**Entry-Level Luxury Cars Analysis for JD Power and Associates**

**Project Overview**

This project aims to analyze discussions from Edmunds.com forums about entry-level luxury performance sedans. The analysis involves identifying brand mentions, attribute associations, co-occurrence lift values, and consumer aspirations to provide actionable insights. The methodology uses techniques such as word frequency analysis, lift value calculations, and Multi-Dimensional Scaling (MDS) plots to visualize and interpret relationships.

**Steps in Analysis**

**1. Data Preparation**

* **Web Scraping**: Approximately 5000 posts were scraped from Edmunds.com discussion forums.
* **Data Cleaning**: Text data was processed to remove punctuation, convert to lowercase, and tokenize words.
* **Model-to-Brand Mapping**: Car model names were replaced with their corresponding brands using a pre-defined mapping.

**2. Word Frequency Analysis**

* Identified the most frequently mentioned car brands and attributes.
* Output: Top brands like BMW, Audi, Acura, Honda, and Subaru, and key attributes such as price, luxury, tech, performance, and engine.

**3. Lift Value Calculation**

* Calculated co-occurrence lift values to identify relationships between brands and attributes.
* Higher lift values (>1.0) indicate stronger-than-expected co-mentions.

**4. Multi-Dimensional Scaling (MDS)**

* Visualized brand relationships using a 2D representation based on lift values.
* Brands closer in the MDS plot are more frequently co-mentioned.

**5. Attribute Analysis**

* Analyzed which attributes (e.g., price, luxury, performance) were strongly associated with each brand.

**Results and Insights**

**Analysis of MDS Plot and Lift Values**

1. **Acura and Subaru**:
   * High co-mentions between Acura and Subaru were unexpected since Subaru is not a luxury brand. This could indicate overlap in consumer discussions comparing affordability or reliability.
2. **Volkswagen and Audi**:
   * These brands have a high lift value due to shared parentage (Volkswagen Group). Audi represents luxury, while Volkswagen targets mid-segment buyers, highlighting cross-segment discussions.
3. **Infiniti's Positioning**:
   * Infiniti is positioned equidistantly between Audi and Acura, reflecting its appeal to upper-middle-class consumers. Audi targets upper-class buyers, while Acura appeals to the middle class.
4. **Infiniti and Hyundai**:
   * High co-mentions (lift >1.7) suggest discussions about both brands, possibly due to shared features like affordability and reliability.
5. **Cadillac and Audi**:
   * Surprising high co-mentions indicate unexpected comparisons between these two brands, despite differing target markets.

**Analysis of Attributes with Brands**

1. **Tech Features**:
   * Mid-level brands like Honda and Subaru outperform luxury brands like Audi and BMW in mentions of tech features, reflecting shifting consumer priorities.
2. **Performance and BMW**:
   * Despite BMW’s tagline, "The Ultimate Driving Machine," its lift value with "performance" is below 1. This suggests that entry-level luxury models from BMW are not resonating with their brand image.
3. **Aspirations and Intentions**:
   * Conversations are not heavily focused on aspirations or purchase intentions, as seen in the low co-mentions of brands with aspirational keywords.
   * Hyundai showed notable co-mentions with aspiration terms, indicating its growing appeal.
4. **Bigrams and Trigrams**:
   * Testing with bigrams and trigrams did not significantly alter lift values, reinforcing the robustness of the insights derived from word pairs.

**Recommendations to the Client (BMW)**

**1. Focus on Non-Luxury High-End Products**

* **Insight**: True competitors for BMW are not just luxury brands but also high-end models of non-luxury brands like Honda and Subaru.
* **Action**: Highlight BMW’s value proposition against non-luxury competitors by emphasizing features like tech advancements and driving experience.

**2. Customer Sentiment Monitoring**

* **Insight**: Digital platforms are major sources of influence for potential buyers. Conversations highlight areas where BMW’s entry-level models may fall short of expectations.
* **Action**: Implement a robust customer sentiment monitoring strategy to:
  + Identify and address negative feedback quickly.
  + Enhance customer engagement and reduce lost sales opportunities.

**Conclusion**

This analysis reveals critical insights into consumer discussions about entry-level luxury cars. By focusing on the key attributes and competitive positioning highlighted in this report, BMW and other stakeholders can better align their strategies with consumer preferences. The methodology and results provide a replicable framework for future analyses across different segments or brands.