Welcome to the

Boulder Vision Zero Action Plan

public meeting. We will begin shortly.

Boulder
Vision Zero Action Plan

Public Meeting #2

February 7, 2023

Panelist Introductions

Devin Joslin, PE, PTOE

Principal Traffic Engineer

Veronica Son, PE

Transportation Engineer

Melanie Sloan

Principal Project Manager

Charlie Alexander, PE, AICP, RSP1

Fehr & Peers

Vision Zero Background & Project Purpose

- Vision Zero is Boulder's goal to eliminate all crashes that result in a serious injury or fatality – since 2014
- Between 2018 and 2020…
  - **14,500** people were involved in a crash
  - **Nine** people were killed
  - **150** people were seriously injured

- Current Vision Zero Action Plan: 2019-21
- Creating a new five-year Vision Zero Action Plan for 2023-27
  - Community engagement
  - New analysis methods
  - Improvements from the 2019-21 plan
  - Project list and implementation strategy
  - Funding opportunities

2019-2021 Action Plan Success

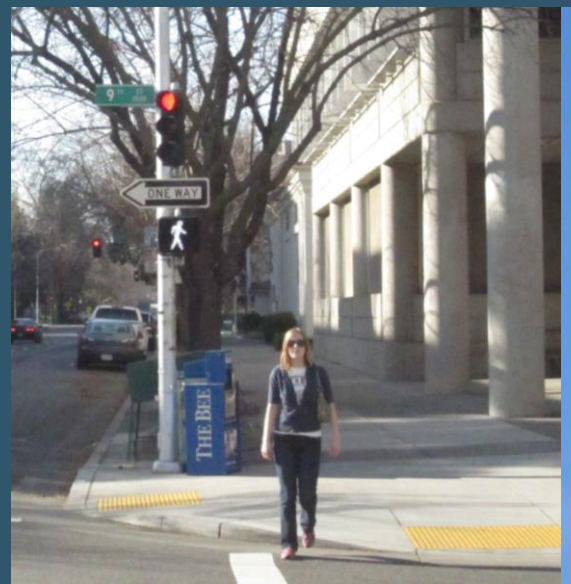
Made changes at **49** intersections

Leading Pedestrian Intervals – reduce vehicle/ pedestrian crashes

Left-turn arrows – reduce left-turn crashes

Red light cameras – reduce red light running crashes

Signing/markings – reduce multiple crash types



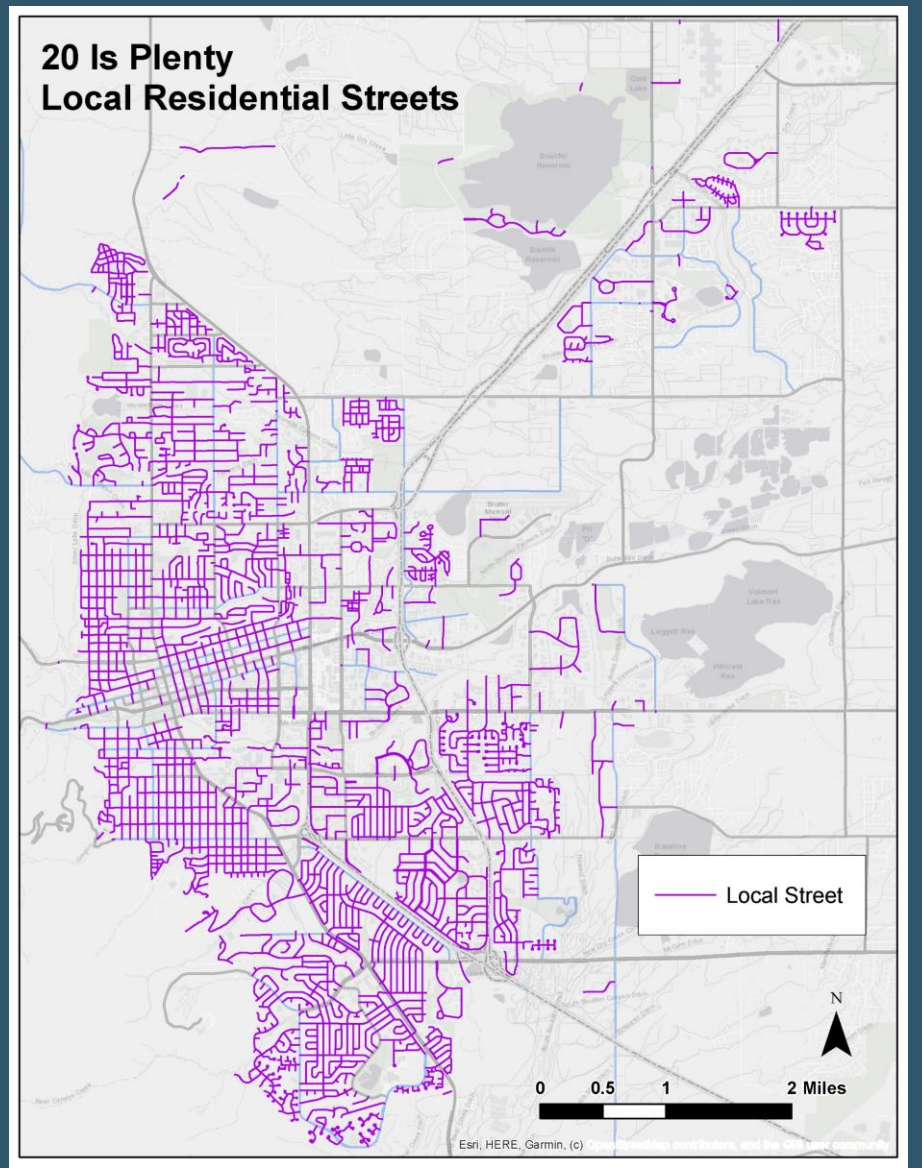
2019-2021 Action Plan Success

Implemented

20 Is Plenty

20 mph residential street

speed limit



2019-2021 Action Plan Success

Advanced Vision Zero improvements, like separated bicycle lanes, with planned annual paving through the pavement management mobility enhancements program:

- Table Mesa Drive
- Lehigh Street
- Pine Street
- Folsom Street
- 17th Street

2019-2021 Action Plan Success

Won **$4.8M**

In grant funding through the Highway Safety Improvement Program, Safe Routes to School, and other regional, state, and federal sources

- Mesa Elementary Safe Routes to School improvements
- Pedestrian crossings
- 47th Street sidewalks
- New traffic lights
- Speed limit setting
- Other street design upgrades

How We Developed the 2023-2027 Plan

We developed the Vision Zero Action Plan by incorporating:

- Successes and lessons learned from the 2019-2021 Vision Zero Action Plan

VISIONZERO Safe Streets Boulder

Vision Zero Action Plan, 2019-21

ELIMINATE CRASHES RESULTING IN SERIOUS INJURIES AND FATALITIES (OBJECTIVE #1)

Vision Zero goes beyond the traditional means of traffic engineering and employs both a location-specific and Safe Systems approach that is targeted, responsive, and proactive. The action items below identify the primary severe crash types and efforts to eliminate these crash types by 2030, including pedestrian, bicycle, left-turn, speed, and impaired-related focus areas.

Action	4 E's	Timeframe	Partners*	Performance Metric(s)
1. Implement **specific countermeasures** at high crash locations (peds, bikes, vehicles)		Ongoing	Transportation, PD	% of intersections addressed on an annual basis ***Target:*** *45 intersections with specific mitigation identified for implementation*
2. Continue to **pursue federal funding** for and construct Highway Safety Improvement Program projects		Ongoing	Transportation	# of projects funded and completed ***Target:*** *3 projects per funding cycle*
3. Proactively implement **new signal timing practices** at identified intersections to improve pedestrian, bicyclist, and driver safety (e.g., pedestrian head-start/ leading pedestrian interval (LPI), no right turn on red (to develop standard), and left turn phasing)		Ongoing	Transportation	% of intersections addressed on an annual basis ***Target:*** *50 intersections identified for changes in left turn phasing. 20 intersections identified for pedestrian head-start/leading pedestrian interval (LPI)*
4. **Always employ proven effective, safe, and innovative intersection and corridor designs** to improve safety for all modes (e.g., protected bike lanes/intersections and quick-build solutions)		Ongoing	Transportation	# of projects funded and constructed featuring innovative design aspects on an annual basis
5. Continue and enhance **pedestrian, bicyclist, and driver safety education** outreach on types of severe injury crashes through existing and future multimedia campaigns and include topics on **dangerous effects of speeding, impaired, and distracted travel**		Ongoing	Transportation	# of people reached through outreach events and social media engagement on an annual basis
6. Update the city's **Design and Construction Standards** and **Pedestrian Crossing Treatment Guidelines** to reflect best practices to improve safety		2019-20	Transportation, PD	Revised standards and guidelines
7. Proactively install **green pavement markings** in advance and through select intersections to improve bicycle safety		Ongoing	Transportation	# of intersections mitigated on an annual basis
8. **Install signing and markings** to mitigate crashes involving bicyclists and pedestrians on multi-use path system		2019	Transportation	# of locations of signing and markings installed along multi-use path network on an annual basis

Engineering *Education* *Enforcement* *Evaluation* *High Impact* *Funding*

* Partners defined on page AP-6

Objective #1 Continues >

How We Developed the 2023-2027 Plan

We developed the Vision Zero Action Plan by incorporating:

- The city's 2022 Safe Streets Report, which analyzed crash data and identified crash trends

VISIONZERO
Safe Streets Boulder

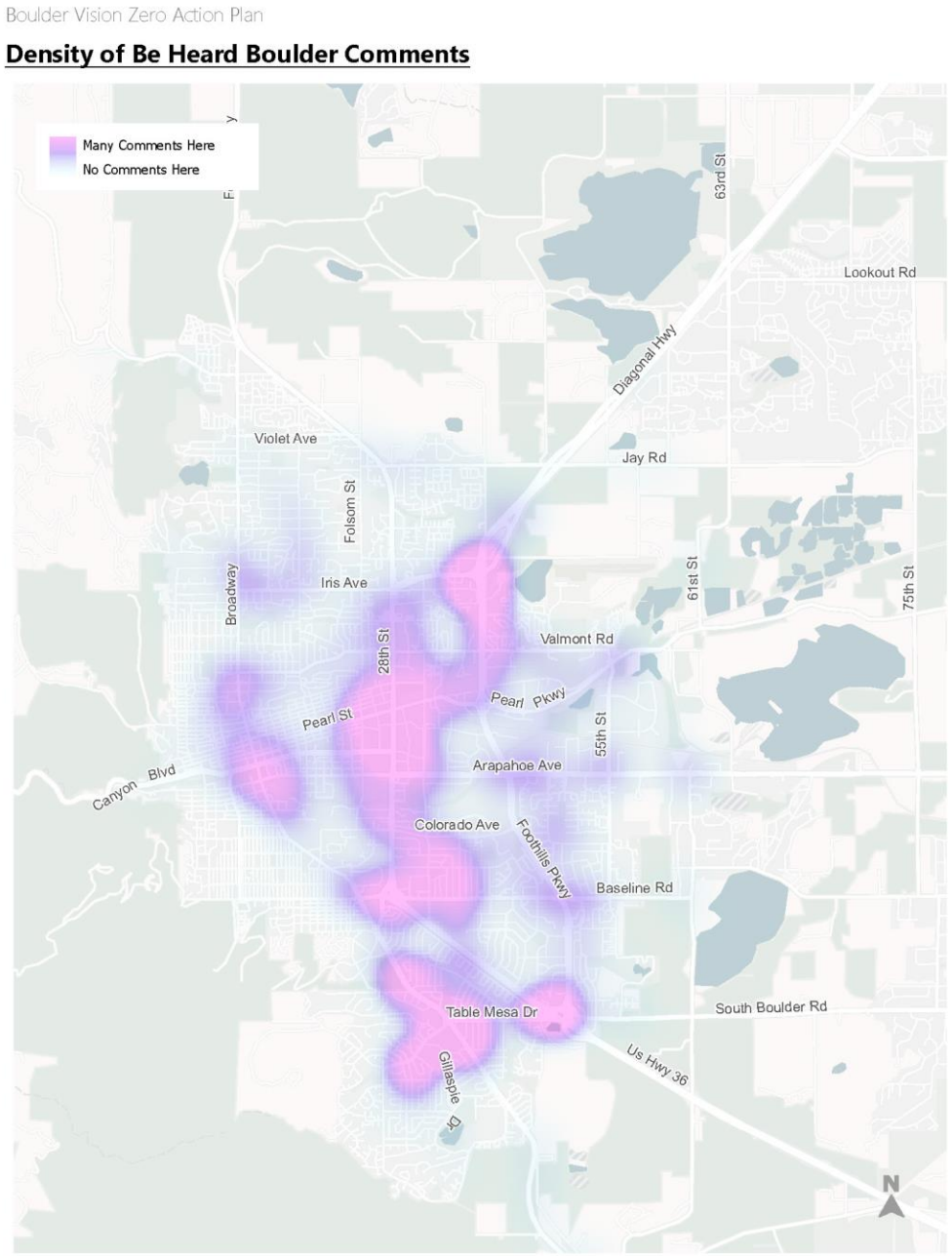
2018–2020 CRASH DATA SUMMARY

How We Developed the 2023-2027 Plan

We developed the Vision Zero Action Plan by incorporating:

Phase 1 community engagement in summer and fall of 2022

- Virtual public meeting
- BeHeardBoulder survey and Web map
- English and Spanish language options
- Meetings with Community Cycles, the Center for People with Disabilities, and Community Connectors-in-Residence
- Participated in Spanish language Resource Fair at San Lazaro Park Properties



Phase 1 Community Engagement

700 surveys and Web map comments provided through BeHeardBoulder

37% of respondents had either been or knew someone who had been seriously injured or killed in a traffic crash

The **top 4 traffic safety concerns** among respondents: distracted driving, drivers not yielding to pedestrians or bicyclists, speeding, and drivers and bicyclists not sharing the road

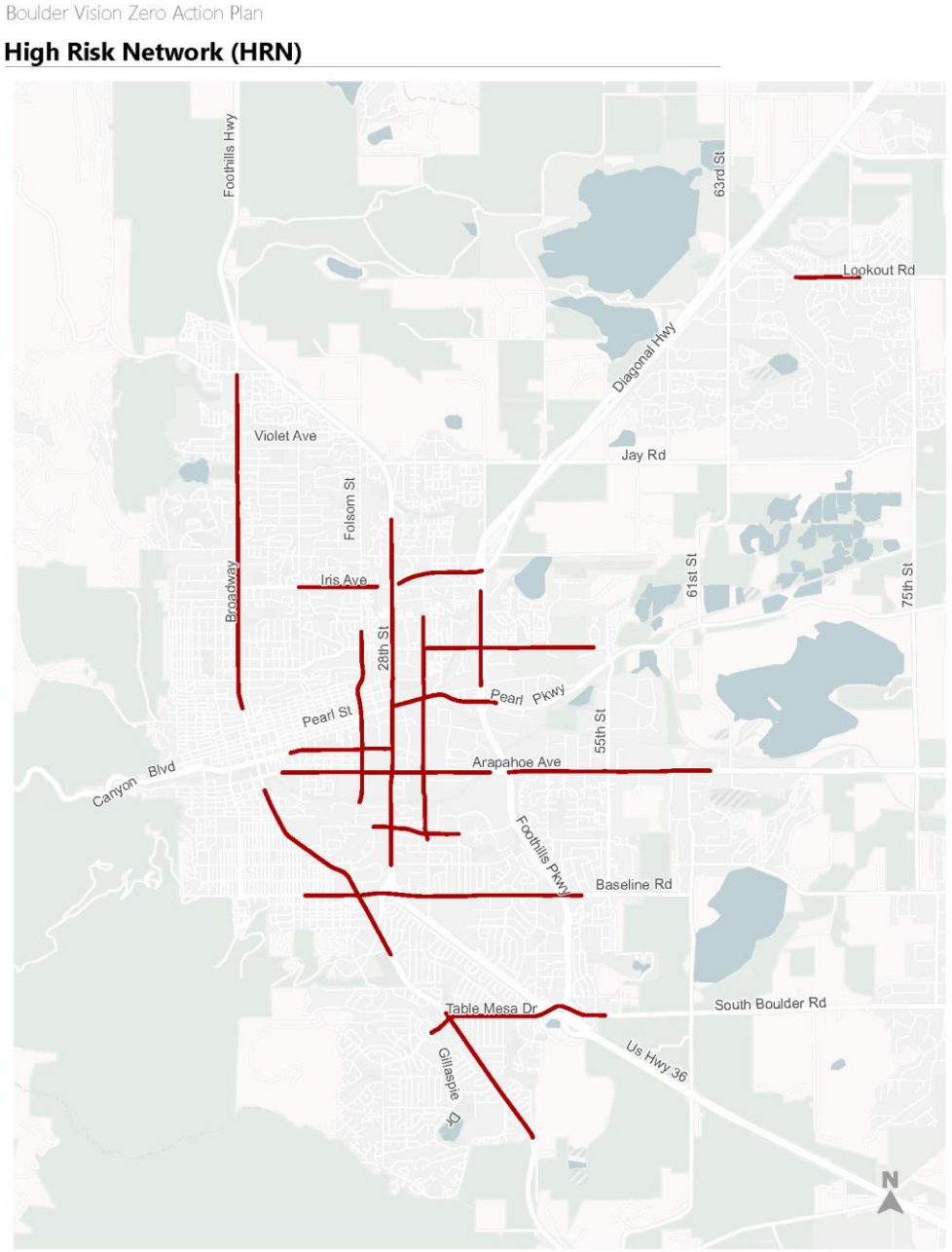
66% of respondents stated that traffic safety affects whether they walk, bike, take transit, or drive

The **top corridors that respondents were concerned about**: Broadway/South Broadway, Table Mesa Drive/South Boulder Road, Arapahoe Avenue, and 28th Street

How We Developed the 2023-2027 Plan

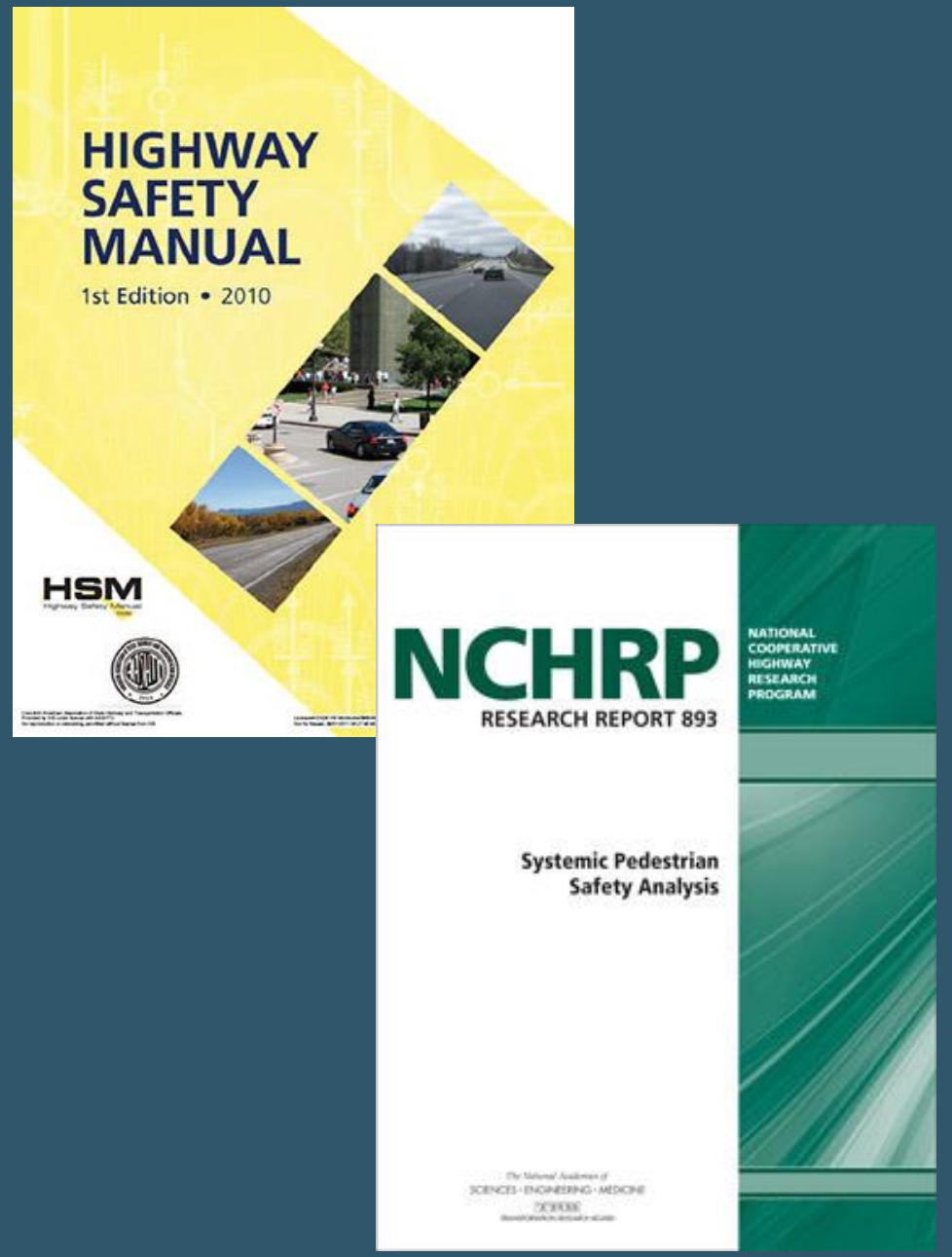
We developed the Vision Zero Action Plan by incorporating:

⚠ New analysis to identify locations with the most risk for crashes, the High Risk Network, and proactive ways of eliminating crashes



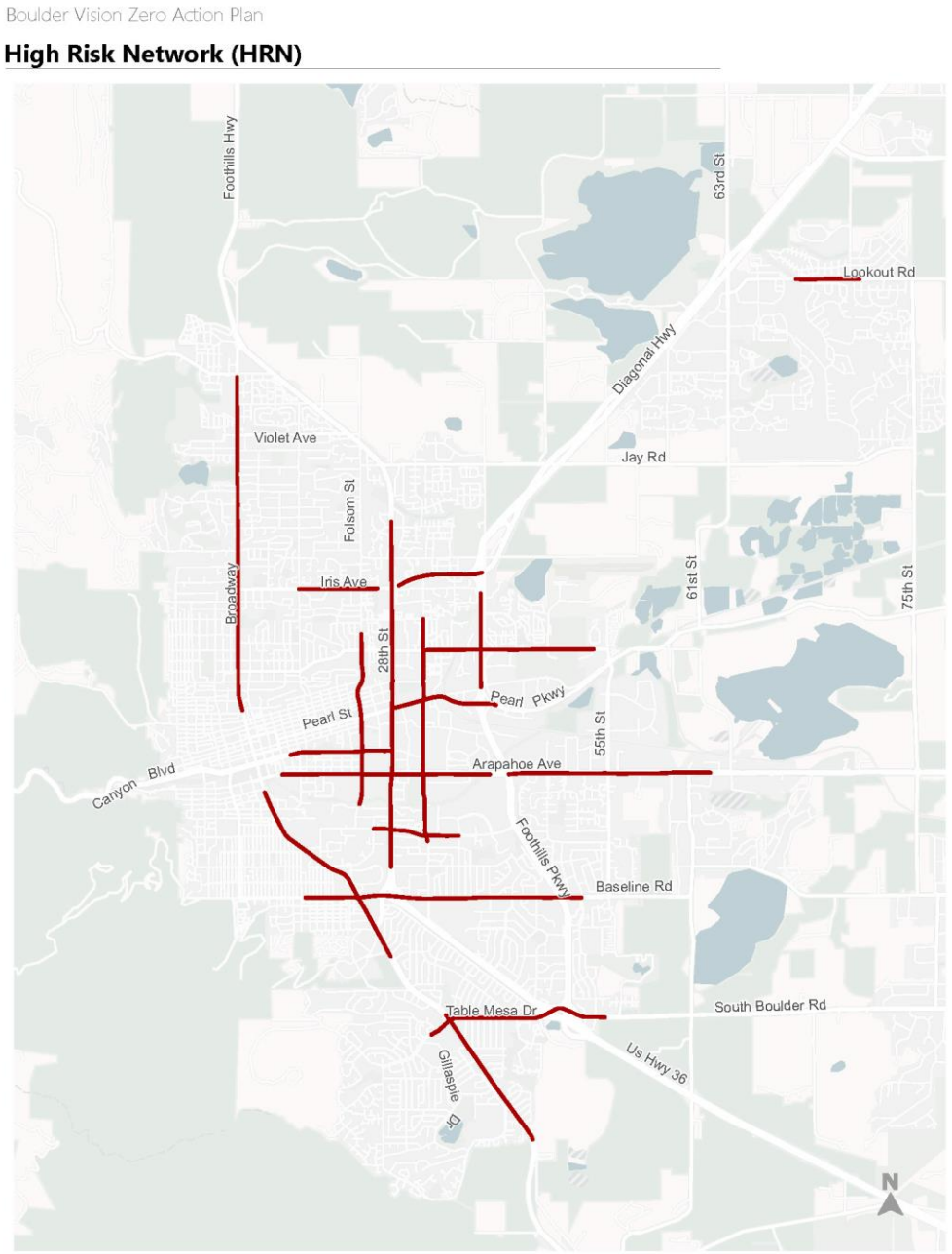
Systemic Safety Analysis

- Analyzing historic crash data alone leads to managing risk only at certain locations
- Systemic Safety evaluates risk across the entire roadway system
- This approach shifts from reactive to proactive crash reduction strategies



Top 6 Risk Factors

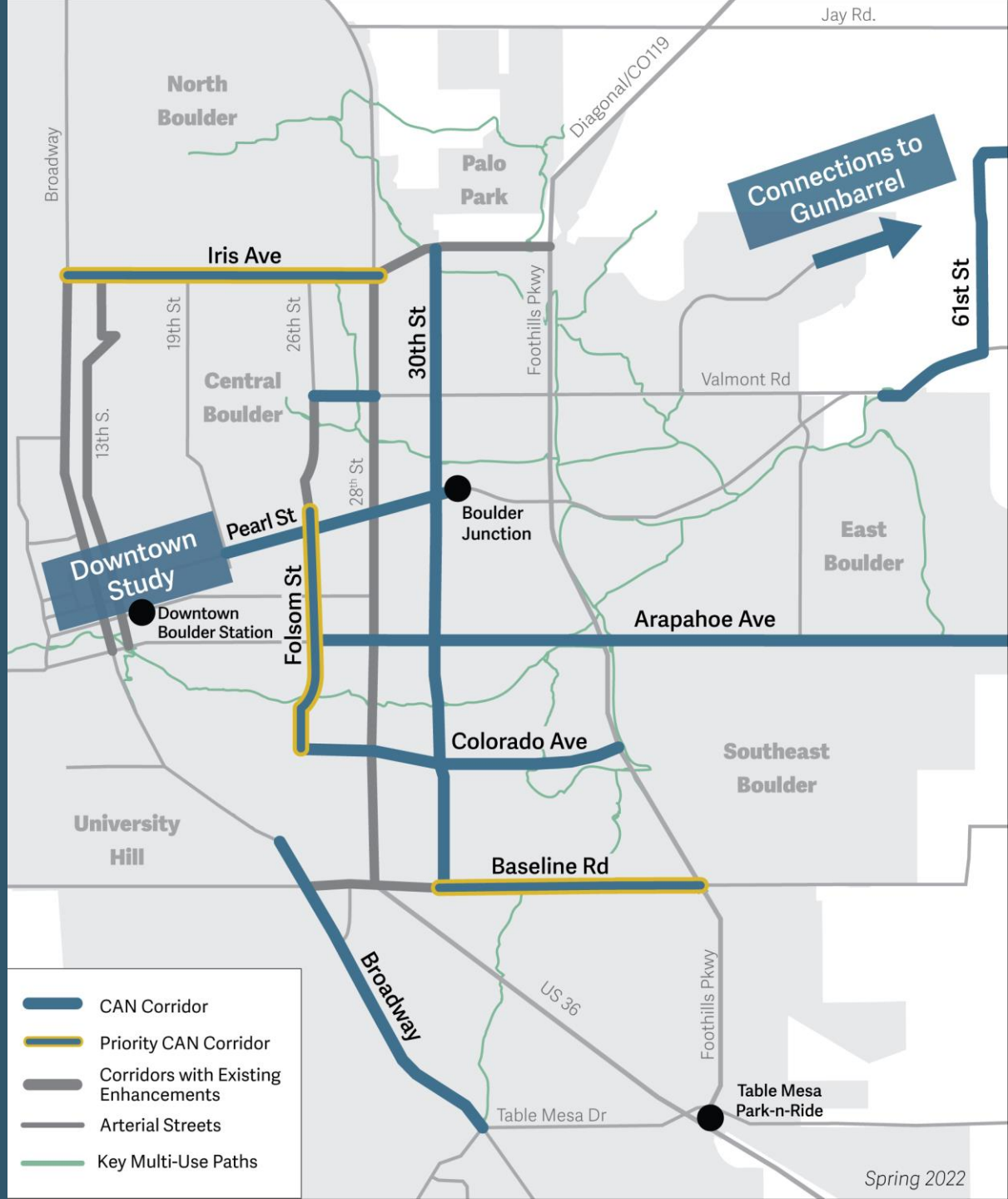
- Business and mixed-use zoning districts
- Higher traffic volume streets
- Signalized intersections
- Busier intersections without a traffic light
- Streets with a multi-use path
- Higher speed streets



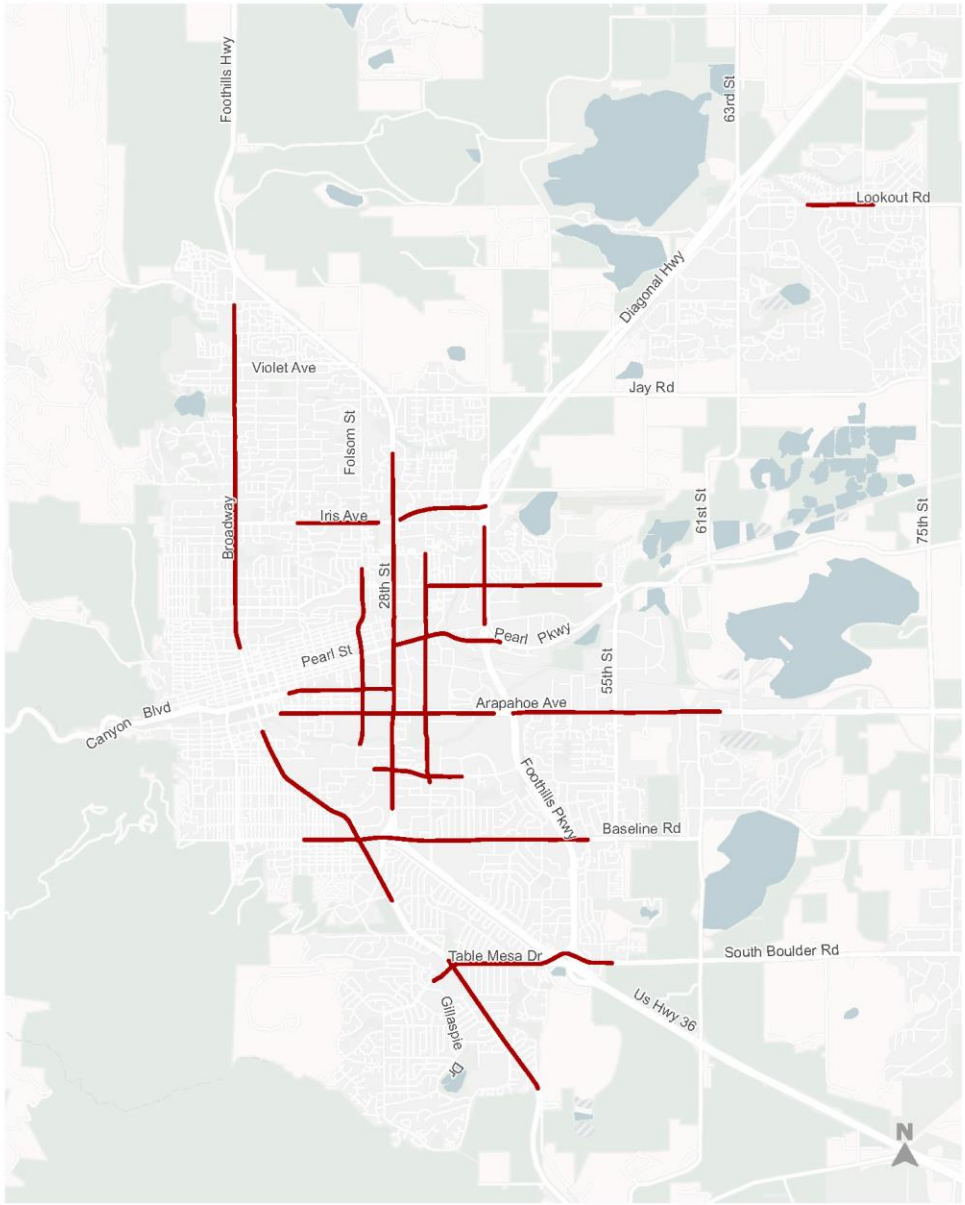
Core Arterial Network Corridors

Elevating work on a connected system of corridors to meet Boulder's transportation goals:

- Protected bike lanes, intersection enhancements, pedestrian facilities, transit facility upgrades
- Reduce potential for severe crashes
- Make travel more comfortable and convenient

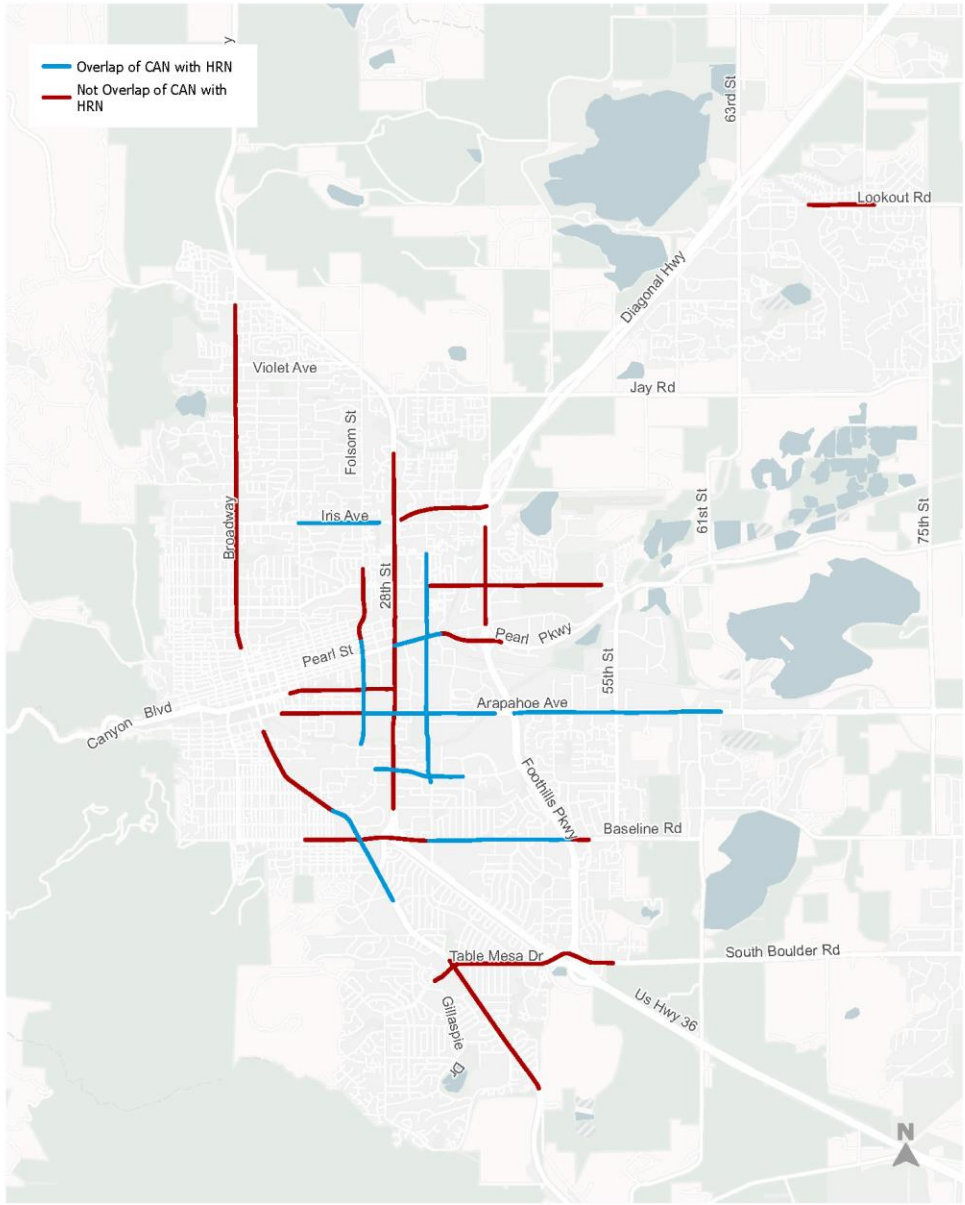


High Risk Network (HRN)

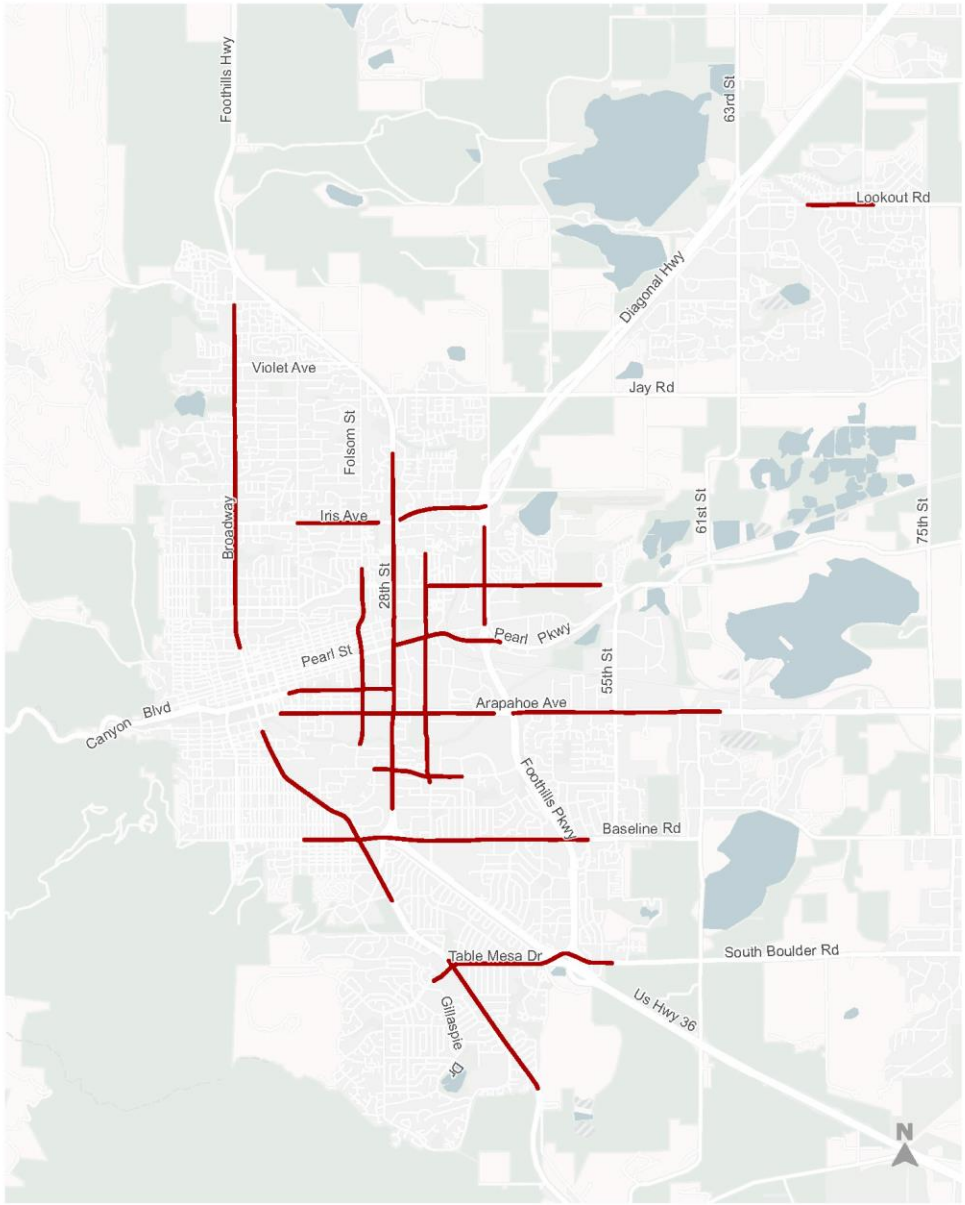


Boulder Vision Zero Action Plan

Overlay of the CAN and HRN by Roadway Segment

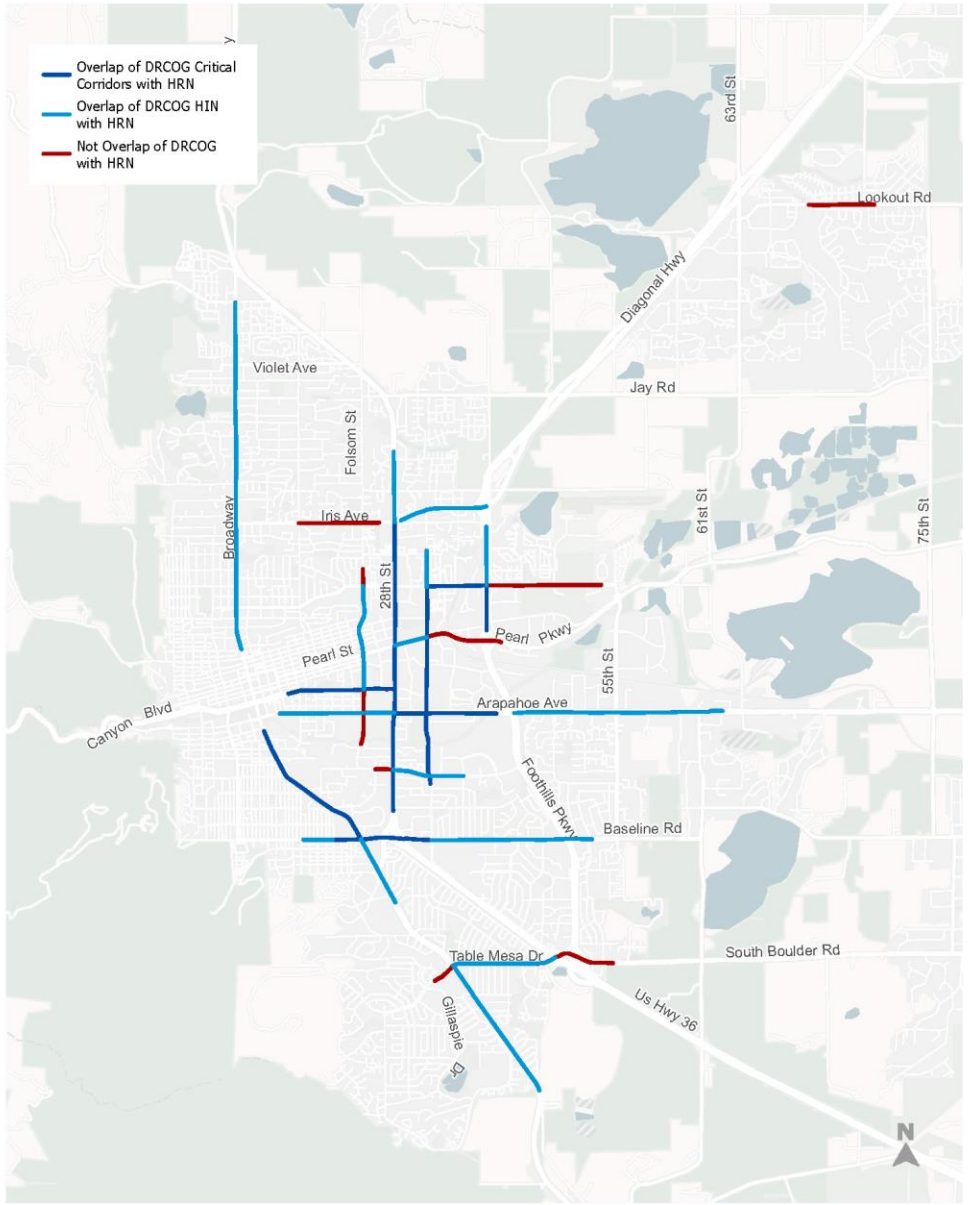


High Risk Network (HRN)



Boulder Vision Zero Action Plan

Overlay of the DRCOG HIN and Critical Corridors with HRN



Project Identification

Along each of the High Risk Network corridors, we identified possible solutions based on:

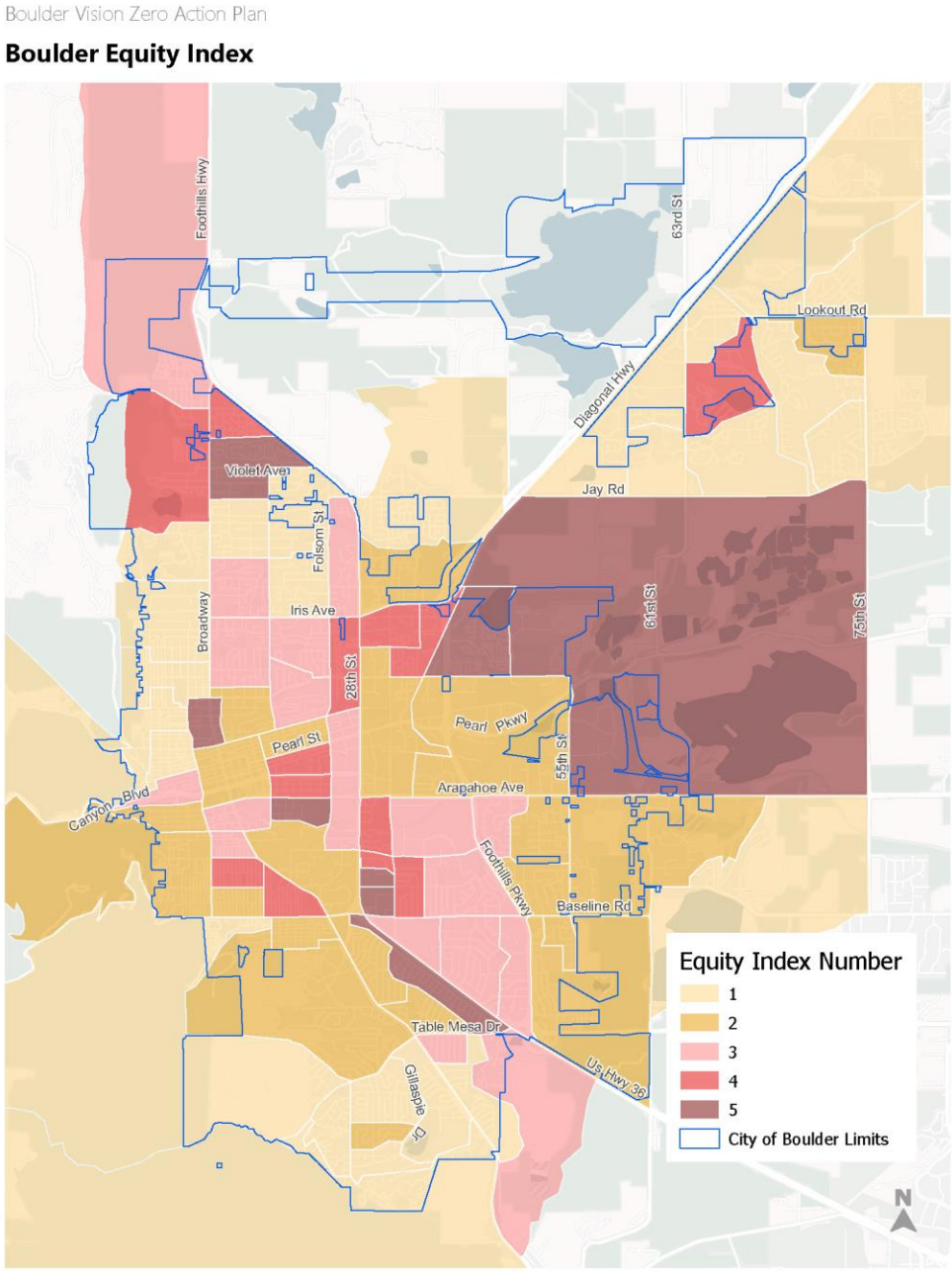
- Engineer's review of crash data (5 years)
- Highway Safety Manual analysis
- BeHeardBoulder feedback

Arapahoe Avenue & 17th Street		HSIP Cat:	**Signal**				
Code	**Countermeasure**	**Unit Cost**	**Quantity**	**Project Total**	**CMF**	**Benefits**	**CBR**
3	Add retroreflective signal backplates	$ 6,000.00	1	$ 6,000.00	0.85	$ 965,100.00	24
26	Increase intersection sight distance (routine maintenance)	$ 1.00	1	$ 1.00	0.85	$ 965,100.00	144,765
28	Install Leading Pedestran Interval	$ 1.00	4	$ 4.00	0.9	$ 965,100.00	24,128
8	Change from perm.-prot. to prot.-only on minor approach (operations only)	$ 1.00	2	$ 2.00	0.99	$ 965,100.00	4,826
17	Prohibit right-turn on red	$ 1,000.00	1	$ 1,000.00	0.99	$ 965,100.00	10
29	Install green pavement markings	$ 5,000.00	1	$ 5,000.00	0.9	$ 965,100.00	19
Arapahoe Avenue & 19th Street		HSIP Cat:	**Signal**				
Code	**Countermeasure**	**Unit Cost**	**Quantity**	**Project Total**	**CMF**	**Benefits**	**CBR**
3	Add retroreflective signal backplates	$ 6,000.00	1	$ 6,000.00	0.85	$ 2,133,000.00	53
30	Upgrade traffic signal heads to 12"	$ 1,000.00	12	$ 12,000.00	0.97	$ 2,133,000.00	5
28	Install Leading Pedestran Interval	$ 1.00	4	$ 4.00	0.9	$ 2,133,000.00	53,325
7	Change from perm.-prot. to prot.-only on major approach (operations only)	$ 1.00	2	$ 2.00	0.58	$ 2,133,000.00	447,930
Arapahoe Avenue between Folsom Street and Safeway Shopping Center		HSIP Cat:	**Roadway**				
Code	**Countermeasure**	**Unit Cost**	**Quantity**	**Project Total**	**CMF**	**Benefits**	**CBR**
9	Bend-out shared use path crossing	$ 20,000.00	1	$ 20,000.00	0.55	$ 921,600.00	21
Arapahoe Avenue & Shopping Access		HSIP Cat:	**Signal**				
Code	**Countermeasure**	**Unit Cost**	**Quantity**	**Project Total**	**CMF**	**Benefits**	**CBR**
7	Change from perm.-prot. to prot.-only on major approach (operations only)	$ 1.00	2	$ 2.00	0.58	$ 2,247,900.00	472,059
17	Prohibit right-turn on red	$ 1,000.00	2	$ 2,000.00	0.99	$ 2,247,900.00	11

How We Developed the 2023-2027 Plan

Racial Equity Index

- % of the population that are people of color
- % of the population that are Hispanic/Latino
- Median income
- % of the population below the poverty line
- % of the population enrolled in Housing & Human Services financial aid programs



2023-27 Vision Zero Action Plan

Four categories of actions:

1. Implement **engineering solutions** like traffic lights and intersection redesigns

2. **Pair** engineering solutions with **education and enforcement**

3. Improve the city's **internal Vision Zero practices**

4. Improve Vision Zero **data and transparency**

1. Implement engineering solutions
Key actions

- Implement low-cost solutions on the High Risk Network
- Implement higher cost solutions on the High Risk Network
- Implement corridor-wide solutions on Core Arterial Network corridors
- Upgrade practices/guidelines/policies for pedestrian crossings, speed limit setting, and traffic light operations
- Experiment with and evaluate promising solutions
- Pursue and attract regional, state, and federal funding

Common Crash Types & Engineering Solutions

- Running red lights
- Left-turn crashes
- Right-turn slip lanes
- Right-turn on red crashes
- Right-turn crashes
- Crashes at pedestrian crossings

Running Red Lights

Low-cost solutions:
Review and adjust timings so they are "in sync" with nearby lights

Example location:
28th Street & Pearl Street

Higher cost solutions:
- Traffic light replacement to add more signal heads, backplates, or heads in more visible locations
- Red light cameras

Left-Turn Crashes

Low-cost solutions:
Protect left-turns (left-turn on green arrow only) where traffic light equipment allows

Higher cost solutions:
Protect left-turns where traffic light equipment upgrades are needed

Example location:
Baseline Road & Mohawk Drive

Proactive approaches:

- Protect left-turns when there are many pedestrians or bicyclists
- Apply customized criteria on vertical bike separation corridors

Right-Turn Slip Lanes

Low-cost solutions:
Consistent signing and markings

Evaluation of higher cost solutions:

- Signalizing right-turn slip lanes
- Changing geometry of right-turn slip lanes
- Removing right-turn slip lanes

Example location:
Broadway & University Avenue (northbound)

Proactive approach:
Prioritize locations with high vehicle right-turn volumes and high pedestrian/bicyclist volumes

Right-Turn on Red Crashes

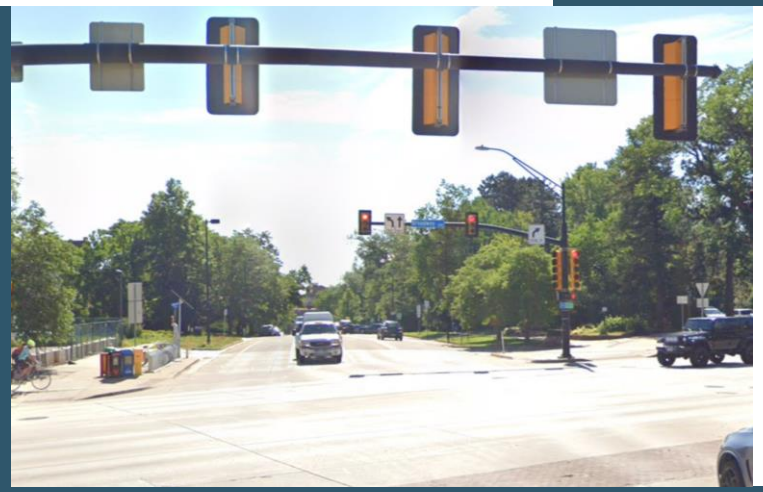
Low-cost solutions:

- “No right-turn on Red” signs
- Couple right-turn on red restrictions with enforcement for compliance

Higher cost solutions:

- Protect right-turns (right-turn on green arrow only) with traffic light equipment upgrades
- Blank-out signs for dynamic “No right-turn on Red” prohibitions

Example location:
Broadway &
University Avenue
(eastbound)



Proactive approach:
Prioritize locations with high vehicle right-turn volumes and high pedestrian/bicyclist volumes on the intersecting street

Right-Turn Crashes

Low-cost solutions:

- Leading Pedestrian Intervals

Higher cost solutions:

- Protect right-turns (right-turn on green arrow) with traffic light equipment upgrades
- Protected intersections (on vertical bike separation corridors)

Example location:
Arapahoe Avenue & 17th Street

Proactive approach:
Prioritize locations with high conflicting volumes of right-turning vehicles and pedestrians/bicyclists

Crashes at Pedestrian Crossings

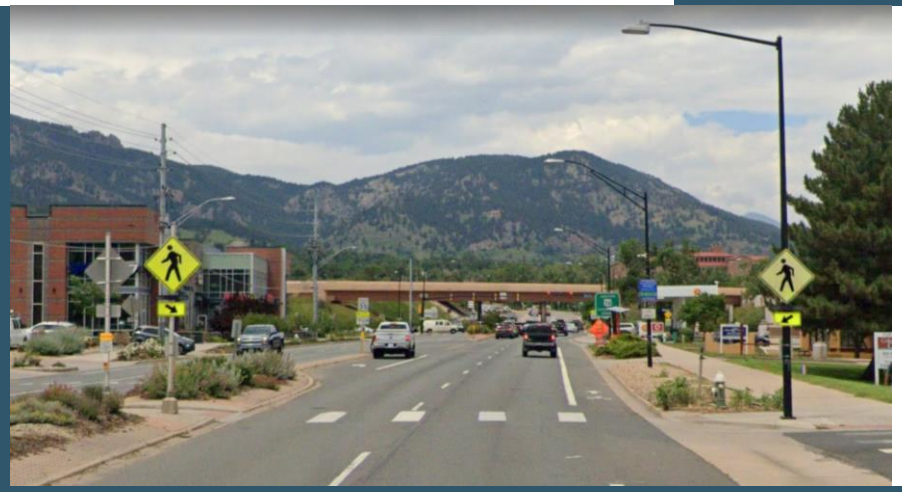
Low-cost solutions:

- Pedestrian recall (automatic “Walk” signal)
- Leading Pedestrian Intervals

Higher cost solutions:

- Update city’s *Pedestrian Crossing Treatment Installation Guidelines*
- Implementation of traffic lights, Rectangular Rapid Flashing Beacons (at new crossings and upgrading existing crossings)

Example location:
Existing RRFB on Baseline Road at Canyon Creek Road



Proactive approach:
Upgrade existing crossings based on new *Pedestrian Crossing Treatment Installation Guidelines*

2. Pair engineering solutions with education and enforcement

Key actions

- Regular collaboration between the Police Department and Transportation & Mobility
- Deploy photo radar van
- Expand the use of red light cameras
- Support legislation to enable expanded use of photo radar van
- Implement campaigns focusing on behaviors of concern
- Combine engineering solutions with public information

3. Improve the city's internal Vision Zero practices
Key actions

- For all capital projects, designate a Vision Zero representative
- Continued participation in the national Vision Zero Cities Network

4. Improve Vision Zero data and transparency
Key actions

- Maintain and update the crash dashboard
- Continue to refine and improve accuracy and utility of crash documentation

Proposed Next Steps

- Complete prioritization (benefit-cost, Equity Index, and BeHeardBoulder feedback) and project lists
- Present to TAB in March 2023
- Present to City Council in April 2023
- Get involved by…
  - Taking our questionnaire
  - Signing up for office hours to provide feedback

bouldercolorado.gov/projects/vision-zero-action-plan

Questions & Answers

Vision Zero Action Plan Website
https://bouldercolorado.gov/projects/vision-zero-action-plan

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