Spatial Analysis of Bicycle and Pedestrian Collisions and Factors

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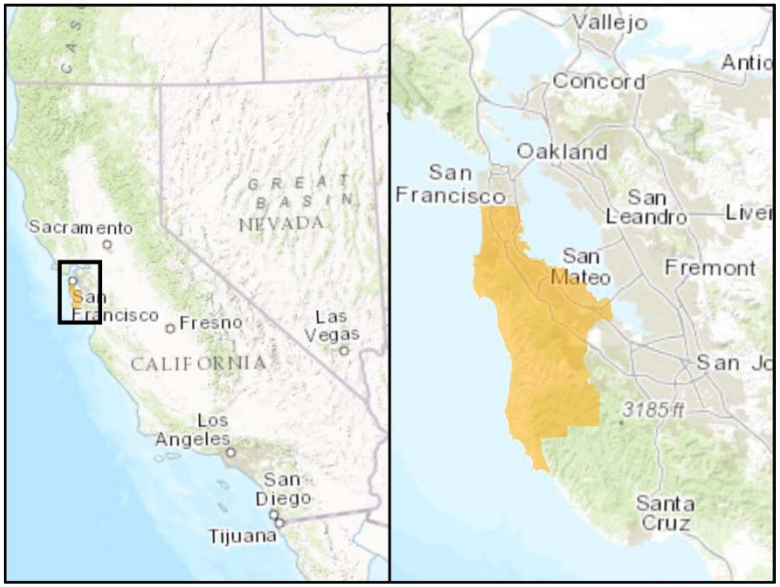
Get Healthy
SAN MATEO COUNTY
gethealthysmc.org

Get Healthy San Mateo County (GHSMC): A Local Collaborative

- **Building healthy, equitable communities for all**
- **Mission**: Support policy change to prevent diseases and ensure everyone has equitable opportunities to live a long and healthy life
- **4 key priorities**
  - Healthy Housing
  - Healthy Neighborhoods
  - Healthy Schools
  - Healthy Economy



Bicyclist & Pedestrian Collisions

- Any collision that involves a bicyclist and/or pedestrian
- Research questions
  - Where are bicyclist and pedestrian collisions occurring?
  - What are the primary causes?
  - Where are severe collisions occurring?

Methods: Data Sources

California Statewide Integrated Traffic Records System, 2009-2013

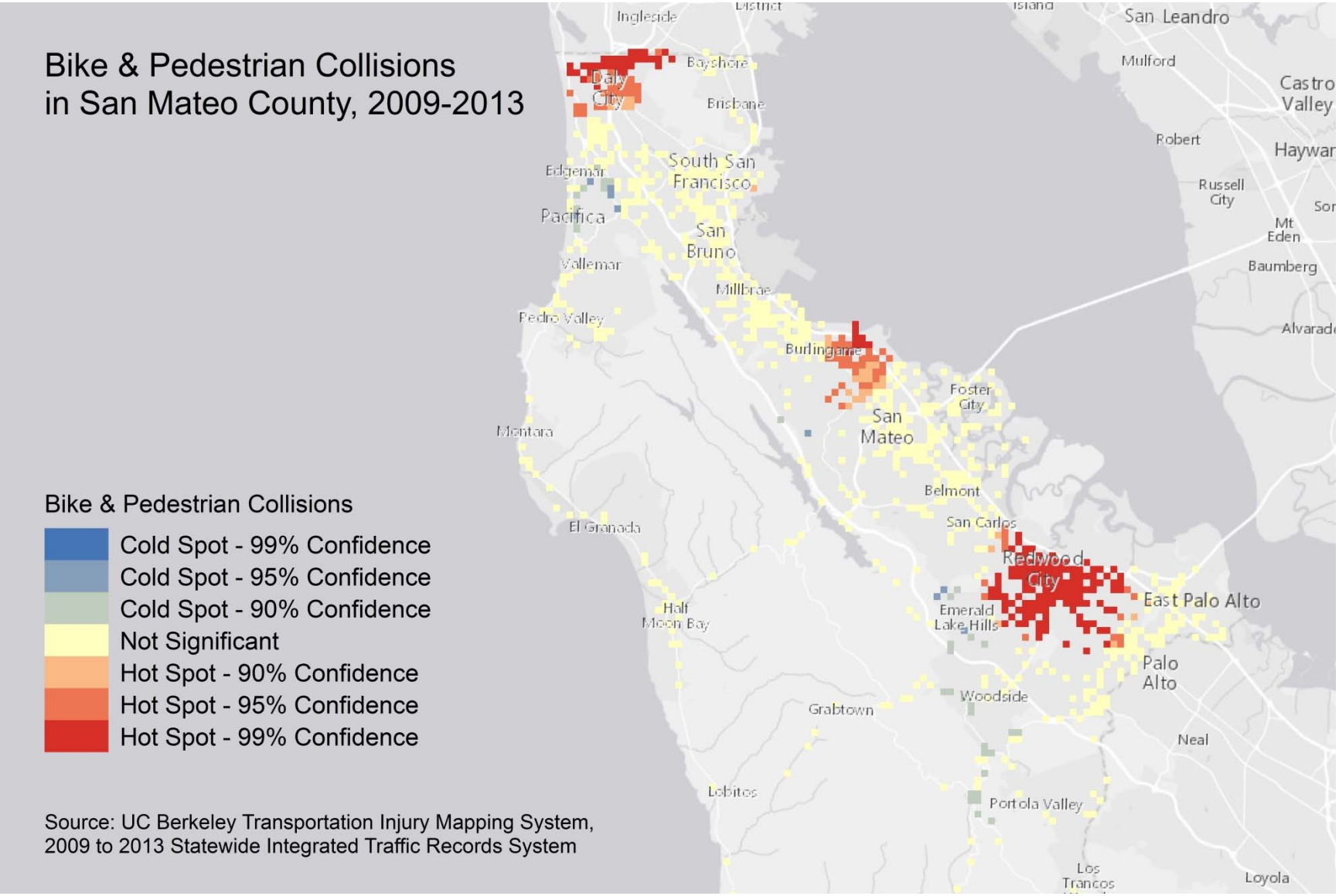
- Database for collecting and processing collision data reported by California Highway Patrol
- UC Berkeley: Transportation Information Management System

Where are bicyclist and pedestrian collisions occurring?

Collision Hot Spots

- Hot spots are areas where high values cluster spatially
- Used Optimized Hot Spot Analysis tool in ArcMap 10.2.1
  - Evaluates dataset attributes to determine optimal parameters for running tool
  - Expanded version of ArcMap's original Hot Spot Analysis (Getis-Ord Gi*) tool
  - Incident data aggregation method: count incidents within fishnet polygons

Collision Hot Spots



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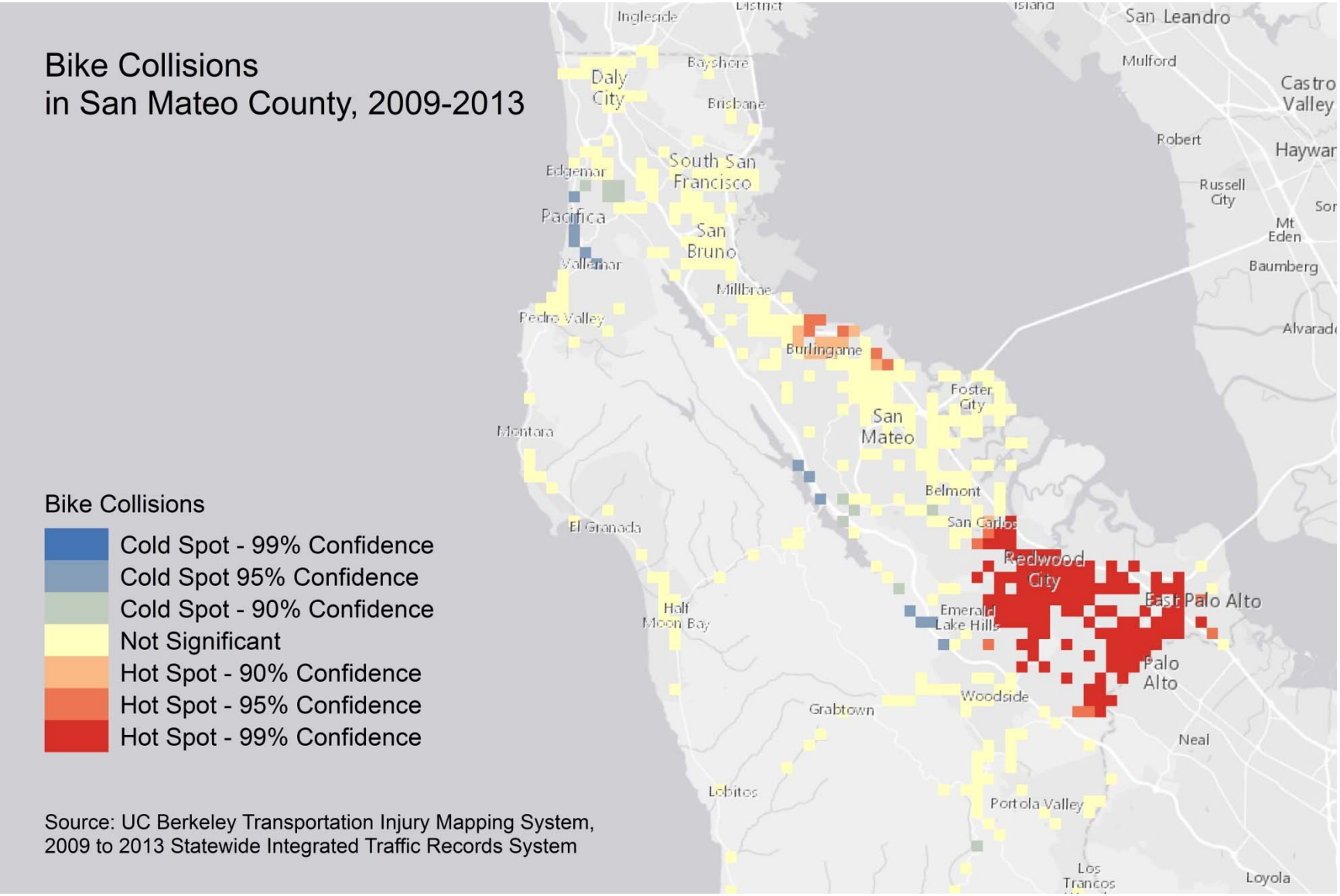
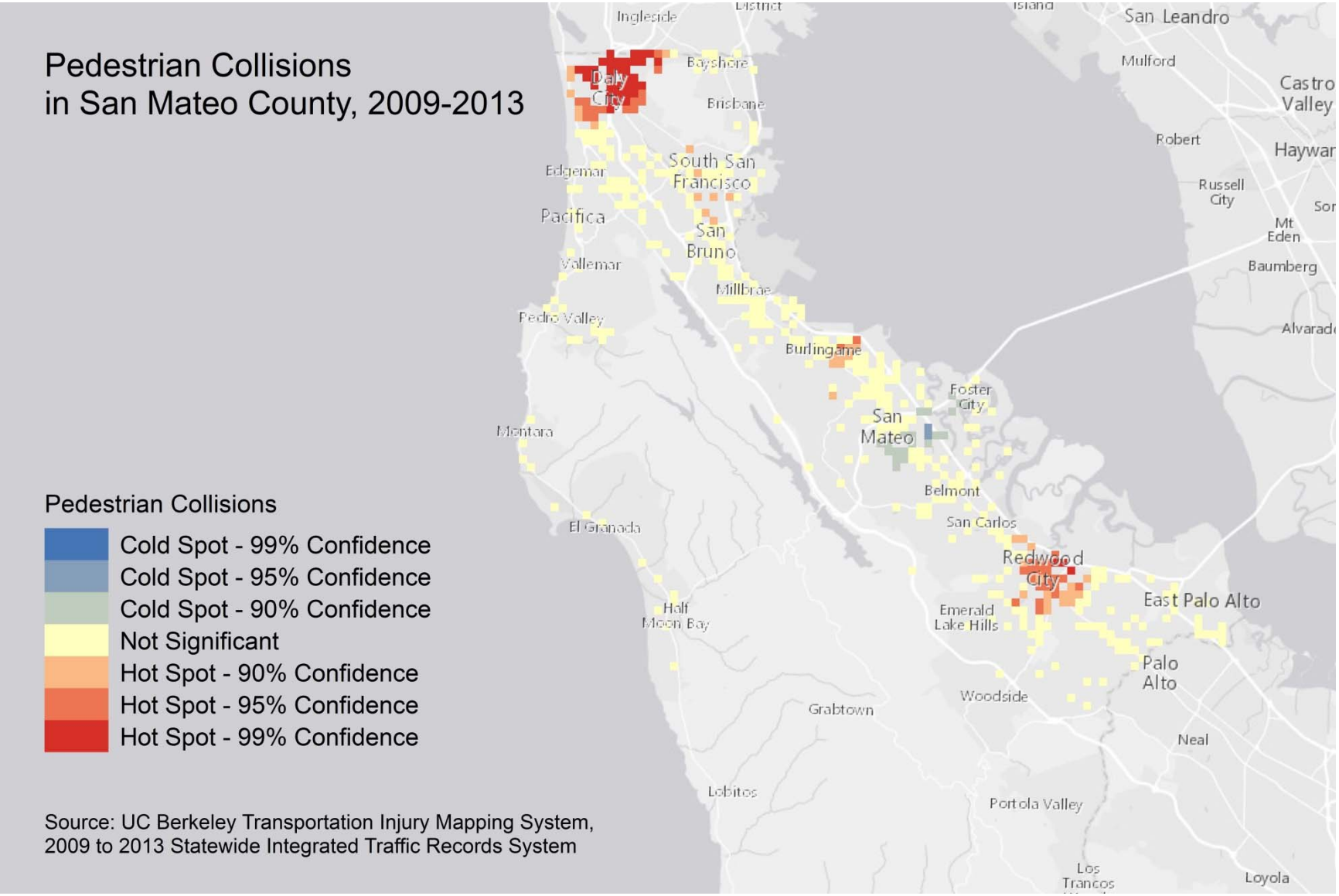


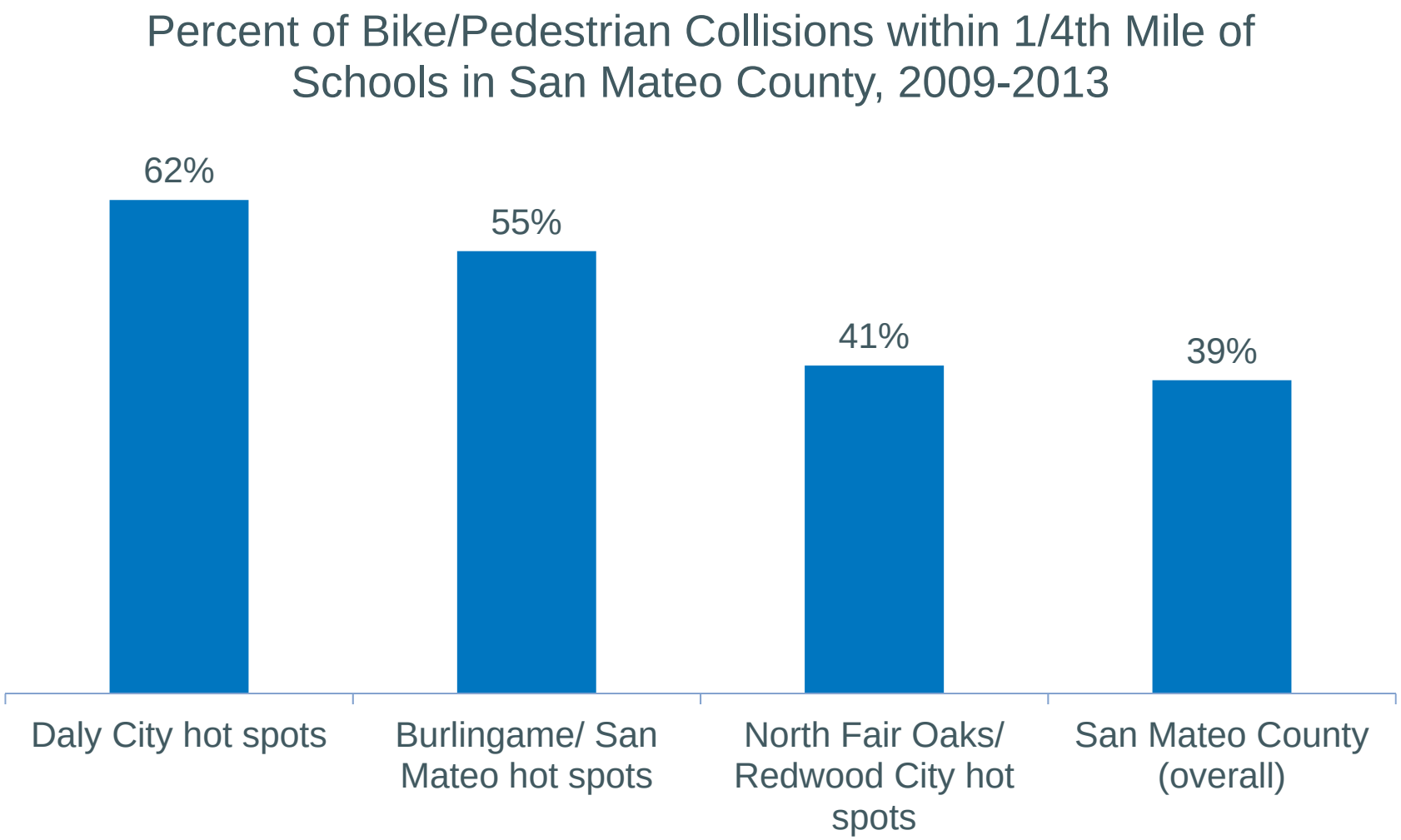
Collision Hot Spots



Collision Proximity to Schools

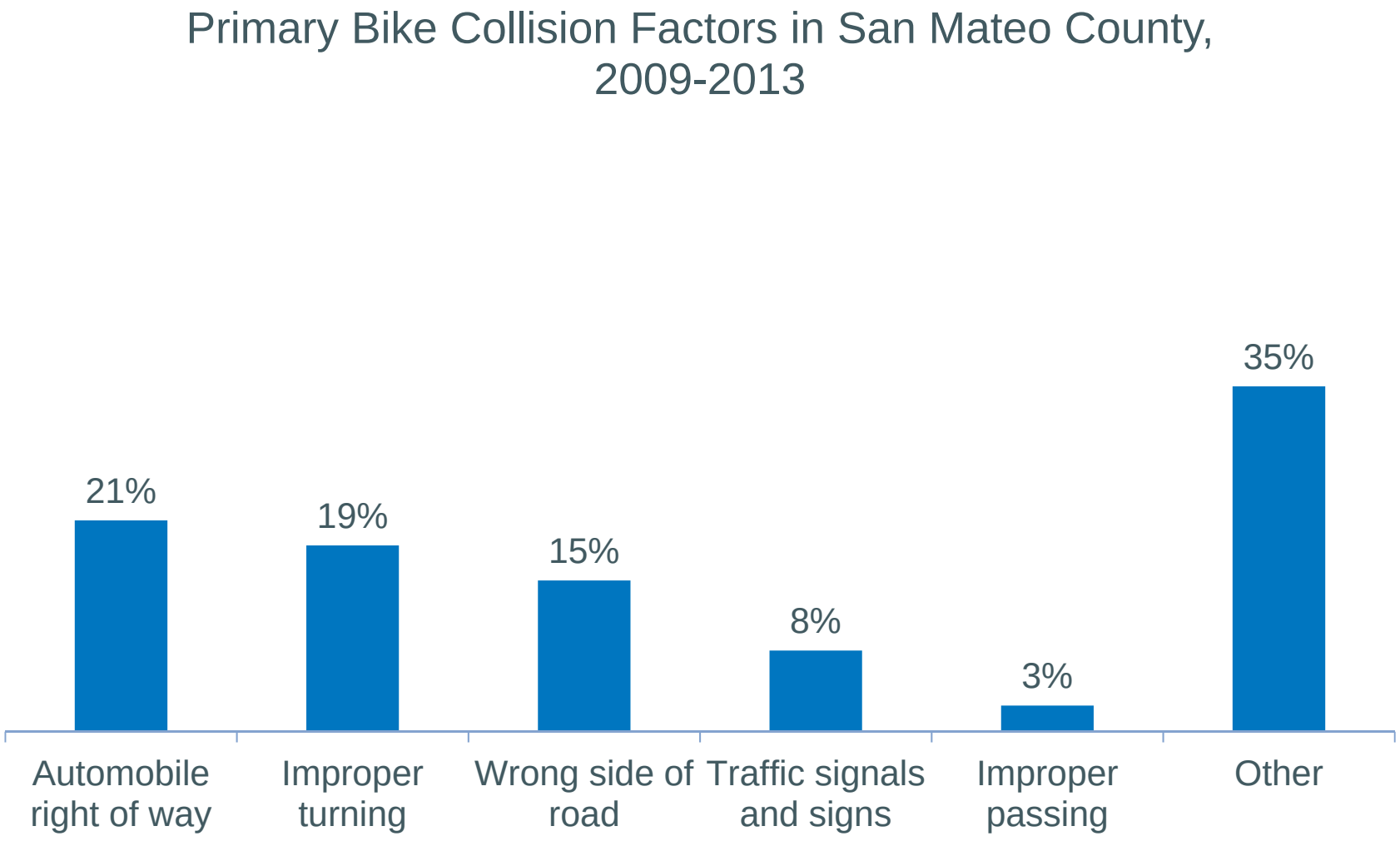
- Created 1/4th mile buffer around all schools using Buffer tool
- Focused on schools within hot spots
  - Daly City
  - Burlingame/San Mateo
  - North Fair Oaks/Redwood City

Collision Proximity to Schools

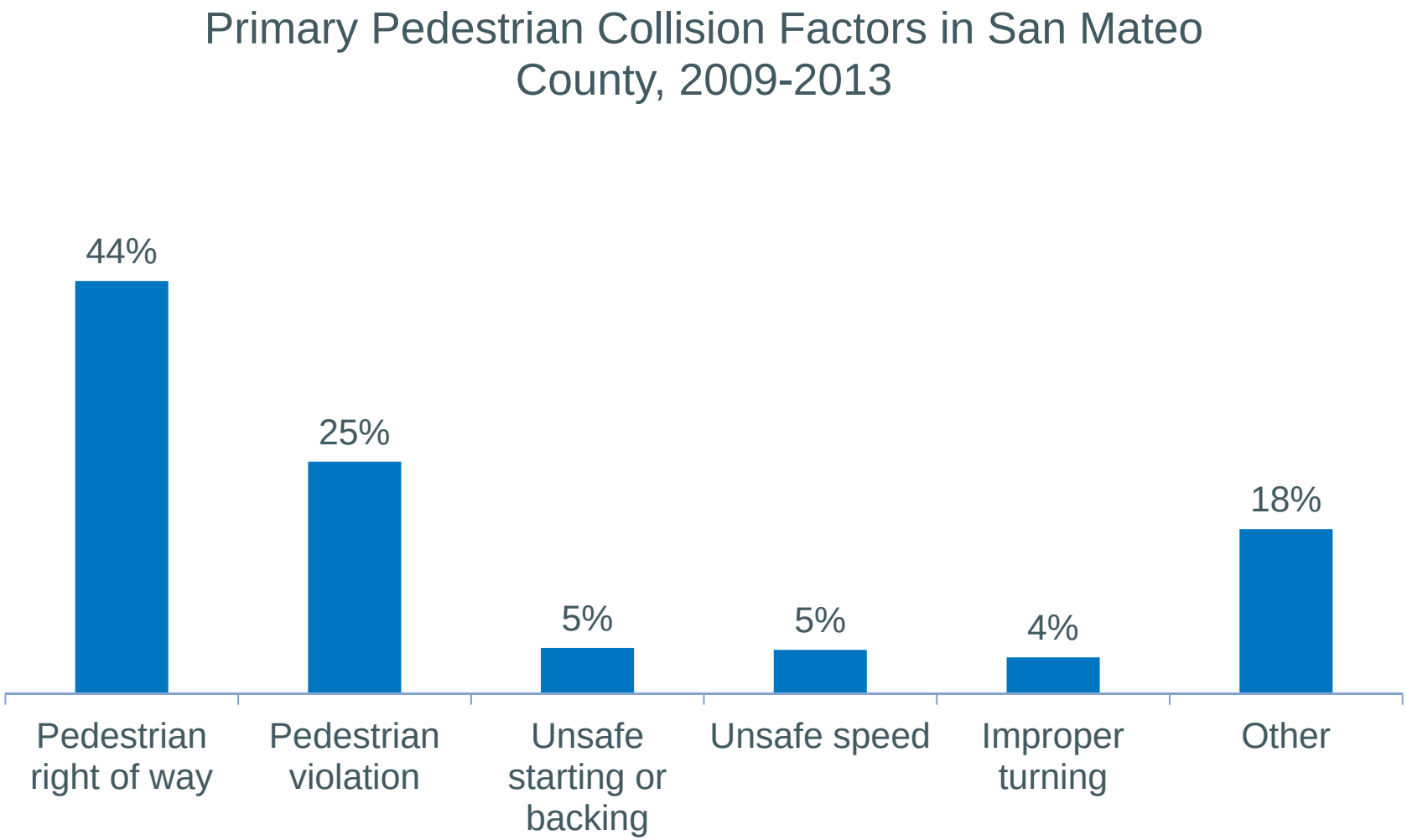


What are the primary causes of bicyclist and pedestrian collisions?

Primary Collision Factors



Primary Collision Factors

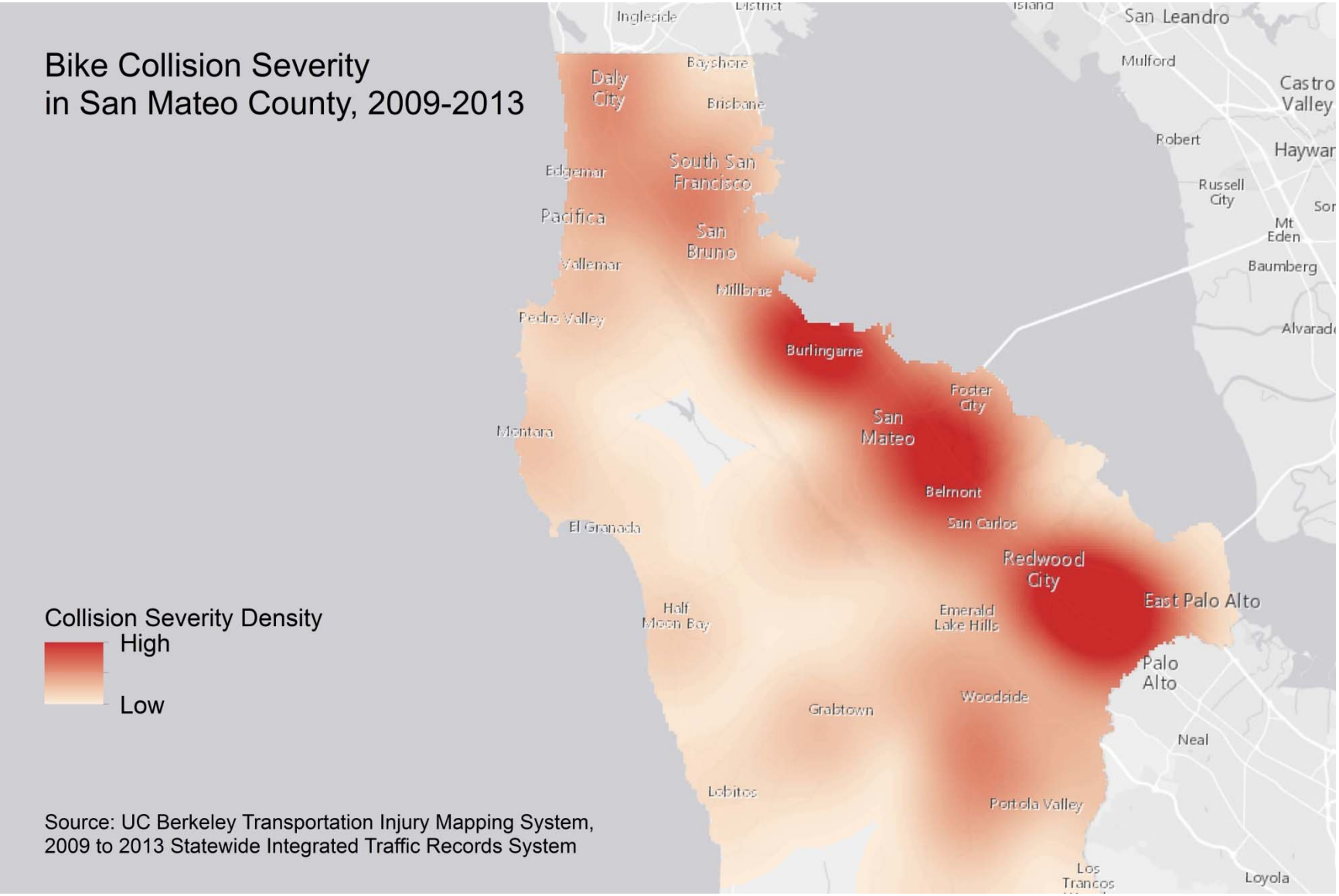


Where are severe bicyclist and pedestrian collisions occuring?

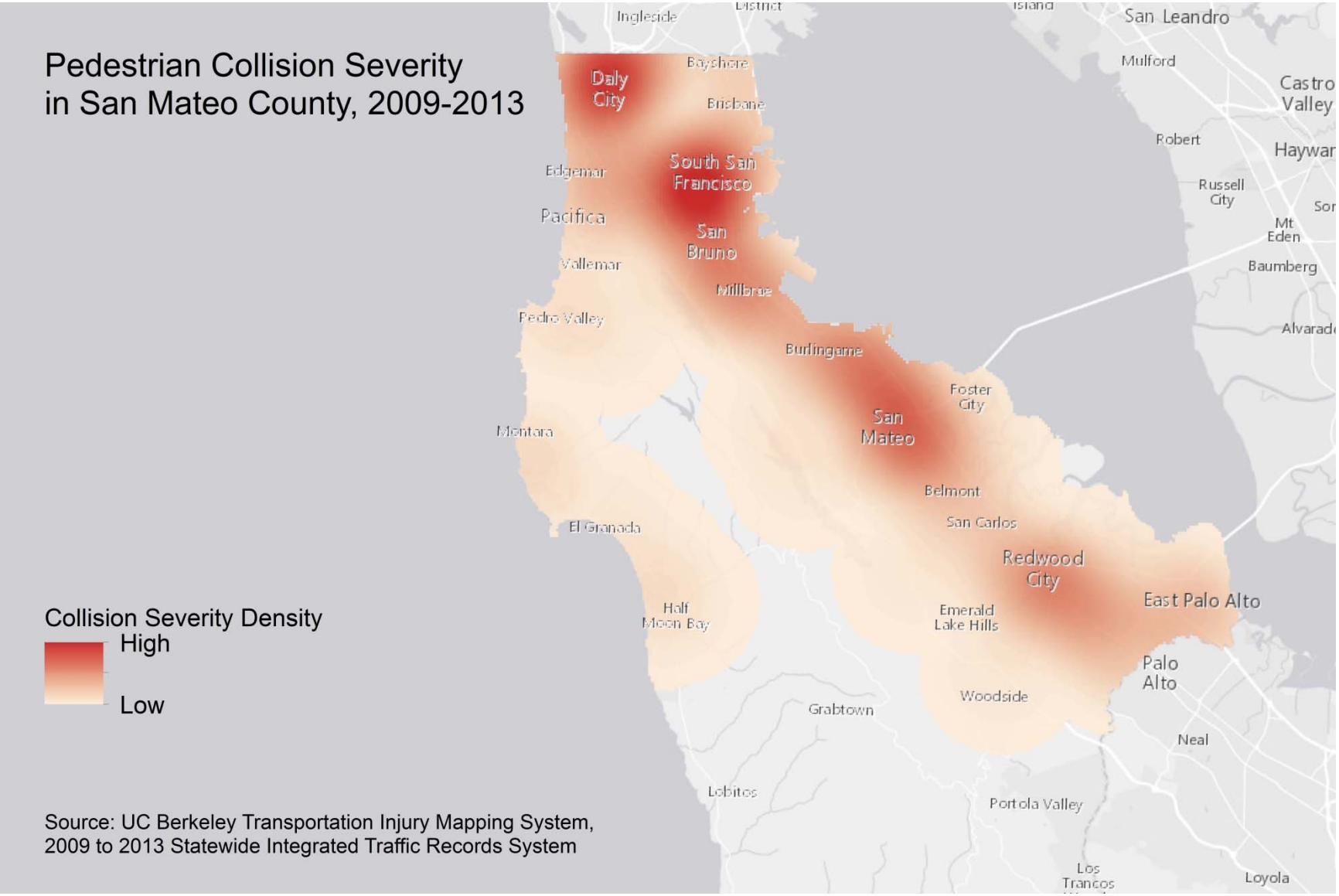
Collision Severity

- Severe collisions refer to collision in which a fatality or severe injury has occurred
- Used Kernel Density tool to identify where severe collisions are occurring

Collision Severity



Collision Severity



Limitations

- Potential data inaccuracy and incompleteness
  - Includes only collisions reported to law enforcement
  - Data entry (such as type of collision, who's at fault, location) subject to human error
- Data is released 1-2 years behind
- Publicly available datasets vs law enforcement datasets

Next Steps

- Conduct further analysis
  - Street conditions
  - Involvement of alcohol and proximity to alcohol outlets
  - Temporal analysis
  - Weather conditions
- Partner with local jurisdictions and organizations

Recommendations

- Identify community values and priorities
- Adopt Vision Zero policies
- Design streets to prioritize bicycles, pedestrians, and cars
- Create and track performance metrics
- Focus development near transit
- Use existing streets more effectively
- Implement Complete Streets policies
- Enforce safety on streets

Thank You!

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