What is Vision Zero?

• End traffic deaths and serious injuries by 2030
• Multi-faceted approach through data driven action and the many E’s of Safety:
  – Engineering
  – Education
  – Enforcement
  – Evaluation
  – Equity
Data

Pedestrian and bicycle collisions make up 7% of total crashes but 47% of fatalities.

9 out of 10 bike/ped collisions result in injury.
Purpose of Bicycle and Pedestrian Safety Analysis

• Better understand risk factors contributing to pedestrian and bicyclist crashes
• Proactively and systemically address risk factors to mitigate potential crashes
• Advance Seattle’s Vision Zero Goals
Data At a Glance – Crash Data

3,726 pedestrian crashes

445 serious or fatal

3,120 bicycle crashes

237 serious or fatal
Bicycle Collision Trends

BICYCLE CRASHES BY YEAR AND HIGHEST SEVERITY

- Total Crashes
- Serious or Fatal Injury
Pedestrian Collision Trends

PEDESTRIAN CRASHES BY YEAR AND HIGHEST SEVERITY

- Serious or Fatal Injury
- Total Crashes
Data Up Close – Roadway Data

Lane Data + Crash Data = Crashes Associated with Lane Data

Crosswalk Data + Crash Data = Crashes Associated with Crosswalks
Exploratory Analysis

74.5% of bicycle crashes and nearly 80% of pedestrian crashes happen on arterial streets.
# Exploratory Analysis - Bicycle

<table>
<thead>
<tr>
<th>Collision Type</th>
<th>% of Total</th>
<th>% of Severe/Fatal</th>
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## Exploratory Analysis - Pedestrian

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<td>Angle at crossing (controlled)</td>
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<td>Angle at midblock (uncontrolled)</td>
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Exploratory Analysis

THE MAJORITY OF BICYCLE AND PEDESTRIAN CRASHES HAPPEN AT INTERSECTIONS
Exploratory Analysis

Pedestrian intersection crashes more likely to happen at locations with traffic signals.
Accounting for Exposure

Exposure = level of pedestrian/bicycling activity

Pedestrian Activity
- Annualized count data
- Trip generators

Bicycle Activity
- Annualized count data
- Trip generators
- Strava data
- Bicycle Network

Trip generators: housing units (single family or multifamily), commercial destinations, transit locations, and universities or schools.
Pedestrian Volumes
A Proactive, Systemic Approach

Focusing on modeled collision rates at intersection locations based on the 5 following prioritized collision types:

- Total bicycle collisions
- Total pedestrian collisions
- Opposite direction bicycle collisions
- Angle bicycle collisions
- Angle pedestrian collisions
Leading Edge Analysis

- Identify Risk Factors
- Ranked Lists of Locations by Safety Performance Factor
- Multivariate Analysis
A Proactive, Systemic Approach

Data Analysis

Significant Risk Factors

 Ranked list of locations where intervention may be needed

 Field Investigations

Identify Safety Improvements

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<th>EB Est</th>
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A Proactive, Systemic Approach
How is Seattle Going to Use Findings?

- Identify locations where street or signal design changes may be needed
- Make informed decisions around prioritizing safety improvements
- Proactively treat locations with the intention of mitigating potential crashes
Key Takeaways

• Consistent and accurate crash data is key to a data-driven approach
• Simple statistical and spatial analysis can reveal informative patterns that may not be apparent
• Understanding exposure is key to understanding risk, prioritizing safety improvements
Where do we go from here?

• Incorporate more regression inputs
• Validate countermeasure approaches
• Further develop predictive volume models for the entire city
• Rerun BPSA in future with better bicycle data after bicycle network is developed
• Promote education and enforcement
Questions?

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http://www.seattle.gov/visionzero