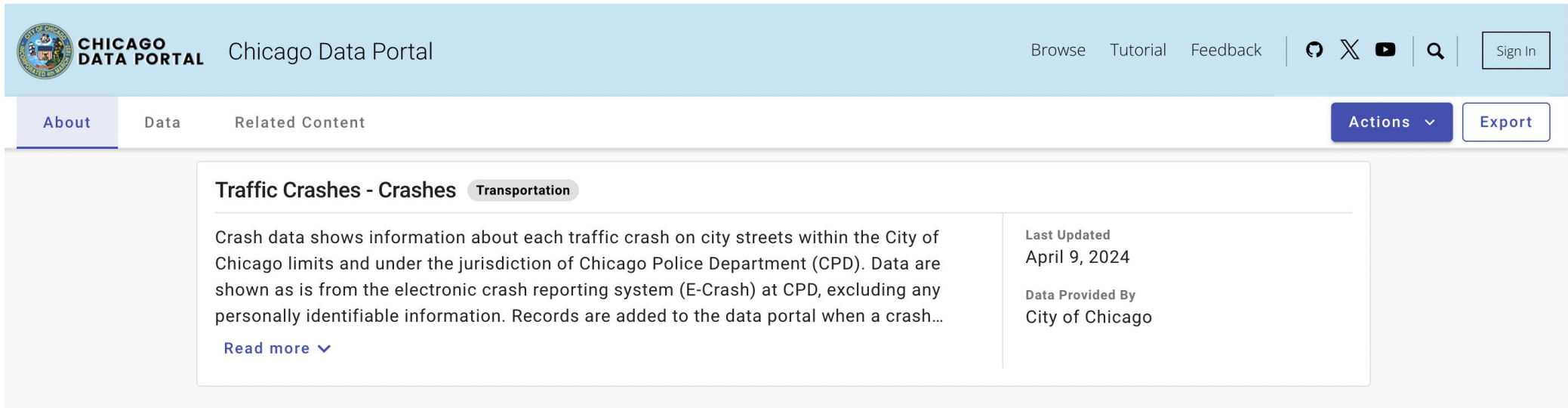# Traffic crashes in Chicago

By: Olivia Pardo, Isabel Heard, Zach Bergler & Maddie DeLaRosa

Research Question

- What months are car crashes more common?

- Where in the city are there more crashes then normal?

- Where in the city are there less crashes then normal?

- Where are there outliers in the city?

Data

- Data collected from the City of Chicago's Data Portal
  - https://data.cityofchicago.org/Transportation/Traffic-Crashes-Crashes/85ca-t3if/about_data
- Transportation Data --> Crashes

Data Cleaning

- Remove null values in longitude & latitude

- Looking at only 2023
  - January 1st , 12:00am, 2023 to December 31st , 11:45pm, 2023

- Delete outliers (middle of Atlantic ocean)

Crashes in Chicago

109,690 total crashes in 2023

Total crashes per month:

January – 8,039
February – 8,030
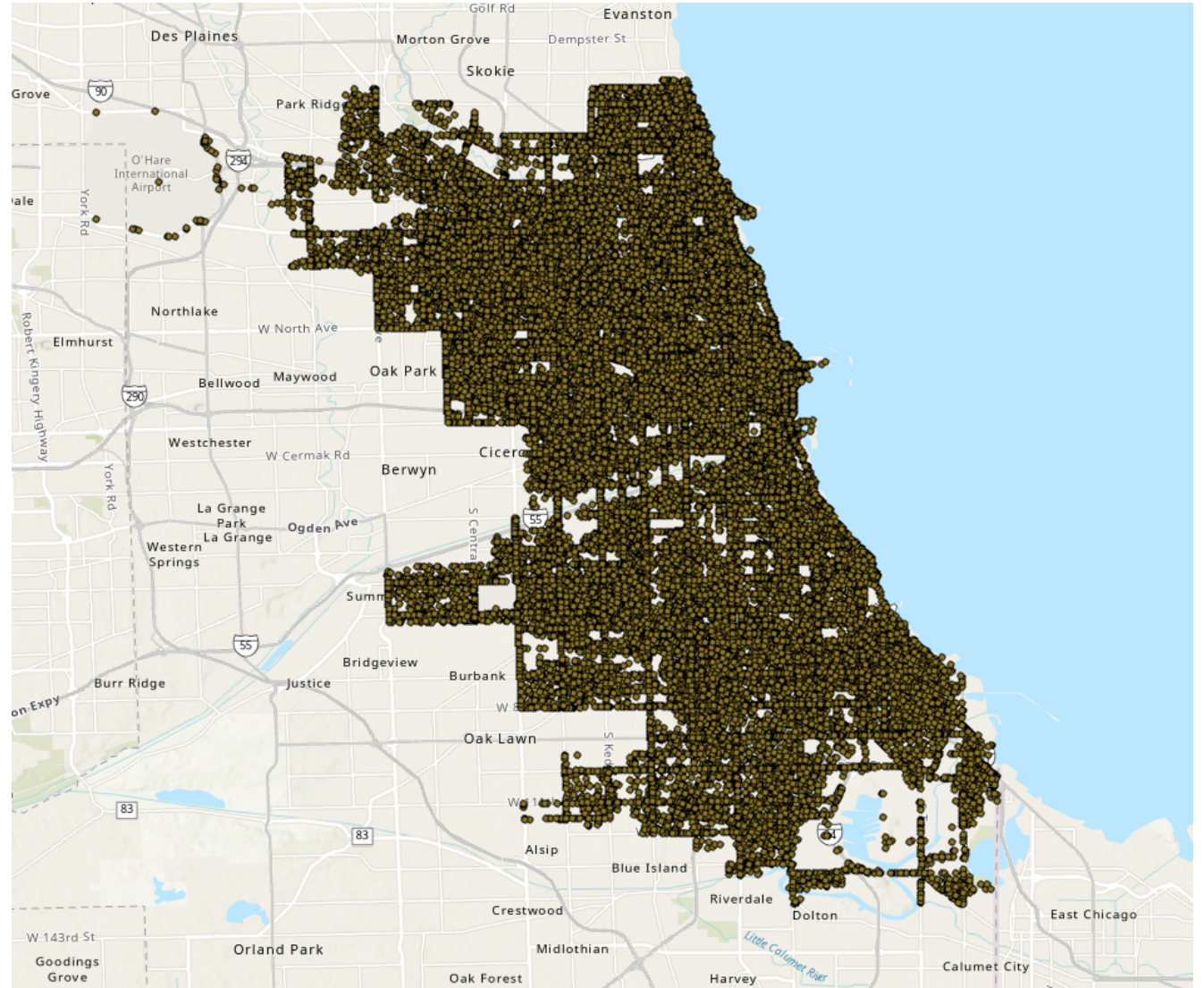March – 8,808
April – 8,933
May – 10,039
June – 9,499
July – 9,437
August – 9,687
September – 9,530
October – 9,993
November – 8,671
December – 9,024

Methods & Analysis

1. Projected data

2. Created space-time cube by month

3. Optimized hot spot analysis

4. Emerging hot spot analysis

5. View in 3D local scene

6. Analyze hot/cold spots and outliers

Optimized Hot Spot Analysis of Car Accidents in Chicago, IL 2023

Optimized Hot Spot Analysis
Chicago, IL

- Cold Spot with 99% Confidence
- Cold Spot with 95% Confidence
- Cold Spot with 90% Confidence
- Not Significant
- Hot Spot with 90% Confidence
- Hot Spot with 95% Confidence
- Hot Spot with 99% Confidence

0 1.25 2.5   5 Miles

Esri, NASA, NGA, USGS, City of Chicago, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, USFWS
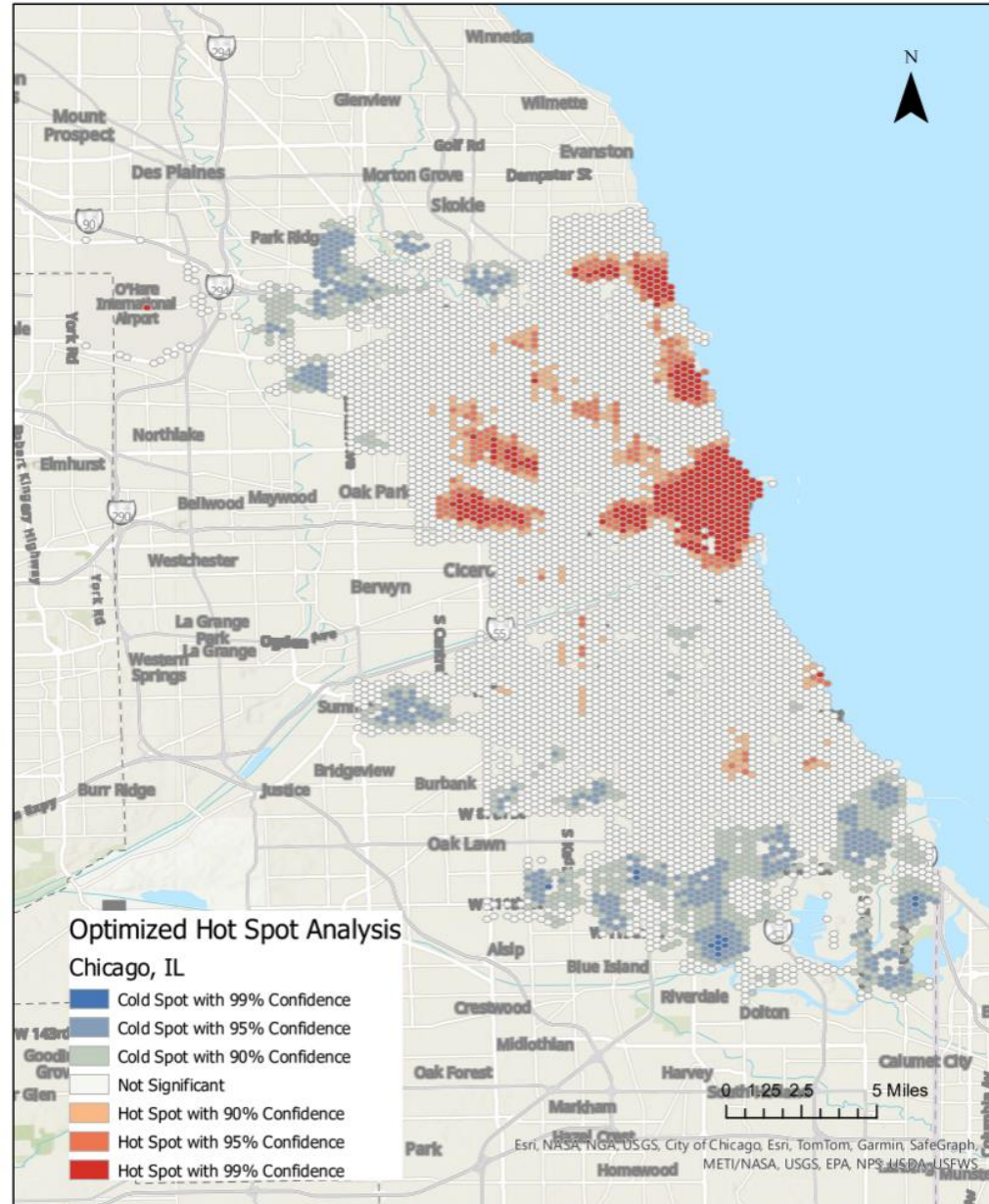
Emerging Hot Spot Analysis of Car Accidents in Chicago, IL 2023
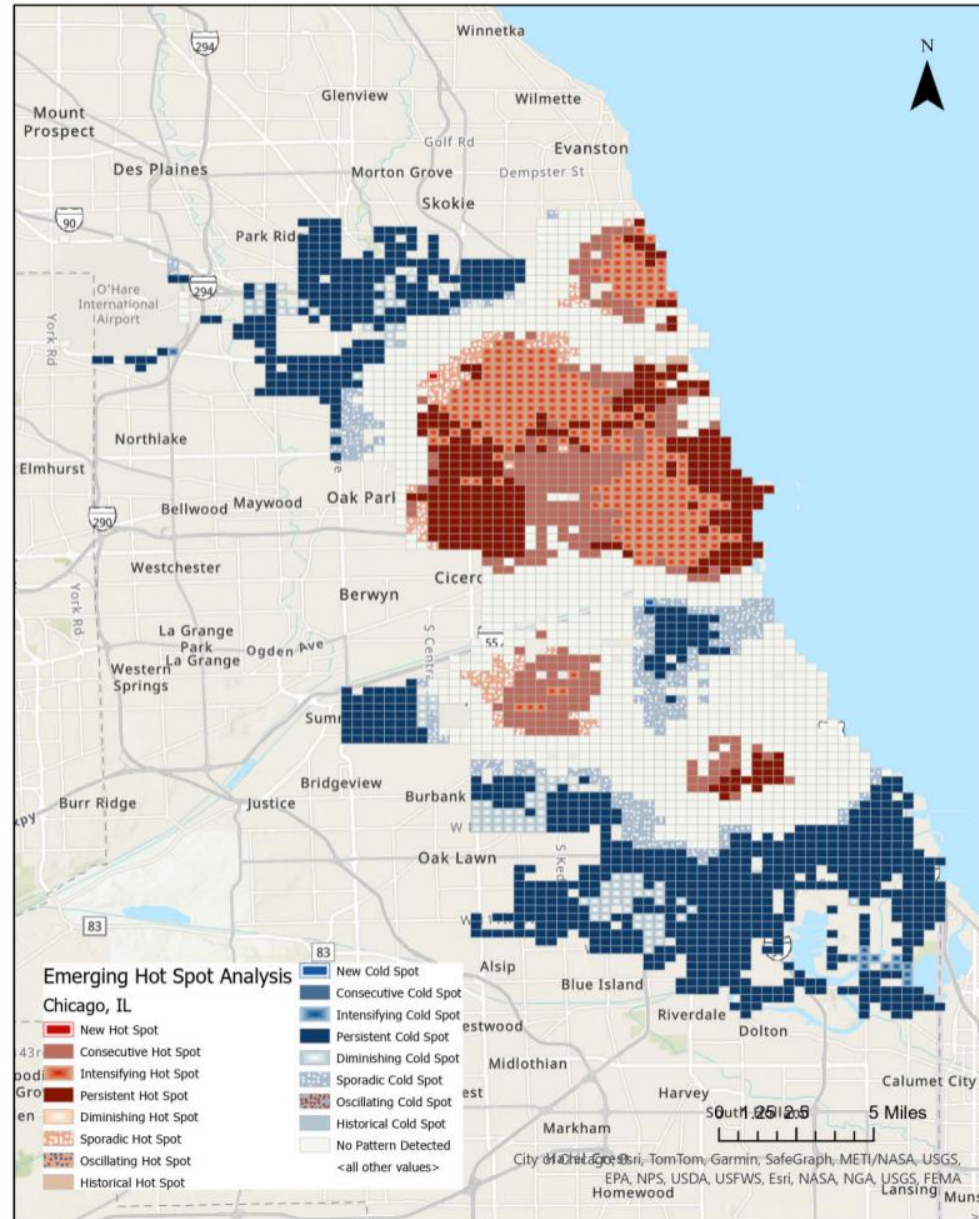
Car Accident Hot Spots & Outliers in Chicago, IL 2023

Hot Spots
- Cold Spot with 99% Confidence
- Cold Spot with 95% Confidence
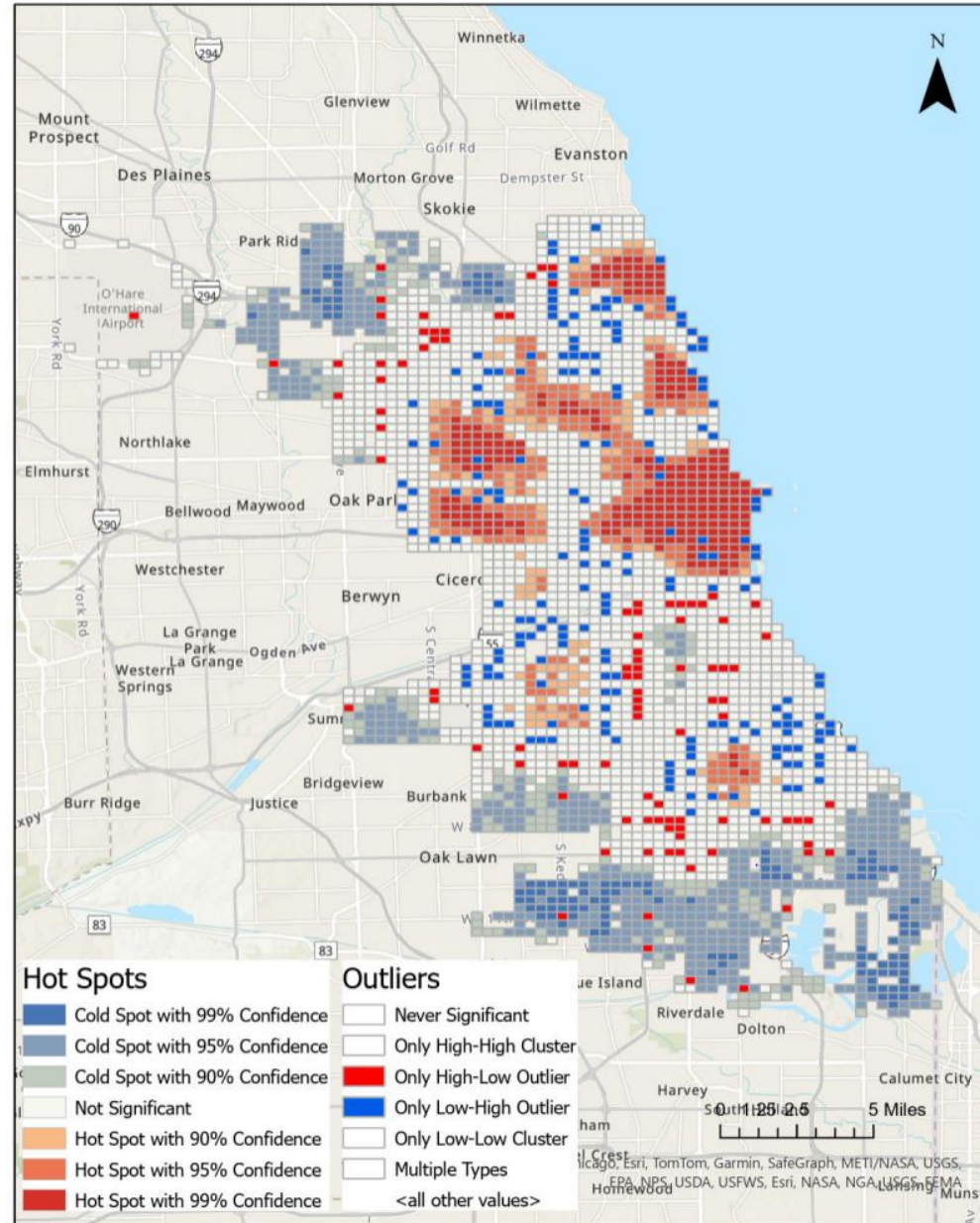- Cold Spot with 90% Confidence
- Not Significant
- Hot Spot with 90% Confidence
- Hot Spot with 95% Confidence
- Hot Spot with 99% Confidence

Outliers
- Never Significant
- Only High-High Cluster
- Only High-Low Outlier
- Only Low-High Outlier
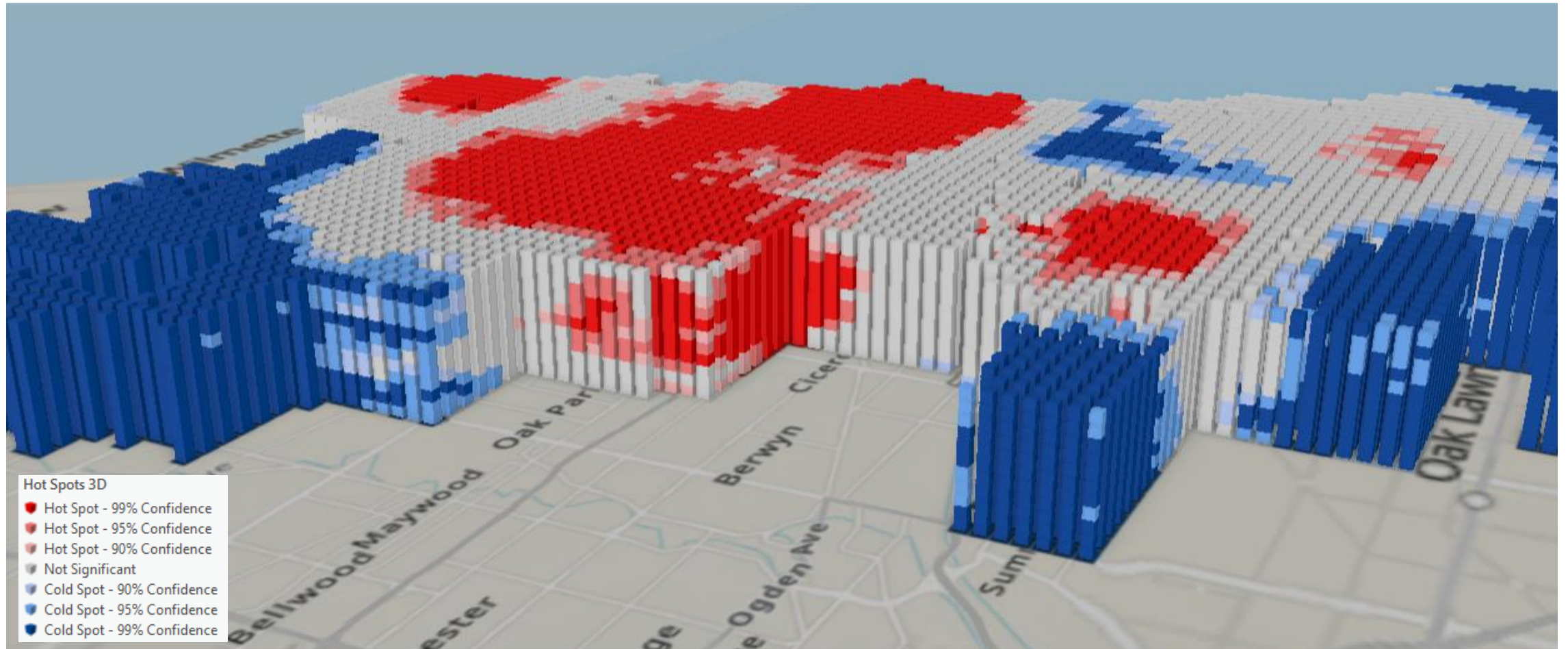- Only Low-Low Cluster
- Multiple Types
- <all other values>

3D Hot Spot Analysis – Lake Shore Drive
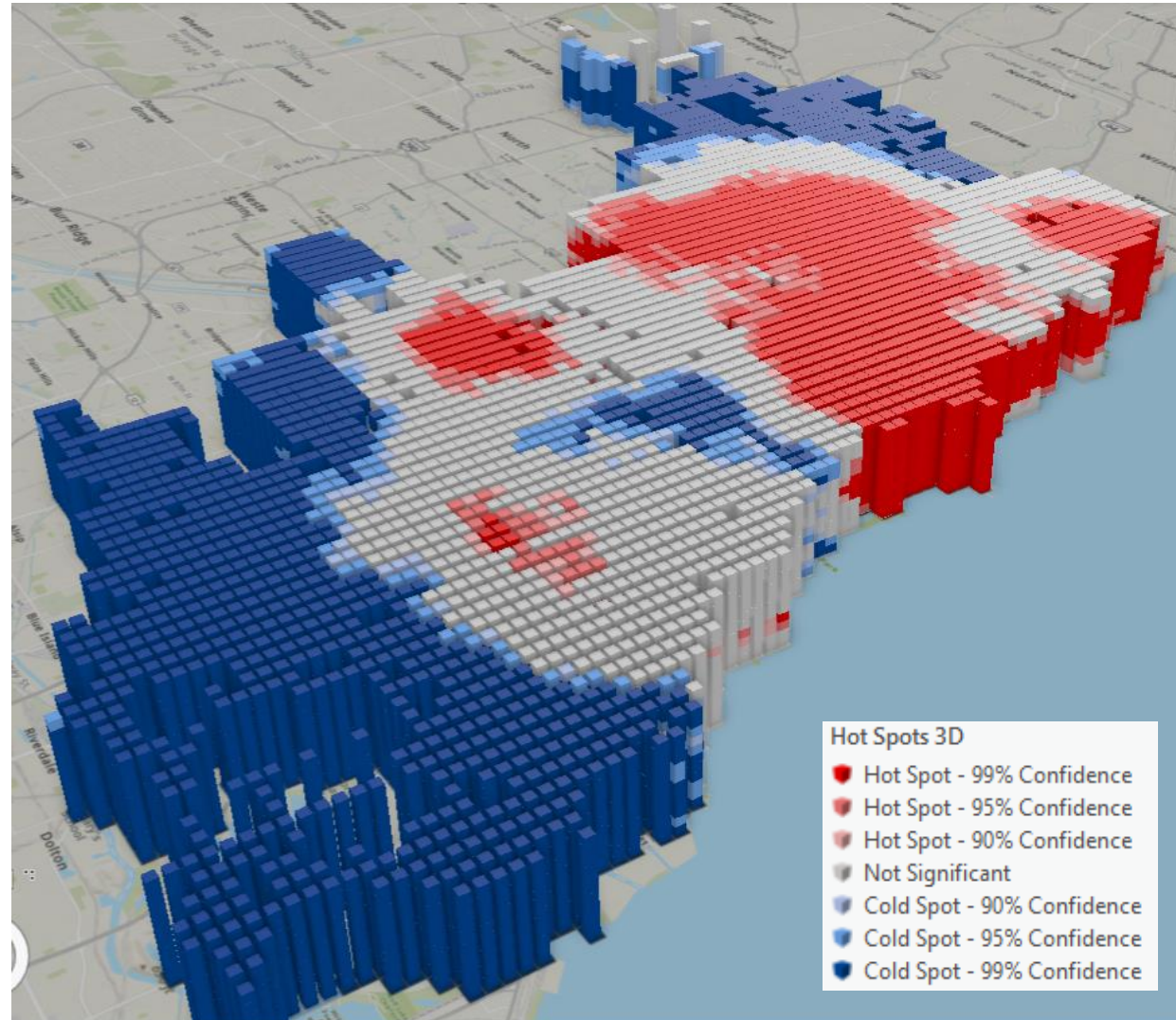
3D Hot Spot Analysis – Eastern View

3D Hot Spot Analysis – Northern View

Hot Spots 3D
- Hot Spot - 99% Confidence
- Hot Spot - 95% Confidence
- Hot Spot - 90% Confidence
- Not Significant
- Cold Spot - 90% Confidence
- Cold Spot - 95% Confidence
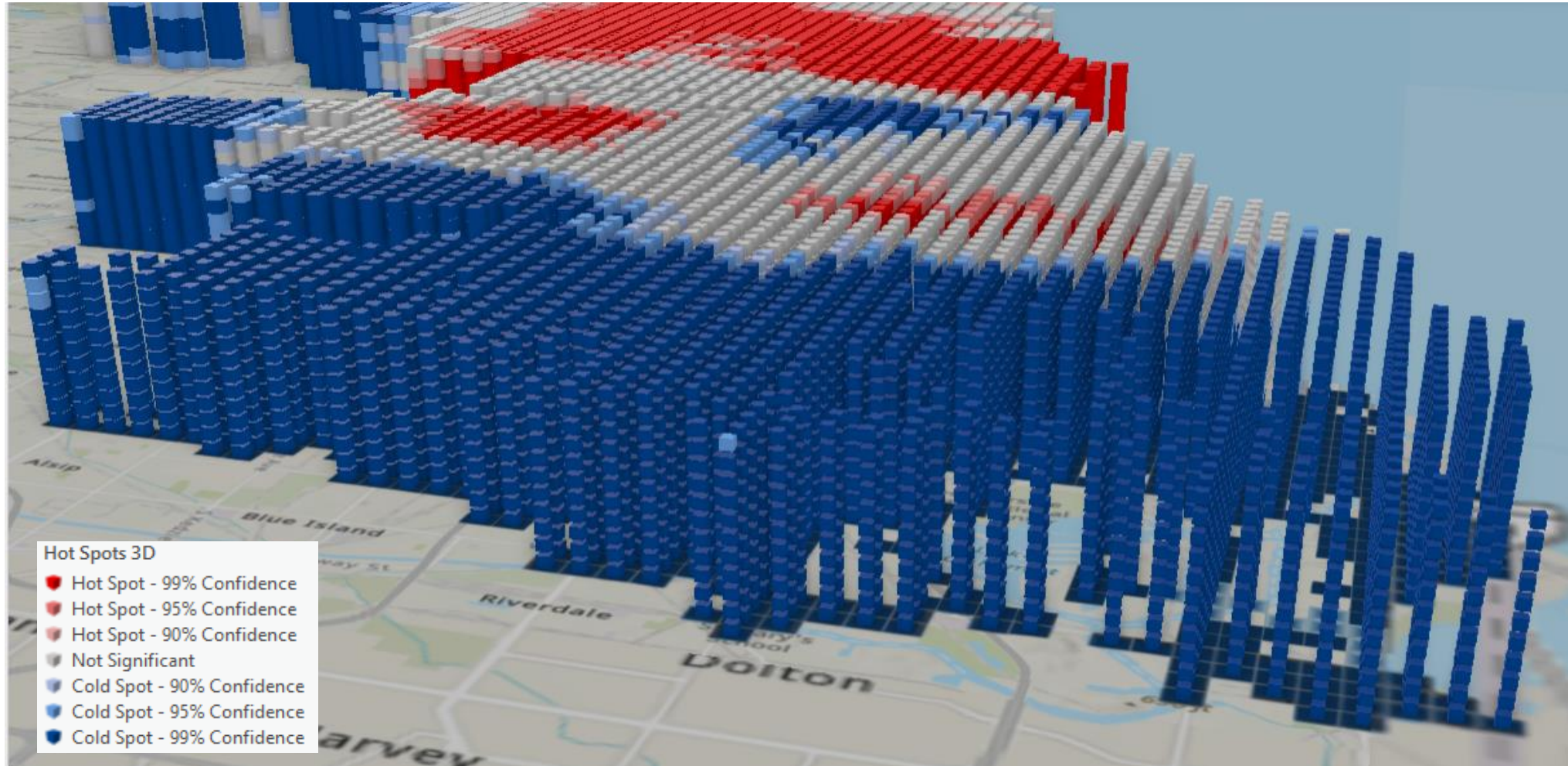- Cold Spot - 99% Confidence
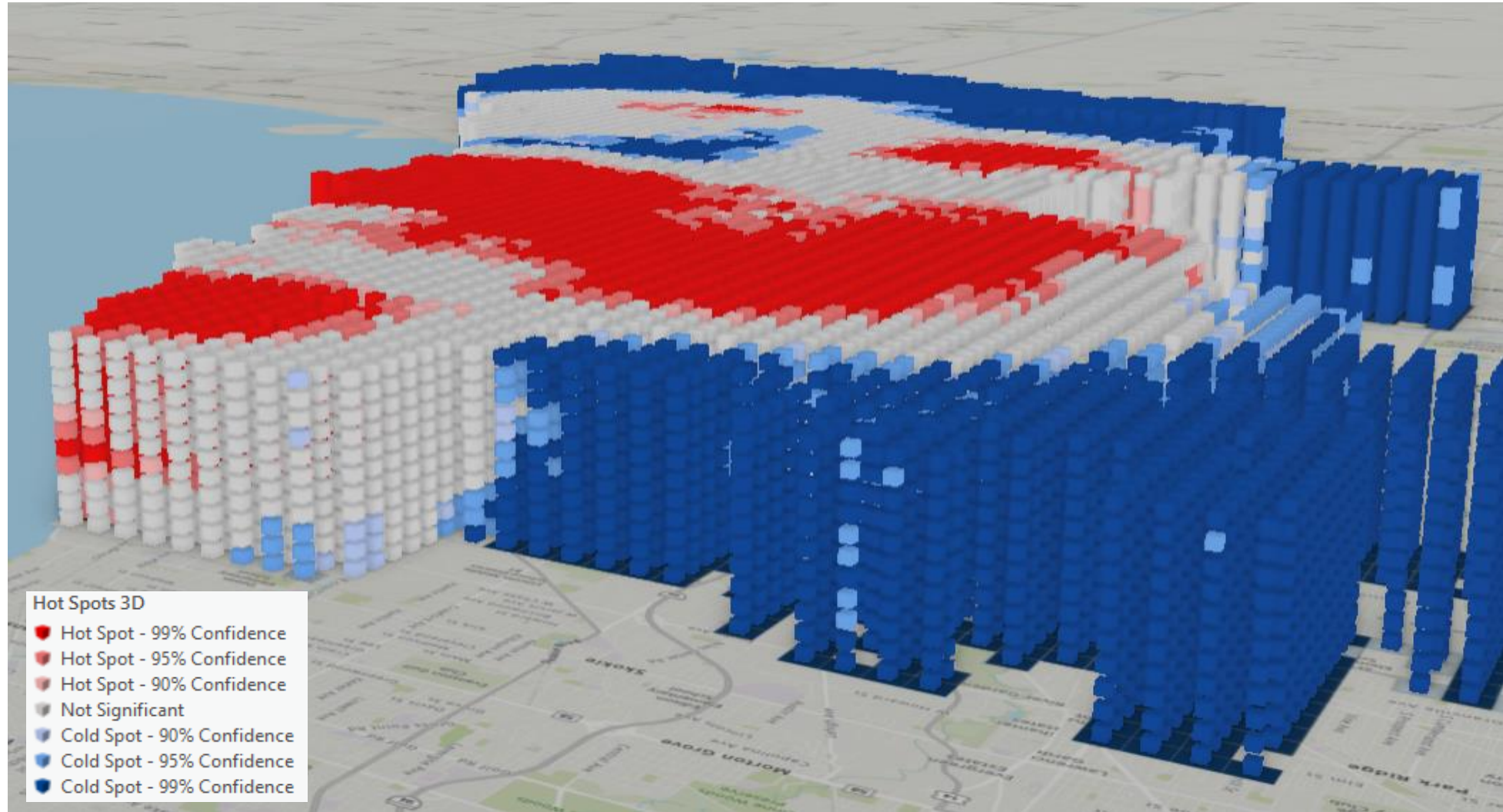
3D Hot Spot Analysis – Southern View

Conclusions

- No patterns found in the monthly timing of car crashes.

- Patterns in the location of car crashes:

  - Hotspots in the northeast, downtown, and central areas of Chicago all with high confidence levels.

  - Cold spots downtown to the east, on the westside, and throughout the southside of Chicago all with high confidence levels.

  - Further research; hourly and weekly instances of car crashes.