**Global Terrorism Analysis: Data Visualization Report**

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**Tool Used:** Tableau & Power BI  
**Dataset:** Global Terrorism Database (region\_05.csv)

**1. Design Choices for Each Visualization**

**Tableau**

**1.1 Global Terrorism Heatmap**

* **Design:** Used a filled map colored by incident count aggregated by country and year.
* **Why:** Geographical spread of terrorism is best visualized on a map to reveal hotspots.
* **Interactive Filter:** A year slider allows users to explore changes over time.

**1.2 Top 10 Terrorist Groups Over Time**

* **Design:** Stacked area chart of top 10 groups' activity by year.
* **Why:** Area chart highlights growth/decline of group activities over decades.
* **Interactive Filter:** Tooltip and color-coded areas identify each group.

**1.3 Attack Types and Casualties (Scatter Plot)**

* **Design:** nkill on X-axis, nwound on Y-axis, colored by attack type, sized by total casualties.
* **Why:** Scatter plot clearly shows severity and type of high-casualty events.

**1.4 Monthly Trend Dashboard**

* **Design:** Combined line chart (incidents over months), bar chart (top attack types), and a table (top 5 countries).
* **Why:** Offers a multi-dimensional view of trends and patterns.
* **Interactivity:** Cross-filtering allows slicing all elements together.

**Power BI**

**2.1 Geospatial Analysis of Attacks**

* **Design:** Bubble map using latitude and longitude; bubble size = total casualties.
* **Why:** Helps visualize intensity and location of attacks.
* **Interactivity:** Region and year slicers filter the map dynamically.

**2.2 Terrorist Group Comparison**

* **Design:** Multi-row cards displaying Total Attacks, Total Casualties, and Success Rate for top 5 groups.
* **Why:** Offers clear at-a-glance comparisons of group metrics.
* **Slicer:** Year timeline allows temporal comparison.

**2.3 Weapon Type Analysis**

* **Design:** Treemap using weapon types, colored by lethality (casualties), with drill-down to subtypes.
* **Why:** Treemap shows hierarchical structure and relative severity.

**2.4 Target Analysis Dashboard**

* **Design:** Donut chart (target type share), bar chart (casualties by target type), and table (top specific targets).
* **Why:** Multiple views support insight into what kinds of targets are attacked.
* **Bookmark:** Allows toggling between visual layouts.

**2. Key Insights**

* **Terrorism is regionally concentrated**, especially in South Asia and the Middle East.
* **Groups like Taliban, ISIS, and Boko Haram** are responsible for the majority of high-casualty attacks.
* **Explosives and firearms** are the most lethal weapon types.
* **Civilians, military, and police** are the top targets.
* **Seasonality and spikes** in activity are observable during specific years or months (e.g., 2014).

**3. Challenges Faced & Solutions**

| **Challenge** | **Solution** |
| --- | --- |
| Missing values in nkill, nwound | Used COALESCE and ZN() to treat nulls as zero |
| Map visual not working in Power BI | Enabled it in Security Settings; used Azure Map as backup |
| Drill-down in Treemap | Created hierarchy and activated drill buttons |
| Bookmark not toggling views | Used Selection pane + Bookmark pane with "Display" setting only |

**4. How to Interact With the Visualizations**

**In Tableau**

* **Heatmap:** Use the **year slider** to filter the map.
* **Area Chart:** Hover over stacked areas to view incident count per group per year.
* **Scatter Plot:** Hover on points to see attack type, casualties, and summary.
* **Dashboard:** Use line chart or bar chart to cross-filter the table.

**In Power BI**

* **Map:** Click on a region or use the **year/region slicers** to filter bubbles.
* **Card View:** Use **timeline slicer** to see group activity changes over time.
* **Treemap:** Click on a weapon type to **drill into subtypes**.
* **Target Dashboard:** Use **buttons** to toggle between Donut+Bar view and Table view using **Bookmarks**.

**End of Report**