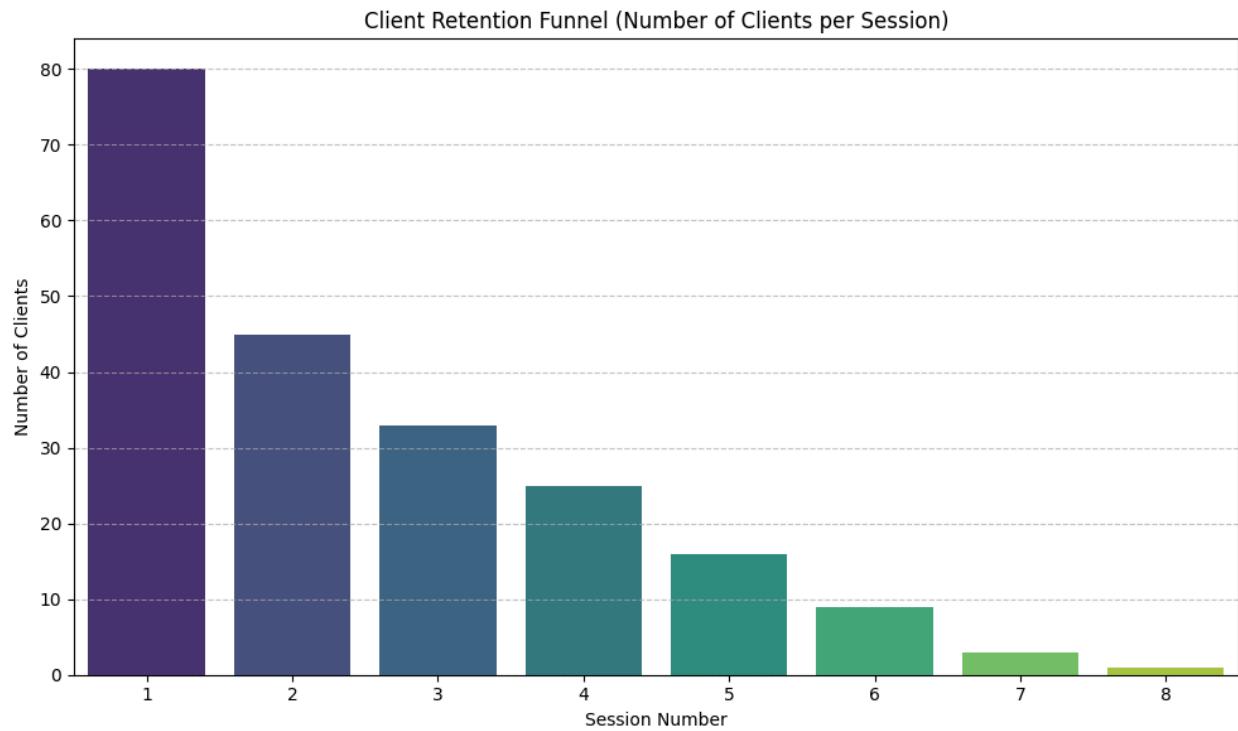
1. **Retention Leakage:** The business currently lacks a clear understanding of the **Session Completion Rate** across different client segments. Without identifying the precise sessions where the highest client **churn** occurs (e.g., the drop-off rate between Session 2 and Session 3), the Parlor cannot proactively deploy targeted retention strategies, resulting in **thousands of dollars in unrealized revenue** from partially completed treatment plans.
2. **Inefficient Acquisition:** Marketing campaign resources are allocated without calculating the true **Return on Investment (ROI)** by channel. The Parlor needs to move beyond simple lead tracking to identify which sources (**Google Search, Tattoo Artist Referrals, Social Media**) deliver the clients with the highest **LTV** and lowest **churn risk**.

Goal:

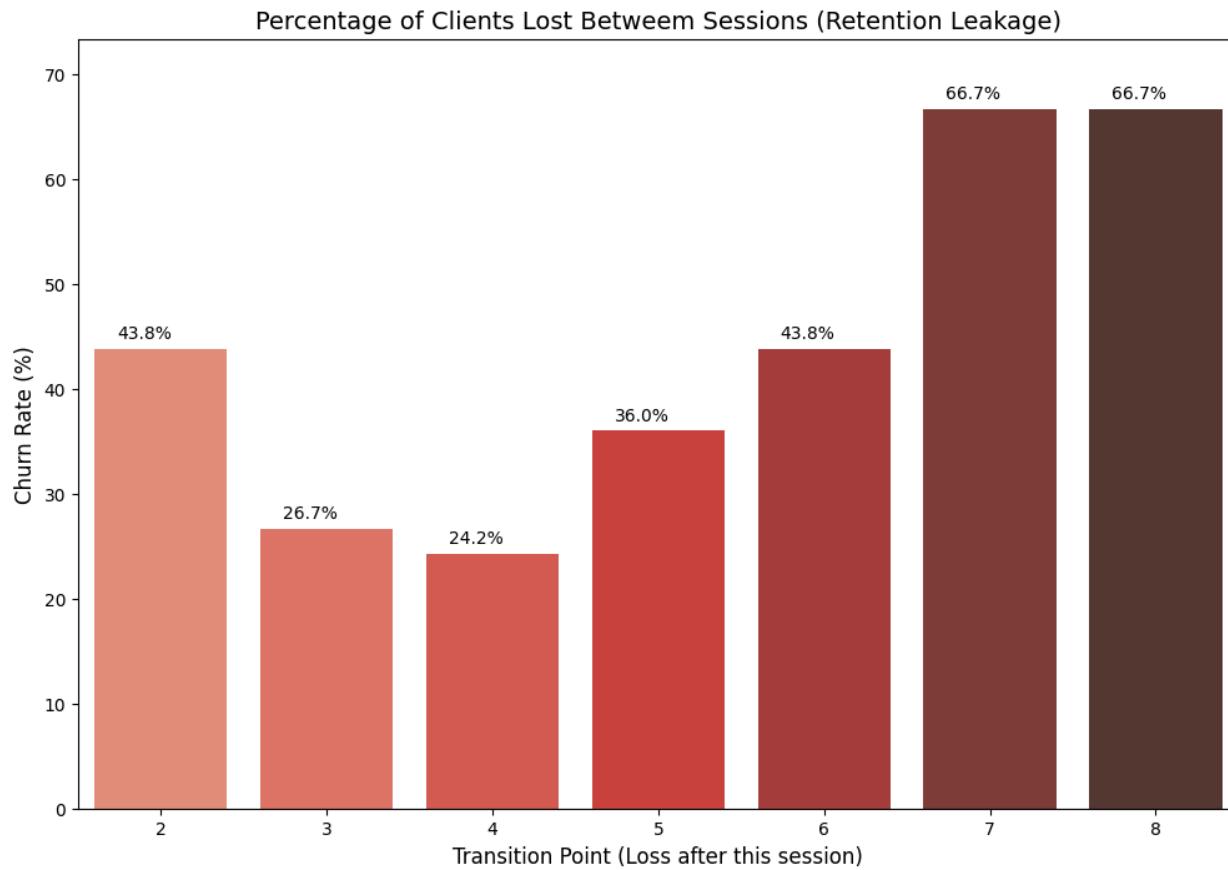
The goal of this project is to stop this financial leakage by creating a data-driven framework that defines the most profitable customer segments and directs marketing resources exclusively toward those high-LTV acquisition channels.

Findings based on my EDA:

Customer Retention

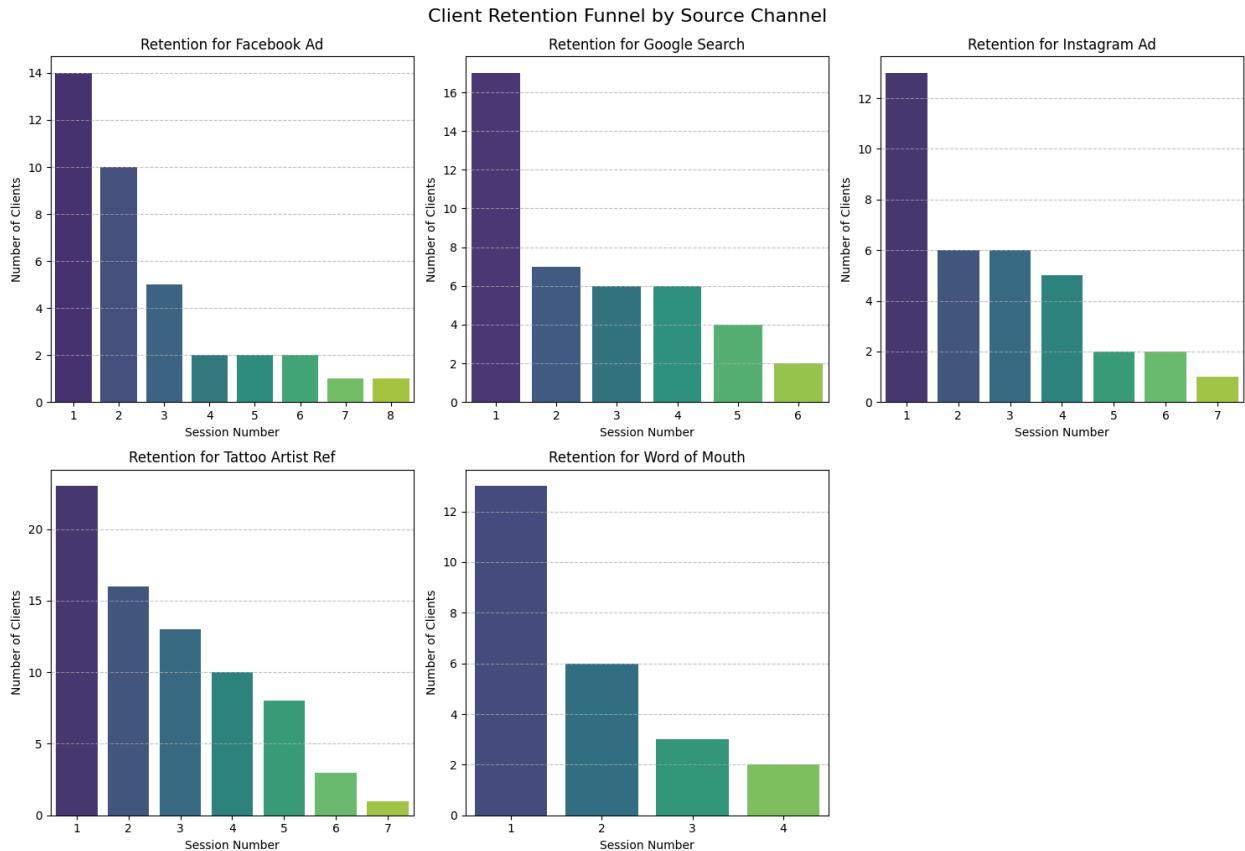


- Analysis: This bar graph depicts the Client Retention Funnel across all channels for the parlor. There is a noticeable drop from session 1 to session 2, going from 80 customers to 45 customers.
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- Analysis:
 - There was a significant drop of 43.8% from session 1 to session 2, suggesting a failure in conversion for new clients to repeating customers.
 - There is also an increase in churn rate starting from session 4 to 5 and session 6 to 7. The substantial churn rates of 36% and 43.8% depict that clients further in their session journey still face the risk of dropping off.
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Retention leakage by channel:



Analysis:

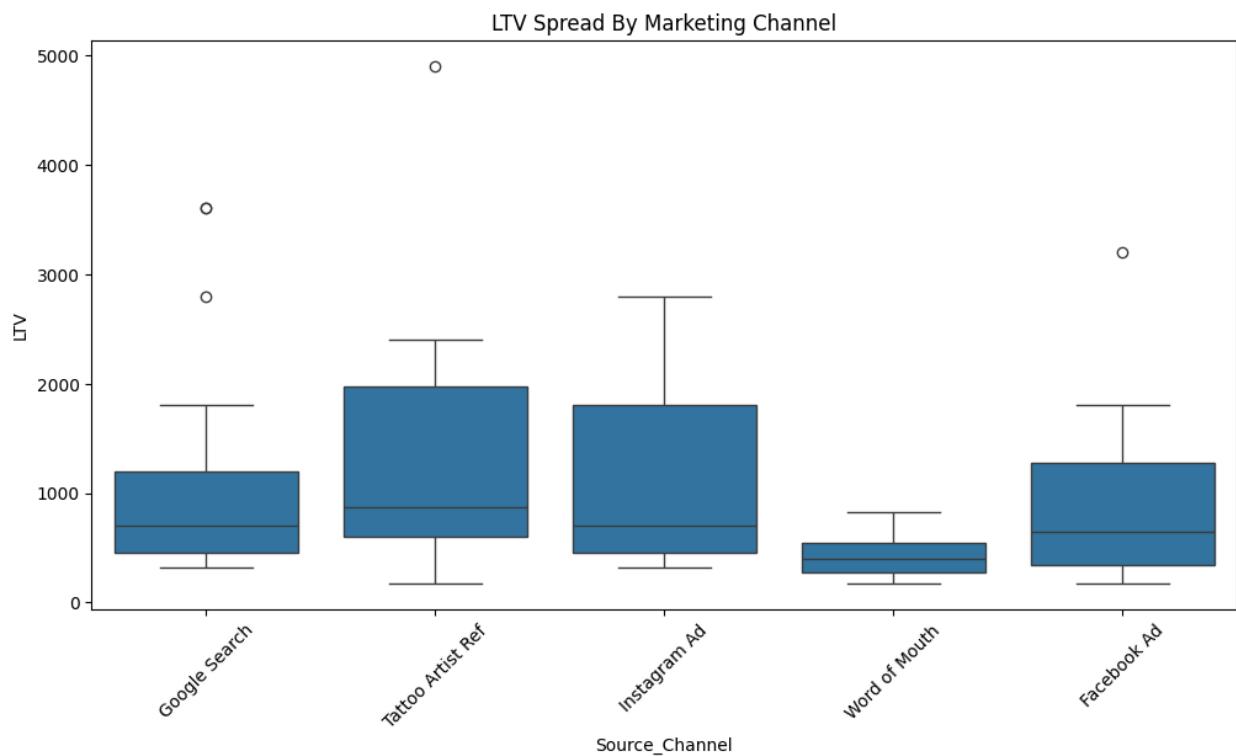
- Google, Instagram, and word of mouth channels display the greatest drop off amongst the channels. Session 1 to session 2 has the greatest drop offs between the three channels.
- Facebook ads show a greater drop off from session 2 to 3.
- Tattoo artist referrals show the greatest customer retention strategy with the least customer drop offs across each session.

Customer Retention Leakage Overall Suggestion:

- Suggestion:
 - Focus on customer experience and follow up communication after each session, especially after their first session.
 - Implement a rewards system or a discount for customers after their first session, this could improve customer retention.

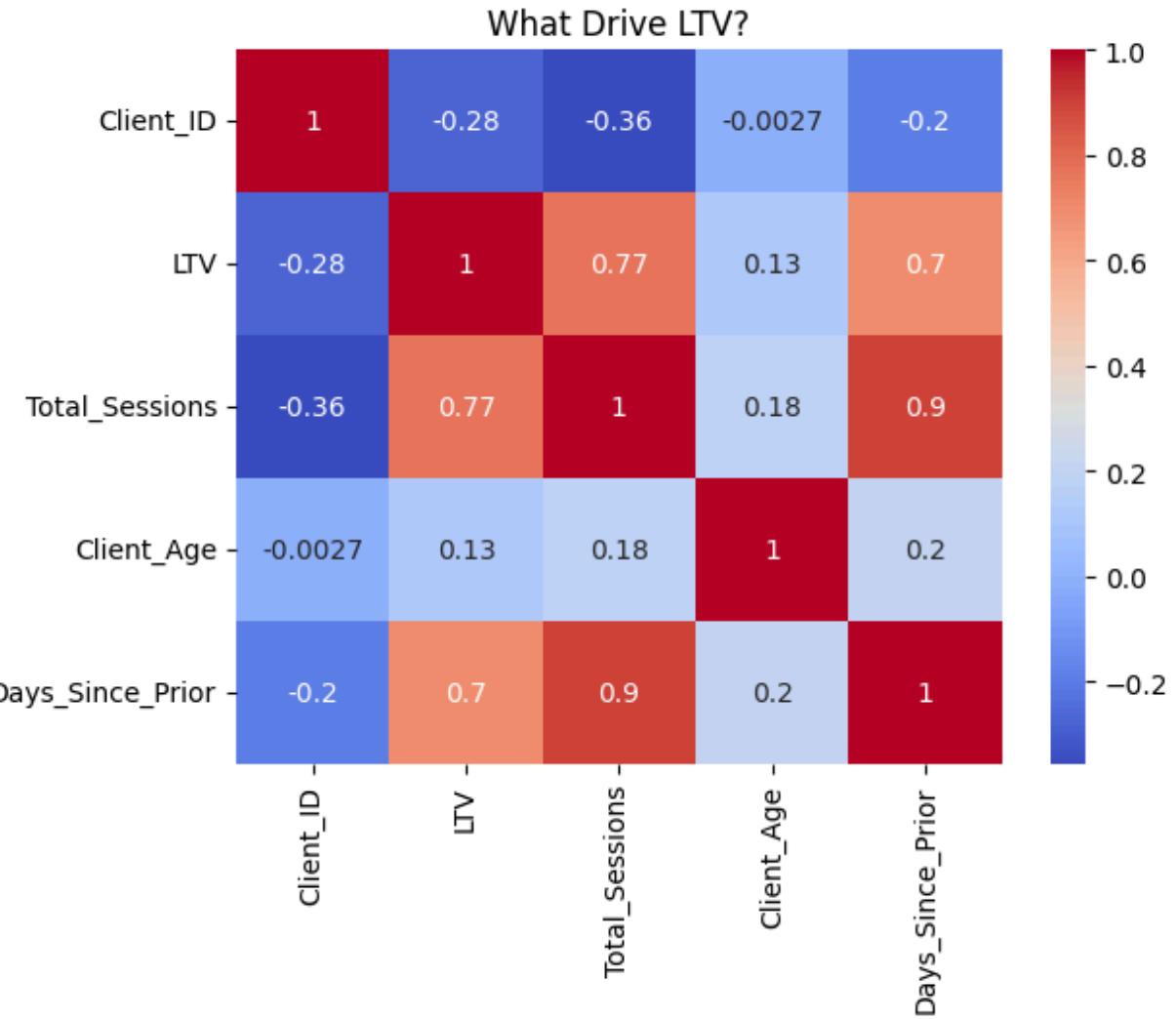
- I would suggest implementing a customer referral incentive after the first session. If customers were to suggest the parlor to their friends and they have their first session, then the referring customer could have a slight discount for later sessions. This would aid in customer acquisition and customer retention.
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Customer LTV:



- Analysis: This box plot depicts the LTV for each source channel.
- There are noticeable outliers for google, tattoo referral, and facebook ads.
- Tattoo referrals has the highest median LTV amongst the other source channels.
- Word of mouth has the least average LTV.

Correlation Heat map



-- Correlation Matrix Findings--

High correlation

- LTV seems to have a higher correlation with 'Total_Sessions' and 'Days_Since_Prior'

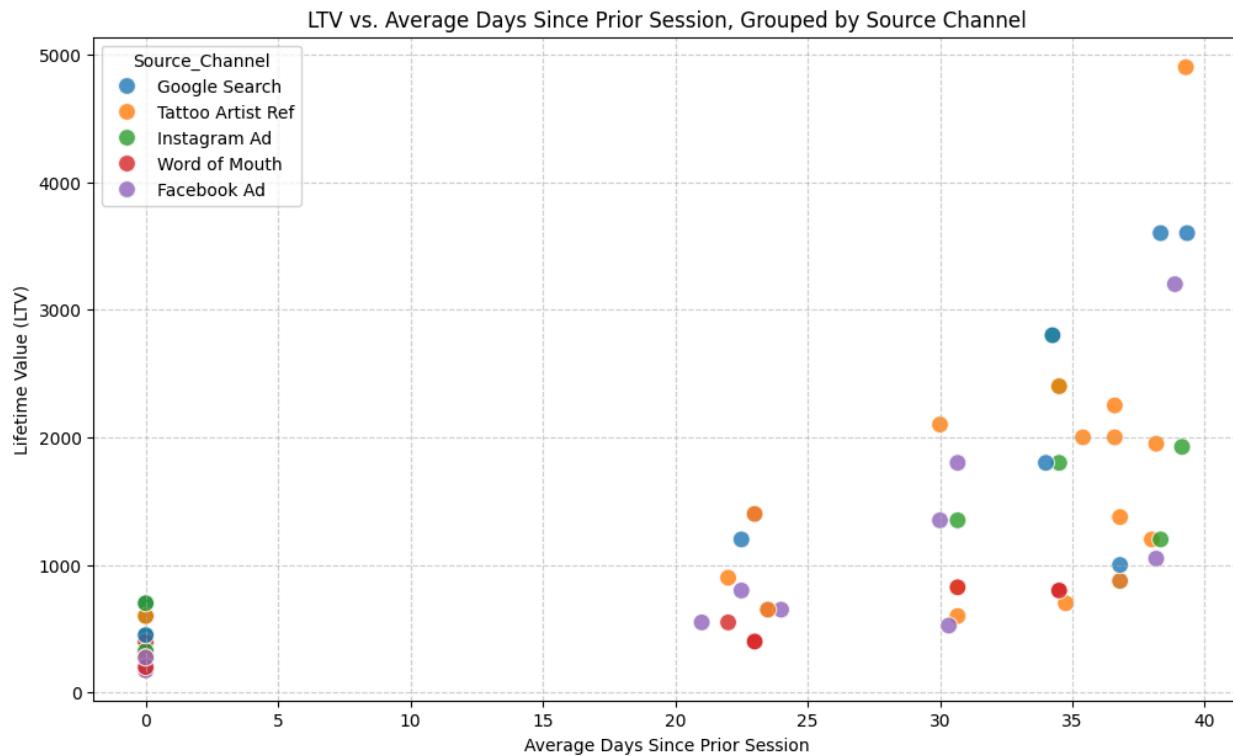
Moderate to weak correlation

- Client_Age seems to have a weak correlation with 'LTV', 'Total_Sessions', and 'Days_Since_Prior'

Negative to weak correlation

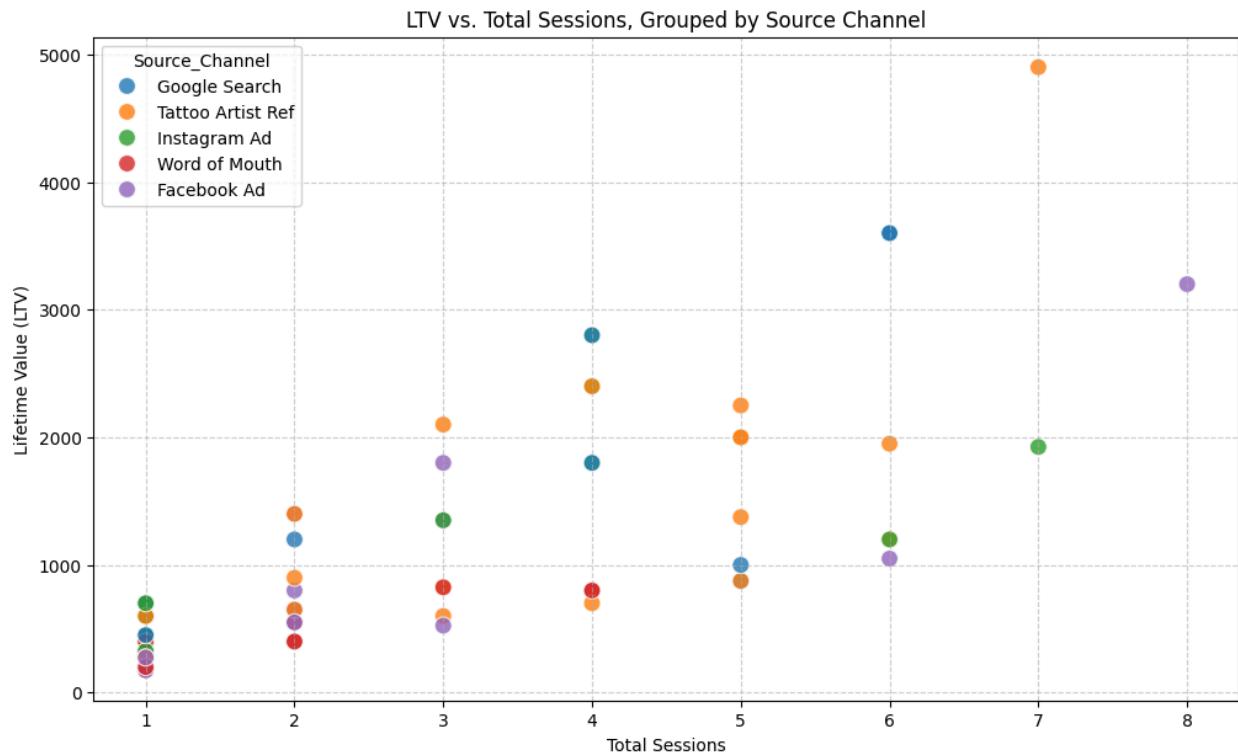
- 'Client_ID' has negative weak correlations with all of the other features.

LTV Drivers:



- Analysis:
 - This plot illustrates the positive correlation between `Days_Since_Prior` and `LTV`.
 - It indicates that clients who have longer average gaps between sessions might be committed to a long-term removal process, leading to higher overall LTV.
 - Again, the `Source_Channel` distinction can highlight which channels bring in these long-term, high-LTV clients.

LTV vs total sessions by source channel:



- Analysis:
 - This plot clearly shows the strong positive relationship between `Total_Sessions` and `LTV`. Clients with more sessions generally have higher LTV.
 - Different `Source_Channel`s show varying densities along this trend. For example, 'Tattoo Artist Ref' seems to consistently lead to higher LTV and more sessions.
 - We can observe if certain channels tend to cluster in the higher LTV/Total Sessions region.

Customer LTV and Acquisition Overall Suggestions:

- There is a positive correlation between total sessions and days prior with LTV, implicating that customers with a greater number of sessions attended result in a greater LTV and regardless of the large gap between days prior for each session there is still a higher amount of LTV.

- High valued channels include 'Tattoo Artist Referrals' and 'Google Search Ads', followed closely by 'Instagram Ads'. Improving marketing investments for these channels should be prioritized.
 - connect with local tattoo artists and partnering with them for referral campaigns.
 - Allocate more funds towards Google and Instagram ads.
- The low LTV for 'Word of Mouth' and 'Facebook ads' need to be improved.
 - Implementing a customer referral incentive program where current customers could receive a discount or deal on future sessions for new friends they bring in.
 - Re-evaluate the target and message for 'Facebook ads' might be necessary for attracting higher LTV clients.
- Implementing new channels.
 - Tik-Tok is one of the leading social media platforms, and implementing content advertising the business could improve customer acquisition.
 - Email ads and campaigns.