U.S. Lightning Strikes Analysis (2009–2018) Data Summary

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Overview

This Tableau project explores lightning strike patterns across the U.S. between 2009 and 2018. The goal was to visualize geographic and temporal trends in lightning activity, identify high-risk regions, and assess how strike patterns have shifted over time.

Project

The dataset includes four fields: latitude, longitude, date, and number of lightning strikes. Each record represents the total strike count at a given location on a given date. Key steps in Tableau included:

- Building an interactive time series map to track yearly strike activity
- Highlighting regional concentrations (e.g., Texas, Oklahoma, Kansas)
- Visualizing year-over-year trends with a line chart of total strikes
- Annotating changes in geographic distribution and volume
- Creating a multi-panel map to compare states with high strike density

The dashboard is designed to enable users to explore shifts in lightning behavior both spatially and over time.

Key Insights

- Total lightning strikes increased by 48% from 2009 (30M) to 2018 (44.6M)
- Strike concentrations shifted westward — from the Southeast toward Texas and Oklahoma
- Texas and Oklahoma had the highest strike densities by 2018, with some locations exceeding 9,000 strikes
- Lightning patterns have become more intense and geographically clustered, especially across the Gulf region
- Some states like Kansas showed moderate activity but were less affected overall

Next Steps

- Explore meteorological or climate variables to explain regional shifts
- Build predictive models using weather data to forecast high-risk periods
- Integrate population density to assess human exposure
- Expand the dataset to include storm severity or damage impact