**Design Rationale**

* **Top KPIs (Scorecards):** Highlight core metrics like Clicks, CPC, and ROI for quick performance snapshot.
* **COST vs ROI by Channel:** Dual-bar chart for visual comparison of ad spend and returns across platforms.
* **Demographic Insights Table:** Shows engagement across age, gender, and device to support audience targeting.
* **Regional Engagement Map:** Bubble map highlights top-performing regions like North America and Europe.
* **Ad Format + Campaign Table:** Heatmap table to identify best-performing ad combinations (e.g., Text + Consideration).
* **Conversion vs Bounce Bar Chart:** Illustrates trade-offs between conversion success and audience retention.
* **Device Pattern Chart:** Displays CTR by device across age groups to identify high-engagement segments.
* **Channel Comparison Table:** Color-coded table summarizing key performance metrics by platform.
* **Interactive Filters:** Channel and Age Group selectors allow user-driven exploration.
* **Color & Layout Logic:** Strategic color use (blue/yellow for KPIs, heatmap for performance) ensures readability and insight clarity.

**KEY INSIGHTS –**

* **Assumptions :** Created a new field called ROI based on the assumed value of $500 per conversion.

### **Best ROI Channels** : Email and Twitter: High ROI with lower costs.

### **Underperforming Channels** : Instagram, Facebook, Google Ads: High spend but low returns.

### **Top Engaged Segments :**

### **Age Group**: 18–24 leads in CTR.

### **Gender**: Females engage more.

### **Region**: North America & Europe show strongest engagement.

### **Device Patterns :** Desktops + Older Users (45–54, 55+) have the highest CTRs.

### **Top Performing Combo:** Text + Consideration campaigns with Highest CTR (1,836.8),Conversion Rate (1,554.4) & Highest CPC (42.7).

### **Best Cost-Effective Format :** Video ads with Strong CTR & Conversion with low CPC.

### **Lower Performance Combo : Image ads** show Lower results despite low CPC .

* **Instagram and Email** achieved the highest impressions and conversions with moderate CPC.
* **Twitter** had the highest CPC but still delivered strong ROI—indicating differing cost-efficiency dynamics across platforms.

**Challenges Faced –**

* The dataset lacks timestamp information within the date field, which limits our ability to analyze user behavior by hour. As a result, we were unable to identify peak posting times for different platforms.
* Additionally, weekly comparisons of key metrics could not be displayed, as the data consistently returned “no data” despite multiple formatting and configuration attempts.