# Final Project Proposal

2024-11-07

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## The tentative project title: Patterns and Impacts of Tornadoes in the U.S

## The motivation for this project:

Severe tornadoes disrupt lives, damage property, and strain local resources. By analyzing historical storm data, our project aims to identify patterns in tornado occurrences across states, helping local governments, emergency services and residents prepare better for future events. Our analysis will provide practical insights into storm patterns and impacts, enhancing community resilience.

## The intended final products:

1. A Detailed Report
2. An Interactive online Dashboard
3. A project website with all summaries and key takeaways
4. A two-minute video overview that highlight primary goals and findings.
5. GitHub Repository with all code and data processing scripts

## The anticipated data sources: ( https://www.spc.noaa.gov/wcm/ )

We will use the dataset "1950-2023_actual tornadoes.csv" from NOAA Storm Prediction Center Tornado Data, focusing on data from 2000 to 2023.

## The Planned Analysis:

Conduct statistical analyses such as tornado frequency, intensity, seasonal patterns, and impacts across states and years (from 2000 to 2023)

## Visualizations:

Interactive bar plots, line plots, scatter plots, box plots, and heatmaps for exploring trends and patterns in tornado frequency, intensity, geographic distributions and impacts across different states and years.

## Coding challenges:

Cleaning large dataset, handling missing values and improper data types, along with data wrangling to prepare the data for appropriate analysis, geospatial data visualization, and advanced statistical analysis for impact metrics.

## The planned timeline:

Week 1: Data collection and cleaning; initial EDA.
Week 2: Conduct trend and impact analysis, and develop visualizations for storm types and frequencies.
Week 3: Complete mapping and geospatial analysis.

Week 4: Build the website, prepare the final report and screencast, and review of deliverables.