# Secondary Crash Research

Kelley Pecheux, Ph.D.

AEM Corporation

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# Project Objectives

- Conduct research into the number of secondary crashes based on roadway type and causation.

- Select one or more states for a deeper review into the causation and potential countermeasures that may reduce secondary crashes.

# Research Approach

- Identify and collect crash data from states with a secondary crash data element on their crash report.

- Standardize data across states and enrich with other data sources.

- Analyze enriched data.

- Develop case studies for most "common" secondary crash types.

**S3 Secondary Crash?**
01 No
02 Yes

**MMUCC Secondary Crash Data Element**

# Identify States and Gather Crash Data

- Conducted MMUCC mapping exercise to identify states with the data element.

- Assembled multiple years of crash data (generally 2-4 years) from the following:

  - Arizona
  - Florida
  - Illinois
  - Maine

  - Nevada
  - Ohio
  - Tennessee
  - Utah

  - Wisconsin
  - Wyoming

| State | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | Grand Total |
|-------|------|------|------|------|------|------|------|------|-------------|
| IL |  |  |  |  |  | 8,397 | 9,704 | 9 | 18,110 |
| AZ | 378 | 2,566 | 3,332 | 3,069 | 2,811 | 2,377 | 1,560 |  | 16,093 |
| TN | 2 | 803 | 1,399 | 1,282 | 1,298 | 1,457 | 1,182 | 2 | 7,425 |
| WI |  |  |  | 539 | 910 | 925 | 703 |  | 3,077 |
| NV |  |  |  |  | 385 | 1,346 | 1,298 | 1 | 3,030 |
| OH |  |  |  |  | 2 | 1,465 | 678 |  | 2,145 |
| FL |  |  |  | 123 | 643 | 498 |  |  | 1,264 |
| WY |  |  |  | 67 | 77 | 128 | 197 |  | 469 |
| UT |  |  |  | 72 | 53 | 57 |  |  | 182 |
| ME |  |  |  |  |  | 33 | 30 |  | 63 |
| Grand Total | 380 | 3,369 | 4,731 | 5,152 | 6,179 | 16,683 | 15,352 | 12 | 51,858 |

*Secondary Crash Research*

# Identify States and Gather Crash Data
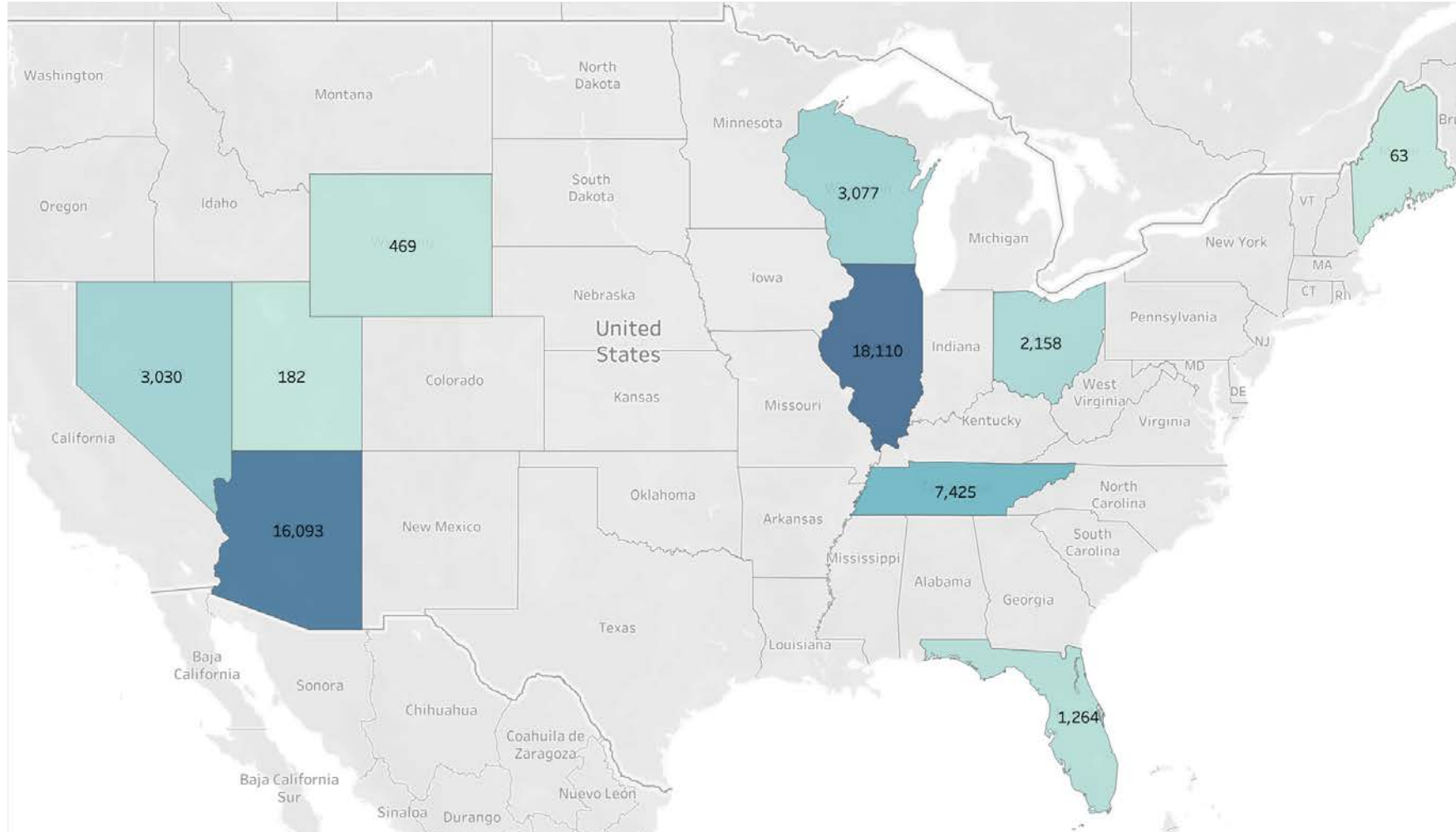
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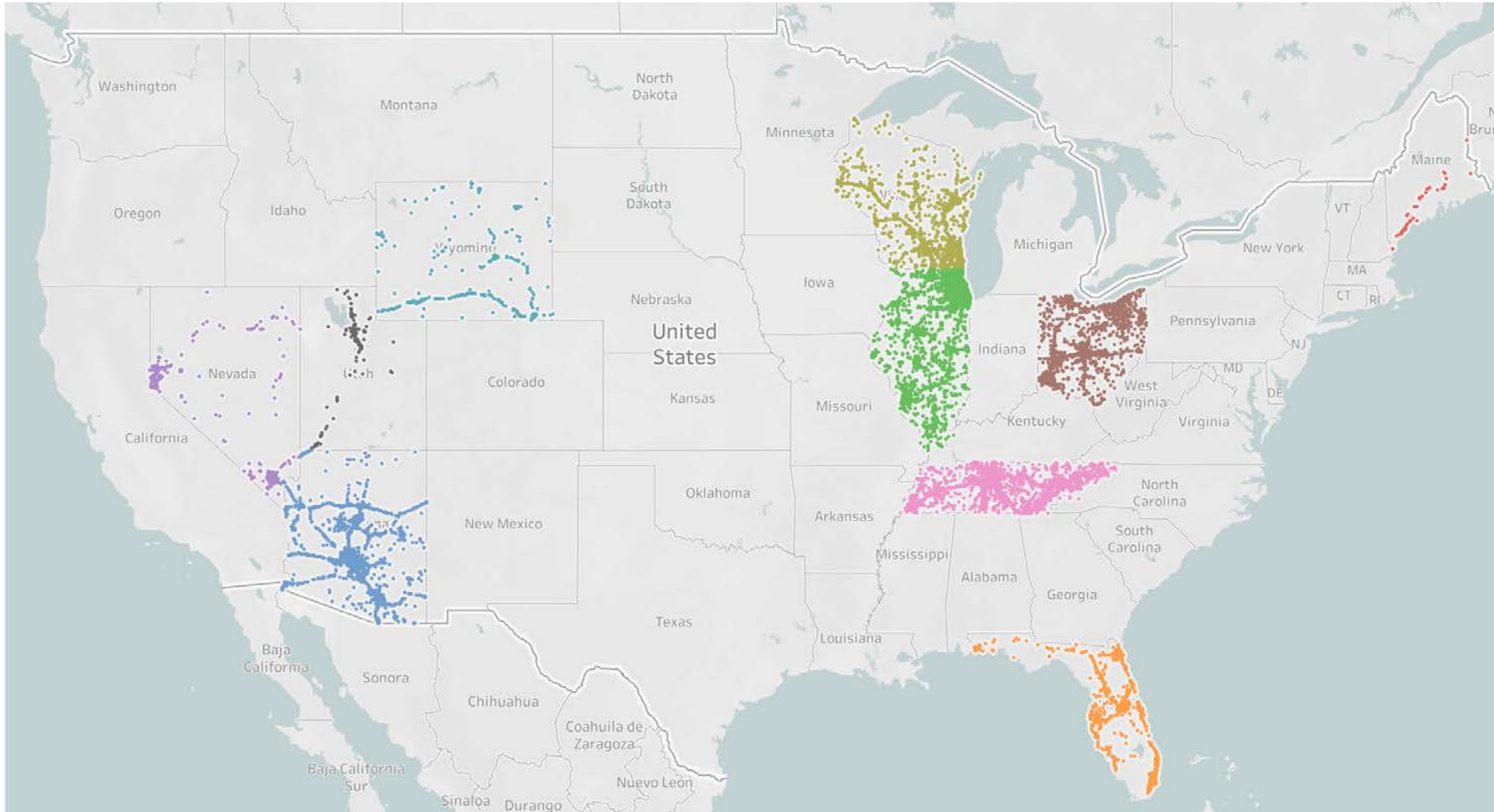
# Standardize and Enrich Data

- Standardizing data
  - Common data elements expressed in different ways (e.g., day of week, urban/rural, time stamps, direction of travel, weather)
  - Errors (e.g., incorrect latitude/longitude)

- Enriching data
  - Detailed weather data
  - Roadway inventory data
  - Congestion/speed data
  - Waze alerts

# Analyze Data

- Anecdotal information on accuracy of secondary crash data.

- Try to verify that crashes are in fact secondary (temporal-spatial analysis, congestion, Waze).

- Conduct analyses (descriptive statistics, cluster analysis).

- Summarize the findings from the cluster analysis in terms of the most common types of secondary crashes identified.



Rain Days, 6 clusters
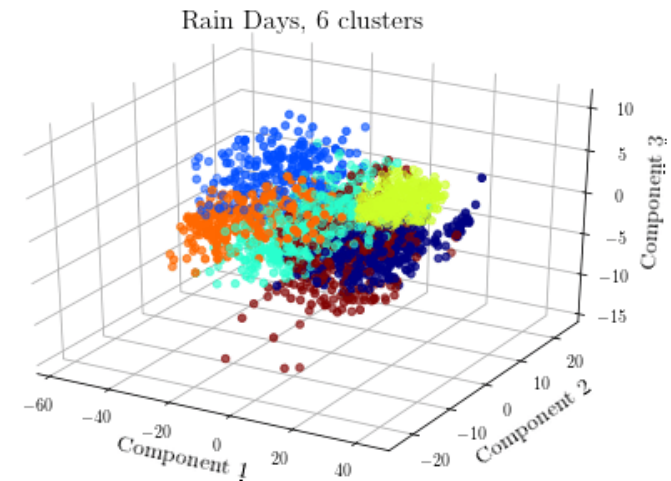
# Develop Case Studies

- Identify 4-6 secondary crashes that are representative of the most common types of secondary crashes (as identified in the cluster analysis).

- Describe each crash with respect to the secondary crash clusters/typology.

- Conduct further research into the specific secondary crashes and collect additional information/data to support the development of the case studies.

- Conduct stakeholder meeting to review and validate the draft case studies and to discuss potential solutions on how the secondary crashes might have been avoided.

# Questions?

Kelley Pecheux

AEM Corporation

Kelley.Pecheux@aemcorp.com

703-350-8487