**Fire Incidents During Major Celebrations – My Approach**

Category: Fire Incidents  
Tools Used: Tableau, SQL, Google Sheets

**Objective:**

This analysis examines fire incidents in London from 2009 to 2024, with a specific focus on incidents around major events such as Diwali, Halloween, Bonfire Night (Guy Fawkes), and Christmas. The goal is to uncover patterns, identify high-risk boroughs and ignition sources, and provide recommendations to improve fire safety strategies.

**Key Questions Answered:**

1. Which events have the most fire incidents?
2. What are the long-term trends in fire incidents?
3. Which boroughs experience the highest number of incidents?
4. What are the most common ignition sources?
5. How do incidents vary by property type?

**Data Source:**

The dataset was sourced from the LondonFire Brigade and contains detailed information on fire incidents during Diwali, Halloween, Bonfire Night, and Christmas. Available on London DataStore.

**Approach:**

**1. Data Cleaning:**

**Tool Used: Google Sheets**

* Removed 3,492 duplicate records to ensure data accuracy.
* Replaced blanks in key columns with meaningful values:
  + Ignition Source: Replaced blanks with "Unknown".
  + Borough: Replaced blanks with "Unknown Area".
* Combine the "Year", "Month", and "Day" columns to create a new "Date" column for easier trend analysis.
* Created a "Total" column to sum up all incidents across events for each record.

**2. Data Analysis:**

**Tool Used: SQL**

* Conducted deeper data exploration to answer key questions:
  + Event Analysis:
    - Total incidents per event (e.g., Diwali, Guy Fawkes).
    - Yearly trends in incidents for each event.
  + Location-Based Analysis:
    - Total incidents by borough and event.
    - Yearly incident trends for high-risk boroughs.
  + Property and Ignition Source Analysis:
    - Incidents by property category (e.g., Dwellings, Outdoor Structures).
    - Top ignition sources during events like Guy Fawkes and Christmas.
  + Monthly Analysis:
    - Distribution of incidents by month to identify seasonal patterns.

**3. Data Visualisations:**

**Tool Used: Tableau**

* Created interactive dashboards to uncover and present insights:
  1. Bar Chart: Total fire incidents by event (Diwali, Halloween, Guy Fawkes, Christmas).
  2. Line Graph: Trends in total incidents from 2009 to 2024 for each event.
  3. Bar Chart: Total fire incidents by month, highlighting peaks in November (Guy Fawkes) and December (Christmas).
  4. Pie Chart: Distribution of incidents by property category (e.g., Dwellings, Outdoor Structures).
  5. Choropleth Map: London borough map showing total incidents, with darker colours for boroughs with higher incident counts.
  6. Vertical Bar Chart: Top 5 ignition sources, ranked by total incidents.
  7. Dynamic Charts: Enabled filter functionality to customise the view by borough, event, or year.

**Key Findings:**

**1. Total Incidents:**

* Total incidents: 27,113
* By Event:
  + Guy Fawkes: 13,835 incidents (51%)
  + Christmas: 10,874 incidents (40%)
  + Diwali: 5,230 incidents (19%)
  + Halloween: 1,192 incidents (4%)

**2. Yearly Trends:**

* Guy Fawkes: Peaked in 2009 (1,245 incidents), declined steadily, with some recovery in 2016 (1,036 incidents).
* Christmas: Steady decline from 2011 (871 incidents) to 2022 (541 incidents), slight recovery in 2024 (680 incidents).
* Diwali: Decline from 2009 (582 incidents) to 2020 (156 incidents), with slight recovery to 355 incidents in 2024.
* Halloween: Fluctuated from 120 incidents in 2009 to 80 in 2024.

**3. Borough Analysis:**

* Top Boroughs (All Events): Tower Hamlets, Westminster, and Southwark consistently had the highest number of incidents.
* Christmas Incidents:
  + Tower Hamlets: 455 incidents
  + Westminster: 431 incidents
* Guy Fawkes Incidents:
  + Tower Hamlets: 636 incidents
  + Newham: 510 incidents

**4. Property Categories:**

* Overall Distribution:
  + Dwellings: 32%
  + Outdoor Structures: 25%
  + Road Vehicles: 11%
* Diwali-Related Incidents: Most incidents occurred in Dwellings (25%) and Outdoor Structures (20%).

**5. Ignition Sources:**

* Top 5 Causes:
  1. Cookers: 2,431 incidents
  2. Naked flames: 1,222 incidents
  3. Wiring/Plugs: 1,037 incidents
  4. Cigarettes: 682 incidents
  5. Fireworks: 648 incidents (primarily during Guy Fawkes and Diwali).

**6. Monthly Trends:**

* November (Guy Fawkes-heavy): 9,537 incidents
* December (Christmas-heavy): 8,380 incidents
* Lowest activity in March and September.

**Recommendations:**

**1. Targeted Awareness Campaigns:**

* Diwali: Promote safe firework use and alternatives (e.g., LED diyas).
* Guy Fawkes: Encourage attendance at organised displays and teach bonfire safety.
* Halloween: Promote flame-resistant decorations and costumes.
* Christmas: Highlight risks of electrical fires and heating equipment.

**2. Borough-Specific Strategies:**

* Focus on high-risk boroughs like Tower Hamlets, Westminster, and Southwark.
* Conduct local workshops, distribute safety materials, and collaborate with community leaders.

**3. Stricter Firework Regulations:**

* Limit sale of high-grade fireworks to licensed organisers.
* Enforce stricter usage hours during Diwali and Guy Fawkes.

**4. Seasonal Resource Deployment:**

* Pre-position firefighting resources in high-risk boroughs during November and December.
* Increase emergency response capacity around peak dates.

**5. Ignition Source Mitigation:**

* Educate households on cooker safety and electrical maintenance.
* Promote fire-safe practices for cigarettes and naked flames.

**Conclusion:**

By targeting high-risk events, boroughs, and ignition sources, and aligning fire safety campaigns with identified trends, stakeholders can significantly reduce the number of fire incidents.