Age-Friendly Carbondale

Highway 133
Dangerous as Designed
Carbondale Speaks Out
March 6, 2024

Source – Department of Transportation, Federal Highway Administration

This report was prepared by Age Friendly Carbondale
Niki Delson, Candace Goodwin, Ron Kokish,
Susan Rhea, Sue Zislis, and Ted Zislis

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The term, "Dangerous by Design" was coined by Smart Growth America in their 2019 report. [1] It asserts that our system of roads and highways was designed primarily to move cars quickly at the expense of keeping everyone safe.

Because of the many complaints and concerns heard among neighboring residents regarding safe walking and biking around Carbondale, a grass-roots effort to investigate them was initiated. The result was this study, undertaken to learn the extent to which residents and frequent visitors to Carbondale think and feel that Highway 133 (133) inside Carbondale's municipal boundaries is "Dangerous by Design." We took three months to design our strategy, four months (June through September 2023) to implement it and the last seven months studying and interpreting the data and writing a report.

This is a study of opinions from over 500 volunteer respondents from the Carbondale community. All the raw data (surveys, post-its, mapped comment cards) are available online, (see Appendix in References). The "data" represents perceptions of safety when they are travelling 133 as pedestrians, cyclists, or motorists. Their perceptions have been presented as arithmetic totals. Here is what we found:

1. Community members do not feel safe when they are walking or biking across or along 133, and they are extremely worried when it comes to their children and the highway. Their concerns are many and center around high vehicle speeds, distracted or noncompliant drivers, unsafe crossings, and a lack crossings. Carbondale residents also said that safety concerns are a barrier to spending less time in their cars and walking and biking more. This is true for every age group from teenagers to people over 80.
2. There was wide-ranging agreement that motorized and non-motorized users ought to have equal access to the 133 corridor and equal consideration when planning decisions are made for that corridor.
3. People see 133 in its present condition as dangerous for non-motorized users. They also see it as very inconvenient. Many said that as pedestrians, the lack of appropriately placed crosswalks causes them to risk jaywalking. Others noted that as drivers, it is difficult to make left turns on 133. They feel unsafe leaving businesses on the east side of 133.

These findings are no surprise. They are consistent with everything we've seen and heard for well over a decade.

Chapter 3 of Carbondale's 2013 Comprehensive Plan begins: *"This section . . . provides a framework for attaining a continuous, well-connected system of streets, sidewalks, and pathways so that getting around Carbondale without an automobile is a viable and attractive option. Maintaining and enhancing pedestrian and bike mobility is among the top priorities for the community." (page 33)*

Later the Comp Plan sets a specific goal: *"Connect the east and west sides of town across the highway." "Improve safety and convenience for pedestrians and cyclists crossing the highway." (Strategy A for achieving Goal 3)* The plan's creators marked that strategy as a top priority. [2]
The updated 2022 Comprehensive Plan reinforces its predecessor, and both plans stress the importance of maintaining small-town character, a concept that certainly describes a town that can be comfortably negotiated without an automobile. [3,4]

Taken together, our findings show that in 2024, the people of Carbondale generally agree that when it comes to 133, Carbondale's elected and appointed officials and staff have not done nearly enough to make the Town's Comprehensive Plans a reality.

This study is based on data from five sources: 59 post-it notes and 102 comment cards collected at five First Fridays, one Farmers Market, one Dandelion Day and one special outreach to our Latino community; 463 survey responses, either on paper or online; a walking consultation with the CDOT Region 3 Traffic and Safety Operations Engineer and two residents who rely on wheelchairs for mobility ("wheelers"); and five previous government reports and studies regarding 133.[2,3,5,6,7]

The compelling "Dangerous by Design" review of public roadways shows that previous road development has put vehicles first without regard for impacts on other users. Nationwide and in Carbondale, people want to feel safe walking or cycling along public roads. In Carbondale, the inability to do so is most likely related to significant growth over recent years in both commercial and residential development along the corridor. The development has occurred along 133 without including safe, non-motorized infrastructure to accommodate that growth. As a result, traffic has steadily increased without the appropriate infrastructure improvements creating a very unsafe situation.

The community demands infrastructure improvements and transportation solutions to address safety concerns. People want more designated safe crosswalks and pedestrian activated beacons. There is also clear demand for traffic speed enforcement and lower speed limits. There are requests for more roundabouts both for speed reduction and better crosswalks.

NONE of the previous government reports and studies we reviewed referred to safe accessibility for people with disabilities, surely the most vulnerable users of our roadways. During a visit with Mr. William Crawford, CDOT Region 3 Traffic and Safety Operations Engineer, we made him aware of the 2023 CDOT Vulnerable Road Users (VRU) Safety Assessment. This document requires the state to identify and proactively address areas where vulnerable road users are at risk of injury. The executive summary of this extensive document demands, "People should be able to use the roads without fear of being injured or killed". [4]

The time is long overdue to push for needed changes. The Federal Highway Administration, the Colorado Department of Transportation, and our community's primary concerns now align around safety. The emphasis on pedestrian safety and traffic enforcement points to a desire for a more secure and pedestrian-friendly environment. Simultaneously, suggestions for infrastructure improvements and other transportation solutions indicate a broader vision for a well-integrated, efficient, and safe transportation system within the community.

Although some of the recommendations in this report will be costly to implement, others can be implemented more quickly and affordably. Speed reduction along the entire corridor is an example of a fix that could be made to happen in short order. Digital speed indicators should be installed at several places along 133. Crosswalks can be painted more often and more brightly. On April 29th, we received a follow-up email from our regional CDOT traffic engineer, William Crawford, that some of the simple recommendations we made will be completed this summer. These include installing white thermoplastic crosswalk bars at Village and Hendrick, bringing in-street-pedestrian signs for Village and Hendrick, re-striping at the Roundabout, fixing the ADA curb at the Roundabout, bringing 3 RRFB button extensions for the Town to install at the Roundabout. He also reported the Town will be installing a pedestrian refuge island at the Cowen crossing this year.

Respondents were generally frustrated and angry about more than a decade of development ahead of the infrastructure necessary for safely managing the predicted increased traffic for non-motorized users (Dangerous by Design!) Our community is outraged by the present situation and at the government which allowed it to come about. Their expectation is that present leadership will act promptly and aggressively to remedy the situation.

INTRODUCTION

In 2022, AARP gifted Niki Delson and Sue Zislis, two Age-Friendly Carbondale (AFC) board members, fellowships to the national America Walks Walking College. This six-month educational program is geared toward advocates eager to organize in communities to expand access to walkable, vibrant, safe, and accessible places. Niki and Sue's final Action Project was to increase safety along the 133 corridor that traverses the town. After completing their action plan, the full AFC Board decided to actualize their work.

The purpose of this study is to provide a conduit for community members to petition our elected officials to take assertive action to make 133 safer for people of all ages and abilities to navigate around town.

The philosophies of "Zero Vision", the Federal Highway Administration's "Safe System Approach" and the "Colorado Vulnerable Road User Safety Assessment" were the guiding philosophies for addressing community safety concerns.

Zero Vision Philosophy – the zero-death vision acknowledges that even one death in our transportation system in unacceptable and focuses on safe mobility for all road users.

> "Reaching zero deaths requires the implementation of a Safe System approach, which was founded on the principles that humans make mistakes and that human bodies have limited ability to tolerate crash impacts. In a Safe System, those mistakes should. Never lead to death. Applying the Safe System approach involves anticipating human mistakes by designing and managing road infrastructure to keep the risk of a mistake low. When a mistake leads to a crash, the impact on the human body doesn't result in a fatality or serious injury. Road design and management should encourage safe speeds and manipulate appropriate crash angles to reduce injury severity."

In 2021, the federally implemented Bipartisan Infrastructure Law (BIL) required each state to identify areas where people who ride bikes and walk are at higher risk of being involved in a crash that results in a death or serious injury, and work towards making those locations and populations safer.

The Vulnerable Road User Safety Assessment and the Safe System Approach of 2023 is Colorado's implementation of the federal legislation using the following principles (also on inside cover): a high-level plan that considers both safety and equity across the roadway system.

Death and Serious Injuries are Unacceptable People should be able to use the roads without fear of being injured or killed.

Humans Make Mistakes People make mistakes that sometimes lead to crashes, but the roadway system and vehicles can be designed and operated so that crashes do not result in deaths or serious injuries.

Humans are Vulnerable Human bodies have limits to how much energy and force they can withstand before they are injured. The roadway system should be human-centric and accommodate these limits.

Responsibility is Shared Everyone involved in the transportation system plays a part in making the system safe. The people who design, build, and maintain roads; everyone who travels on them; the people who design and build vehicles, bicycles and other devices that are used to navigate them; the people who make and enforce safety laws; and the people who respond to crashes when they occur; all have a role to play in the safety of the whole system.

Safety is Proactive We need to identify the conditions in which crashes are more likely to occur, and work towards preventing them before they happen.

Redundancy is Crucial A safe transportation system requires the use of multiple safety features so that if one safety feature fails, the other ones still protect people.

THE TIME IS NOW AND THE RESEARCH IS CLEAR

Lower the Speed Limit - We'll Show You How

Comments and observations regarding speeding traffic were ubiquitous in the responses we received. They were cited as contributing to a close call or a perceived danger by non-vehicle users trying to negotiate 133.

The speed limit from Highway 82 to Meadowood Lane is 35 mph, including the "School Zone" from Keator Road to the Snowmass Drive intersection. The school zone speed limit does not change during school hours.

People crossing 133 perceive danger, and they are supported by research. There are four reasons why vehicle speed is the central factor in traffic deaths. (https://nacto.org/wp-content/uploads/2020/07/NACTO_CityLimits_Spreads.pdf)[8]

1. Crashes at higher speeds are more forceful and, thus, more likely to be fatal.
2. Drivers traveling at higher speeds have a narrower field of vision.
3. Drivers traveling at higher speeds travel further before they can react.
4. Vehicles traveling at higher speeds require longer braking distances.

Speed at the time of impact directly correlates to whether a person will live or die. A person hit by a car traveling at 35 mph is five times more likely to die than a person hit by a vehicle traveling at 20 mph.

The relationship between speed and fatalities is influenced by following local issues:

1. Increased volume of traffic from recent urban growth
    a. Hayden Place 1 and 2 and the new Sopris Storage facility
    b. Main Street Apartments and associated business space
    c. Carbondale Marketplace, including apartments and associated retail space
    d. continued build-out of RVR
    e. Thompson Park development
    f. RFSD apartments – 50 units
    g. Red Hill Lofts – 30 units
    h. Town Center – pending

2. Increased volume of vulnerable users (pedestrians, cyclists, people with mobility challenges, and children), particularly students attending Carbondale Community, Ross Montessori, and Carbondale Middle and Elementary Schools
3. Increased risk caused by the growing number of distracted drivers
4. Increased number of environmental distractions for drivers

In 2023, CDOT, recognizing that speeding is the major cause of serious or fatal injuries to pedestrians and cyclists, shifted away from the 85% rule for determining speed. The new management theory allows traffic engineers to consider additional factors such as the purpose of the road and the number of vulnerable users including pedestrians and cyclists in its design. [9,10, 11]

https://www.strongtowns.org/journal/2020/7/24/understanding-the-85th-percentile-speed [9]

https://ssti.us/2023/09/25/colorado-takes-new-approach-to-setting-speed-limits/ [10]

Colorado state speed limits https://leg.colorado.gov/content/state-speed-limits [11]

Any business district	25 mph
Any residential district	30 mph

For district definitions, see: https://law.justia.com/codes/colorado/2016/title-42/general-and-administrative/article-1/part-1/section-42-1-102/ [12]

The remedy is to reduce the speed limit of these sections by redesignating them as:

1. a business district from Highway 82 to the roundabout
2. a residential district from the roundabout to the Snowmass Drive intersection
3. impose a 20-mph speed limit in the school zone during arrival and departure periods.

We consulted with Kevin Schorzman, the Carbondale Director of Public Works. After reviewing CDOT's definitions of Business and Residential Districts and a map of Carbondale, he felt that additional conversations with CDOT were warranted as there were sections of 133 that seemed to meet CDOT's definitions for these districts.

METHODS OF DATA COLLECTION

Matt Farrar, an urban planner based in Glenwood Springs, volunteered to help design our data gathering. This study is based on data from five sources: post-it notes and comment cards collected at five First Fridays, one Farmers Market, one Dandelion Day and one special outreach to our Latino community; 463 survey responses, either on paper or online; and a walk with two residents who rely on wheelchairs for mobility ("wheelers") and a CDOT representative; and five previous government reports and studies regarding 133.

Post-it notes were placed on a large poster board at each public event. People who stopped to talk with us were asked to write a few words about their experiences walking along or crossing 133. (See Appendix A)

A 17-item English/Spanish Survey that could be completed online or in person at live events previously noted. Surveys and collections boxes were also placed at the Carbondale Library, Third Street Center, Alpine Bank, Independence Run and Hike, and Crystal Meadows Senior housing. We collected 463 responses. (See Appendix B for blank surveys; see Data Archive for responses)

Comment cards were collected about intersections where people had witnessed or experienced a crash or close call (near collision) and had them place "sticky-dot" marker on a laminated map. This map, sticky-dot, comment card activity was held at the same events mentioned above. A bi-lingual interviewer was available at all events. We collected 104 responses. (See Appendix C)

Walk with wheelers and CDOT was held on March 13th with two residents who use wheelchairs, also known as 'wheelers', and William Crawford, CDOT's Traffic Operations Engineer for Region 3. A summary of that visit is included in the next section.

Review of previous studies specifically related to 133. [2, 3, 5, 6, 7] (See Appendix D)

DATA AND ANALYSIS

POST-IT NOTES

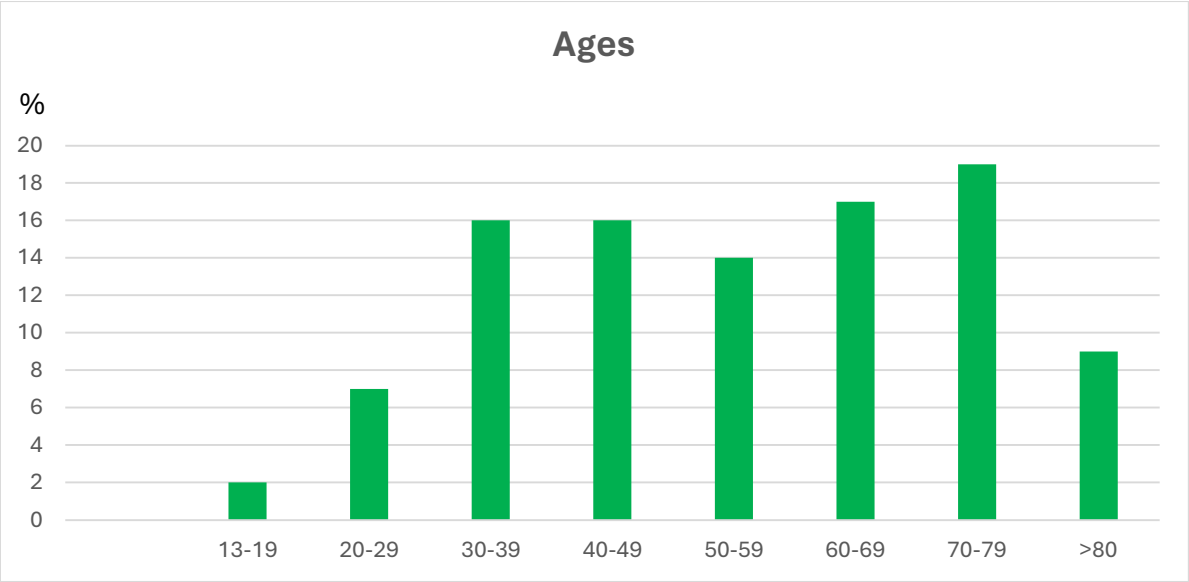
The notes mirrored comments gathered in other ways. For example, people fear for children's safety, feel pressured and unsupported as pedestrians and cyclists crossing or riding along 133, and are frustrated and furious at unsympathetic drivers who speed and ignore crosswalks and flashing lights. People want more clearly defined crosswalks, raised or with vibrant paintings, red flashing lights, and pedestrian islands at Weant, City Market, and Delores. (Drivers are supposed to stop for pedestrians; yellow means slow down.) People want to experience lower speeds, speed limits enforced by cameras and tickets, and electronic "Slow Down" speed indicators, particularly where children frequently cross the highway going to and coming from schools. People want a pedestrian crossing at City Market, and a physical barrier preventing vehicles from making illegal left turns out of City Market. Finally, people want a more welcoming experience on 133 for pedestrians and cyclists - better separation from the noisy, fume-filled air next to the highway and a prettier environment. The 50 comments collected are summarized in the following word cloud. (Size of letters reflects the number of times a word was mentioned.)

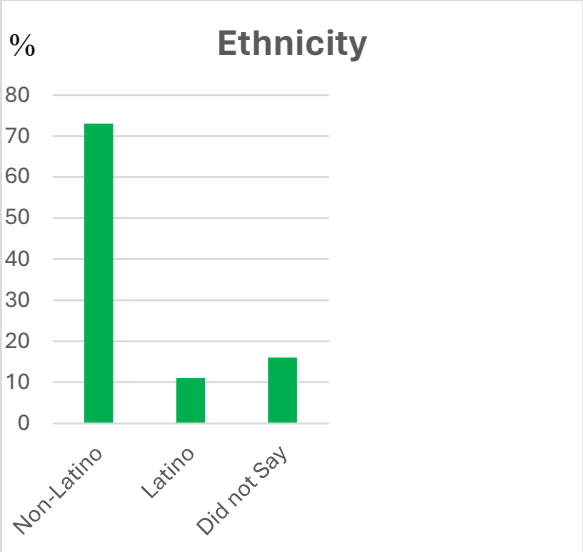
SURVEY

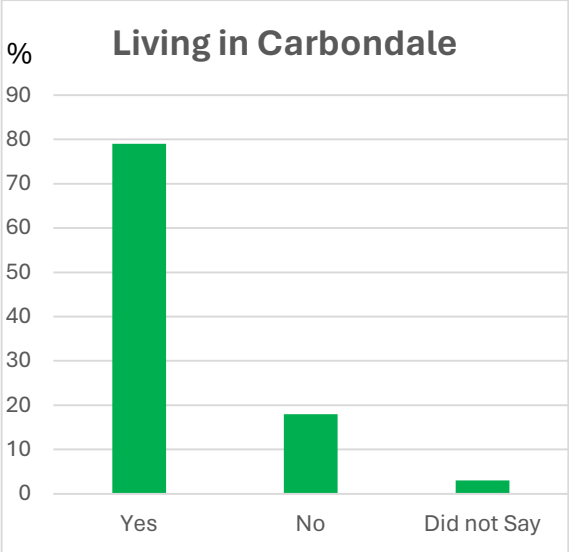
Half of the 463 surveys collected were completed online, and half were on paper. We asked people not to complete the survey more than once. Given that the study took at least 10 minutes, we thought there was no duplication; there was no mechanism to verify it. Respondents were not required to complete each question, so totals do not necessarily add up to 463 for each question.

Questions 13-15: Respondent Demographics

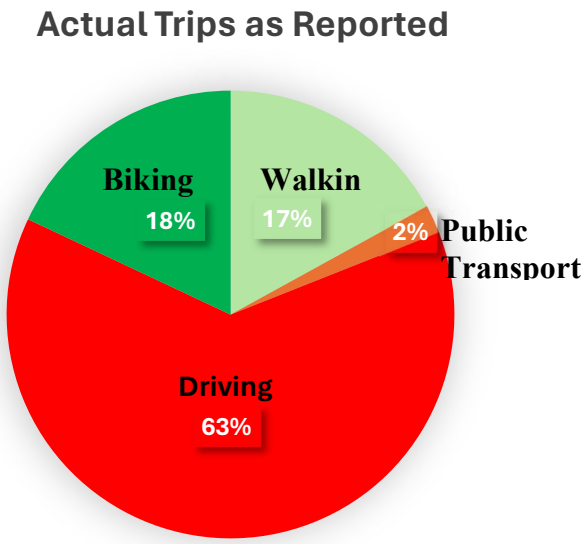
83% of respondents were between 30 and 80; 11% identified as Latino; 79% reside in Carbondale.

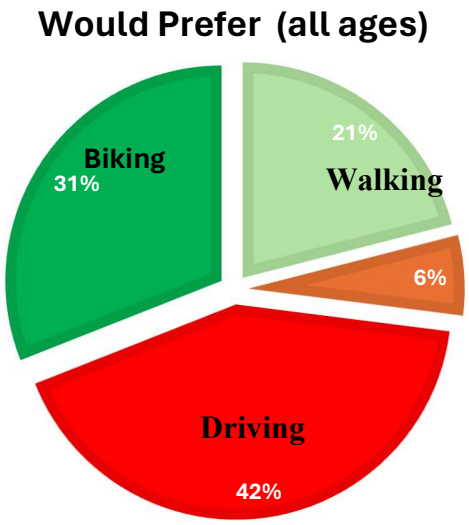






Question 1 - 3: What percentage of your trips around Carbondale are made via driving, biking, walking, public transit, and in other ways? How does this compare to the ways you would prefer to be getting around town? What are the barriers to you getting around town in the ways you'd like?



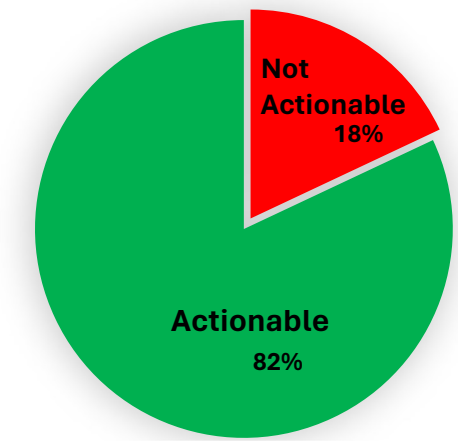


Respondents over age 80 (n=28) reported spending the most time driving (75%). They want to reduce that to 57%. They want to slightly decrease their biking (reported at about 13%) and increase their walking and their use of public transportation. Biking is popular. Respondents over 80 were the only age group that didn't aspire to increasing their biking. (We Cycle became available about halfway through the data gathering months and may now be addressing this aspiration to some extent)

Teenagers (n=9) reported spending the least time in cars (50%), but even they wanted to reduce this to 32%. They also wanted to walk less but wanted to nearly triple their biking.

The other age groups fell between these two extremes in terms of how much time they spent in cars and the changes they wanted to make. Every age group reported driving to be their predominant method of getting around, yet they also reported they would like to use alternate means for getting around. Time in cars increased slowly and steadily with age. (see appendix)

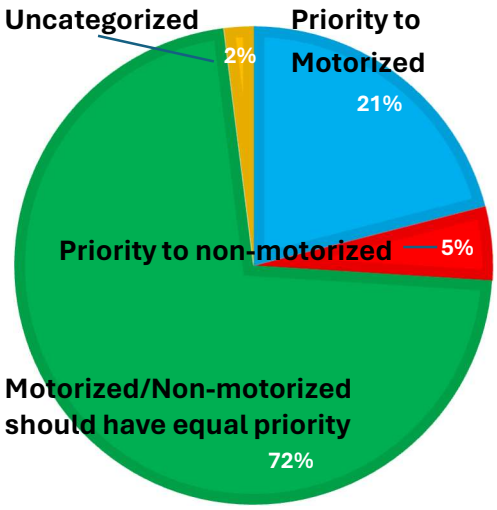
Three hundred and thirty-seven respondents left over 400 narrative comments detailing perceived obstacles to getting around town without a motorized vehicle. The notable conclusion is that 82% of cited obstacles could be remediated by government action. Obstacles that government cannot impact are weather, personal lifestyle and attitude.



Obstacles that government can impact are traffic and road safety, non-vehicle mobility infrastructure, public transit, and accessibility.

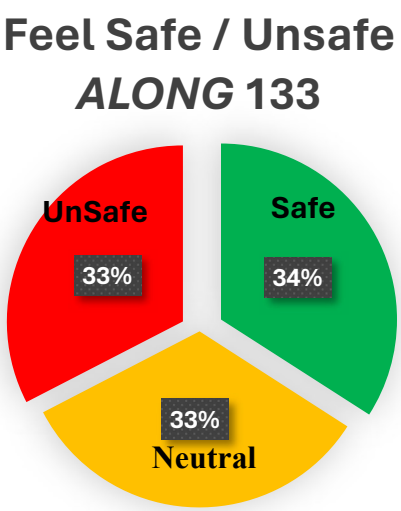
Of the 82% of issues that the Town can affect, public transportation (9%) is already being addressed by contracting for Downtowner services. The remaining 73%, addressing road safety and infrastructure (73%) are the next steps for the Town to work on. Issues people raised in comments mostly refer to vehicles going too fast, vehicles not yielding to pedestrians and cyclists in the Roundabout, and vehicles not yielding to pedestrians and cyclists in the Roundabout, and dangerous intersections.
Intersections of concern that were most mentioned are the Roundabout and City Market. Others mentioned, less frequently, are the area near the Montessori school, including Wells Fargo, and Village Road. Left turns are very difficult on 133, and many feel unsafe leaving businesses on the east side of 133.
The lack of a pedestrian/bike intersection between Village Road and the Roundabout is a significant obstacle, as this is almost a mile distance. Many are choosing to jaywalk, including wheelers. At the Roundabout, even after two years of experience with it, many users still feel unsafe using and crossing the Roundabout. Vehicles are traveling at unsafe speeds, often ignore the flashing crossing lights, and large vehicles in the left lane often obstruct the sight of vehicles in the right lane.

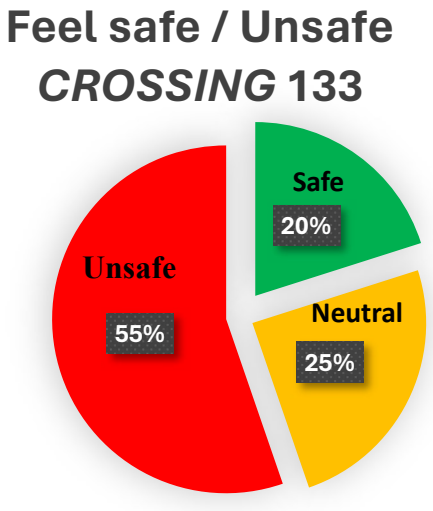
Question 4: What do you think the primary function of 133 should be?



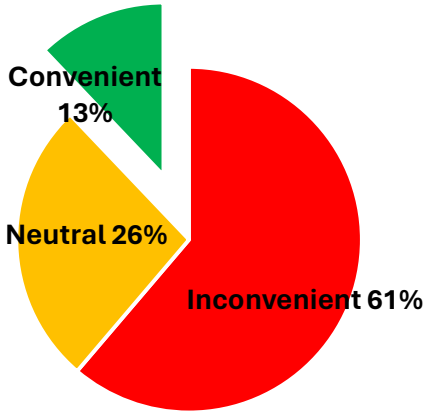
Respondents agreed by a margin of 3 to 1 that 133 motorized and non-motorized travelers should receive equal priority.

Questions 5 - 6: How safe do you feel walking/biking along or across 133?
Adults feel unsafe and safe in equal numbers moving along 133. Still, a third of people said they feel unsafe in the corridor even when they are not crossing it. When crossing 133, adults feel unsafe by nearly a 3 to 1 margin.



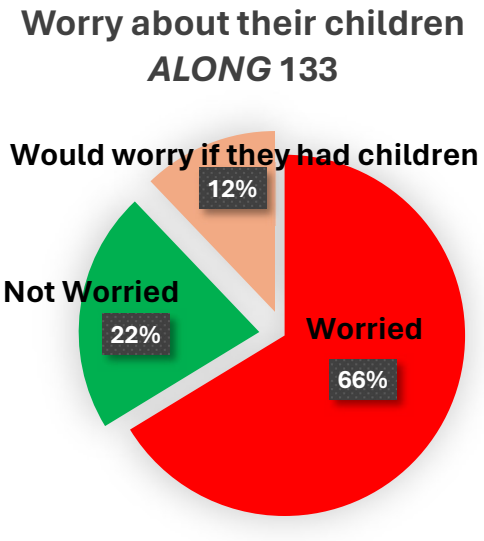


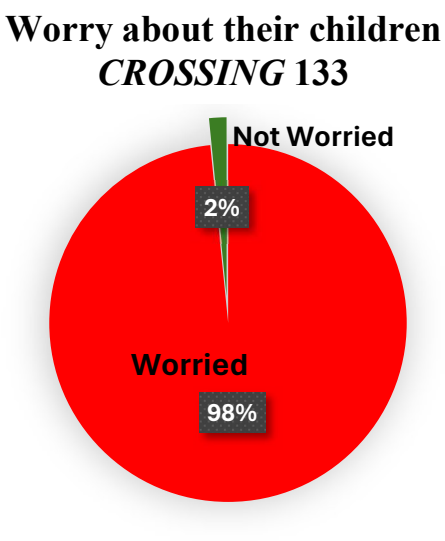
Question 7: When not in a vehicle, how convenient do you think it is to cross 133?



Only 13 % of respondents (about one in eight) said that crossing 133 was convenient for them.

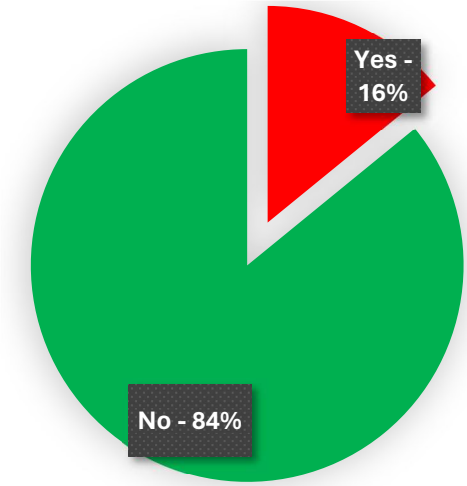
Questions 8 - 9: If you have children, do you worry about them walking, biking, etc. along/across 133?





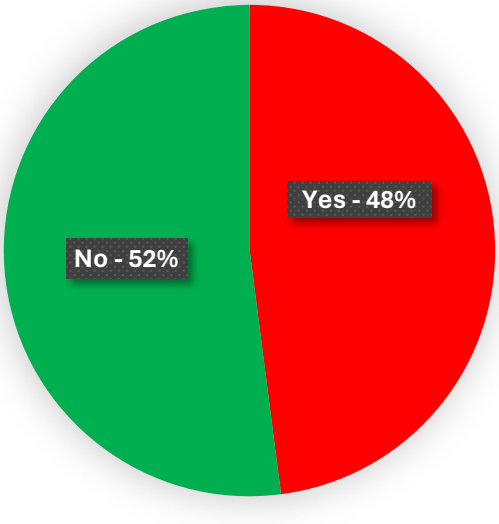
People are extremely worried about children traveling anywhere near 133. Adults are more worried about this than anything else we asked about. We interpret these comments to indicate that adults are trying to teach their children to cross safely but feel frustrated and afraid because they see crossing 133 as inherently dangerous and believe that education cannot compensate sufficiently for those inherent dangers.

Question 10: Have you been in or witnessed a crash on 133?



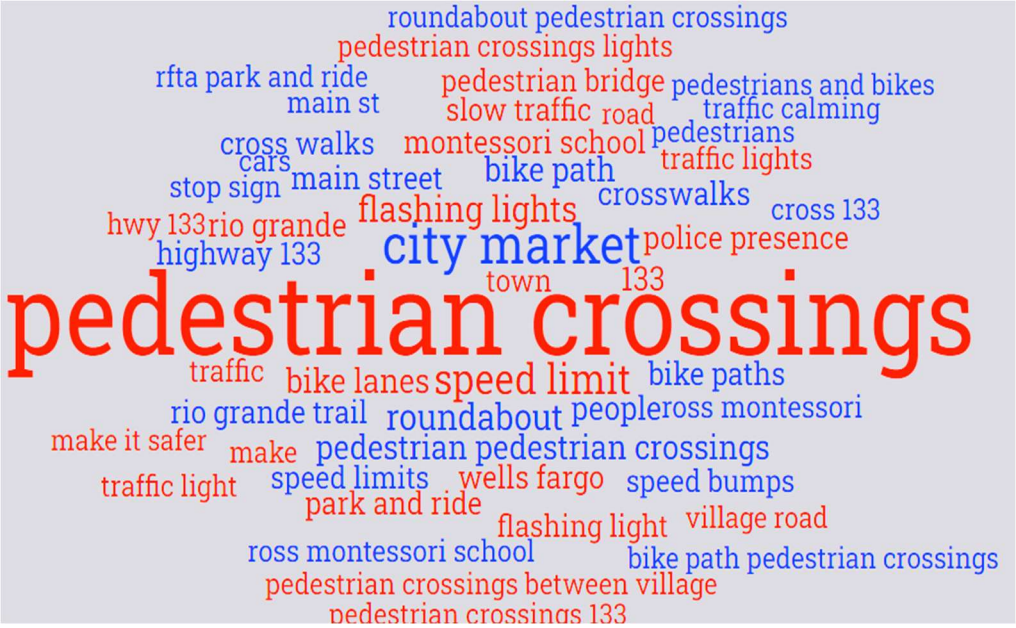
Seventy-five respondents (one in seven) told us they had been in or witnessed a crash on highway 133. Note –This does not necessarily mean that respondents saw/experienced 75 crashes. Several people may have reported the same event, and some respondents may have experienced or witnessed several events.

Question 11: While walking or biking along or across 133, have you had or witnessed a close call or near miss?



222 people, nearly half of respondents reported experiencing or witnessing "close calls".

Question 12: Do you have ideas for improving 133 for pedestrians, bicyclists, and other non-motorized ways of getting around?
This Word Cloud graphic below summarizes suggestions from 341 people. Some people contributed more than one suggestion. The graphic demonstrates that respondents' primary concern is being able to cross 133 and the primary intersection they are concerned about is at City Market.



Summary of Community Comments

Pedestrian Safety: Community members express concerns about the safety of crossing areas, especially near schools and in areas with high foot traffic. The repeated calls for more designated crosswalks, pedestrian flashers, and safer walkways suggest residents are seeking tangible improvements to ensure pedestrian safety. This indicates a strong community emphasis on creating a more walkable and safer environment for pedestrians.

Traffic Enforcement: There is a clear demand for stricter enforcement of existing traffic laws, including speed limits and stop signs. This concern likely stems from observations of speeding and non-compliance with traffic signals, contributing to a sense of insecurity on the road. People clearly believe that stricter enforcement will lead to a safer highway.

Road Infrastructure: Suggestions for the addition of speed bumps, improvements to roundabouts, and the installation of new stop signs and/or traffic lights, point to a

perceived need for physical changes to the highway itself. These suggestions reflect a desire to slow down traffic, improve navigation through complex intersections, and generally enhance the safety and efficiency of the highway for both drivers and pedestrians.

Parking Solutions and Public Transportation: Proposals for metered parking, expansion of parking lots, and improvements to public transit routes suggest that community members are looking for a more integrated and sustainable approach to transportation, aiming to reduce congestion and promote alternative modes of transport.

It is clear – the community's primary concerns revolve around safety, both for pedestrians and motorists, and the efficient management of traffic and transportation infrastructure. The emphasis on pedestrian safety and traffic enforcement points to a desire for a more secure and pedestrian-friendly environment. Simultaneously, suggestions for infrastructure improvements and transportation solutions indicate a broader vision for a well-integrated, efficient, and safe transportation system within the community.

Question 16: Are there any topics, not addressed in this survey, that you would like to have considered in planning for the future of 133?

Two hundred and twenty-four individuals commented. Not surprisingly, many respondents used this question to repeat earlier comments, to comment about things not directly related to 133, or to just grouse about their favorite issues. We culled those comments, leaving in those that directly answered the question, and also some that we just thought were plain interesting. We also included some comments that criticized development that's already in place in hopes of avoiding similar mistakes when considering coming development. A complete list of the comments we considered relevant to Question 16 is found in Appendix B. The points below summarize the complete list of answers in the appendix.

1. Beautifying this stretch of road was the most-often mentioned theme in Question 16 comments. People want this done for its own sake, but also see it as a way to slow down traffic and make the corridor safer. There's growing sentiment that the "Highway" needs a new identity – it should feel and operate like a municipal "street." This might include renaming it, landscaping it, a much lower speed limit, and infrastructure consistent with that lower speed limit.

2. Crosswalks and traffic lights need auditory as well as visual signals.

3. Several people commented that development to date has a strong net-positive effect.

4. Although most people want traffic slowed down, there were also comments in this section that traffic needs to move more quickly.

5. It's difficult to know what is being built. Require developers to post large drawings and explanations on the property along with info about hearings on the plan for a period of time before issuing a permit.

6. Although the need for intra-urban transport will be addressed by the Downtowner (beginning 06/01/24) some comments indicate that an expanded circulator might have been preferable.

7. Some people just don't like our growth. *"Having a lovely bike/pedestrian path is not going to solve the greater problem and that is we are growing at a rate that no human can tolerate and in fact is taking a toll."*

8. Although this is well outside Town boundaries and the scope of this report, it's worth noting that several people asked to extend the Crystal Trail from Campground to Redstone.

9. There seems to be a strong feeling that underpasses are preferable to crosswalks and roundabouts. The strongest call for an underpass is for Highway 82, to allow people coming from town on foot or by bike to access Red Hill.

10. One person suggested hiring a dedicated grant writer to bring in more funds from Feds, State, and foundations to bear on the suggested improvements.

11. A few people used Q 16 to say they wanted 133 widened to 4 lanes.

These themes highlight a community's desire for sustainable growth that prioritizes environmental conservation, safety, and maintaining a sense of community identity amid changes.

Comment Cards About Mapped Intersections

To analyze the data, we collected from the comment cards and associated map markers (sticky-dots), we used human and artificial intelligence to find common themes regarding participants' experiences, concerns, and suggestions for each intersection. AI was then used to generate recommendations, prioritizing safety, to address those themes. With the recommendations in hand, AFC members went to each of the intersections to assess their feasibility based on the specific layout of each intersection and the traffic (vehicle, pedestrian, and cyclist) flow observed. AFC members also walked the highway with two wheelchair users and William Crawford, CDOT's Traffic Operations Engineer for Region 3 to better understand the issues of individuals with mobility challenges. The original recommendations were modified based on the information and observations gathered during these outings and inspired by the following quote from CDOT's Vulnerable Road User Safety Assessment Guide, Safe Systems Approach, *"Safety is Proactive. "We need to identify the conditions in which crashes are more likely to occur and work towards preventing them before they happen."* [4]

Finally, previous traffic studies/reports were reviewed for comments and recommendations made for this section of 133. The studies/reports used included:

1. 2013 Carbondale Access Control Plan [5]
2. Crossing Concepts in the 2022 updated Carbondale Comprehensive Plan. FEHR PEER consultants (updated comp plan page 162-192) 7/28/22 Planning and Zoning Commission [3]
3. Carbondale Marketplace Traffic Impact Study (included in Planning and Zoning Commission meeting 5/28/2022 starting on page 156) [6]
4. Roaring Fork Valley Safe Routes to School Program School and Neighborhood Improvements Report [7]

The following sections present data, discussion, and recommendations for specific intersections along 133. These are listed in order of greatest concern and priority for the Carbondale community, as indicated by the number of times each location was mentioned. The intersections are

1. Roundabout
2. Hendrick Drive and Sopris Avenue
3. City Market,
4. the Montessori area between Keator Road and Weant Blvd,
5. Dolores Way,
6. the RVR area
7. Village Road

Roundabout

A Few Anecdotes

- *Multiple experiences when a car in second lane did not stop at a blinking yellow light. Pedestrians crossing are unable to see if lights are flashing.*
- *I witness cars ignoring flashing lights causing near misses with pedestrians. LOWER THE SPEED LIMIT!*
- *Car coming down valley did not slow down, did not see me in crosswalk and narrowly missed me. Now I am afraid to walk across at the roundabout.*
- *Pickup truck did not stop. I was halfway across. Double lane entrance creates frequent problems. Second car's view of cross walk and my view of that car obstructed by first car.*

Safety Concern Themes

1. **Poor Visibility:** Respondents frequently mention that drivers cannot see pedestrians or cyclists, and likewise, those on foot or on bikes can't tell if the crossing lights are active.
2. **Non-compliance with Signals:** There are reports of vehicles not stopping even when the lights are flashing, indicating a disregard for crossing signals.
3. **Close Calls:** Several respondents have had close calls with vehicles, particularly in the crosswalks, suggesting a high risk of accidents there.
4. **Speeding:** Speed is a significant concern, with many suggestions to lower the speed limit to enhance safety.

5. **Design Issues:** The double lane entrance and the layout of the roundabout seem to cause confusion and obstructed views, contributing to the danger.

Prioritized Infrastructure Changes

1. **Enhance Visibility:**
   a. Install better lighting and ladder painting pattern to all crosswalks at the roundabout; enhance signage throughout to ensure that drivers are aware of crosswalks and anticipate the need to yield; and add second flashing beacon to crossing side of the existing RRFBs.*****
   b. Raise the crosswalks and install permanent, flashing lights at both crosswalks over Main Street.
2. **Signal Use and Compliance Measures:**
   a. Improve the position of the signal activation buttons so that wheelchair users can access them.*
   b. Implement stricter enforcement of signal compliance, possibly through automated systems like red light cameras, to deter drivers from ignoring the signals.
3. **Reduce and Enforce Speed Limits:**
   a. Lower the speed limit approaching the roundabouts and other crossings to give drivers more time to react to pedestrians and cyclists.
   b. Increase enforcement to improve compliance with the 15 mph speed limit in roundabouts and other traffic rules.
4. **Redesign the Roundabout:**
   a. Redesign the roundabout to one lane.
      1. According to a University of Arizona study entitled "Effect of roundabouts on accident rate and severity in Arizona" by B. Souliman, single-lane roundabouts have lower rates of accidents, damage, and injury than those with double lanes. Reducing the roundabout a single lane would eliminate multi-lane crossings and ensure that vehicles have a clear view of the crosswalks and users to reduce the reported vehicle/user issues and potential collisions. [13] It would also slow traffic approaching the roundabout during busy times. (https://keep.lib.asu.edu/items/154324/view)
      2. Per the 2023 CDOT Roadway Design Guide, Chapter 9, Roundabouts, page 20 "The number of lanes provided at the roundabout should be the minimum needed for the existing and anticipated demand as determined by the operational analysis. The engineer is discouraged from providing additional lanes that are not needed for capacity purposes as these additional lanes can reduce the safety effectiveness at the intersection. If additional lanes are needed for future conditions, a phased design

approach should be considered to allow for future expansion." [14]

5. **Educational Campaigns:**
    a. Conducting educational campaigns to remind drivers of the importance of paying attention to crosswalks and adhering to traffic signals to reinforce safer driving practices.

Rationale for Prioritization

The number of vehicles passing through the roundabout since the construction of the Carbondale Marketplace is high. Currently, vehicles exiting the two Marketplace egresses to 133 cannot turn left and must instead turn right and go through the roundabout. The roundabout is also a primary east-west route for pedestrians, cyclists, and other vulnerable users. The combination of these factors increases the danger for all users. The prioritization above is based on the immediate potential to reduce accidents through improved visibility and traffic rule compliance followed by longer-term solutions such as a roundabout re-design.

Relevant Recommendations from Previous Studies

1. **2013 Access Control Plan (numbers in parentheses reference Figures 13 & 14 of the ACP):**
    a. light or roundabout (30,31) - completed
    b. entrance to 711 right-in only (29) - completed
    c. close driveway south of Sopris W&L (32) and create new right-in, right-out driveway (90) – completed (is also left-in eastbound)
    d. Old City Market driveway to right-in, right-out (33) - completed
    e. close two driveways (34, 35) - completed
    f. restrict driveway to right-in, right-out (38) [5]

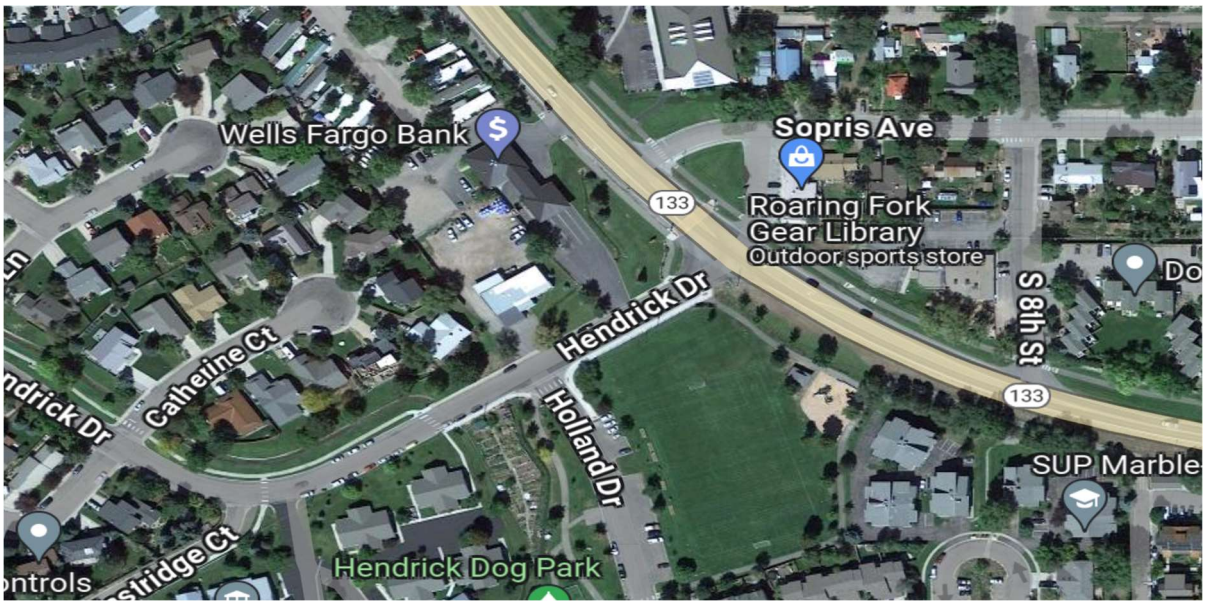
***Per Meeting with William Crawford, CDOT Traffic Operations Engineer, Region 3, on March 13, 2024, (see page 49) the following improvements are scheduled for this summer:**

a. repainting of white borders on the existing red concrete crossing
b. addition of yield bars (shark's teeth) and "STOP Here for Pedestrians" signs 20 to 50 feet in advance of the two crosswalks spanning 133 at the roundabout to indicate where a driver should stop for pedestrians/cyclists
c. addition of extensions to the signal buttons (time frame undetermined)

Per his follow-up email of April 29, 2024, Mr. Crawford reported that CDOT will be arranging for improvements of two areas of concern for those using wheelchairs. These include the installation of RRFB push button extensions and reducing concrete ledges

on ADA ramps. Note, the RRFBs do not belong to CDOT and the town needs to install them.

Hendrick Road and Sopris Avenue



A Few Anecdotes

I experienced multiple near accidents after activating the flashing signal when cars don't stop; I was crossing from the west side of 133.

I pressed the light and waited until cars going North and South stopped. When I got to the middle of the crosswalk, a car came barreling through within inches of hitting me.

We hit flasher button and started crossing and a car skidded to a stop. They weren't paying attention.

I witnessed cars ignoring flashing lights, causing near misses with pedestrians. LOWER THE SPEED LIMIT!

Drivers not paying attention and driving too fast, and I almost got hit and would have been if I wasn't hyper-vigilant.

Extended periods of lights not working; I have noticed near misses of cars turning too fast to get off 133 and not seeing children crossing.

Child crossing at a flashing yellow light on a bike and almost got hit by an oblivious driver that had no clue that she had almost hit a child.

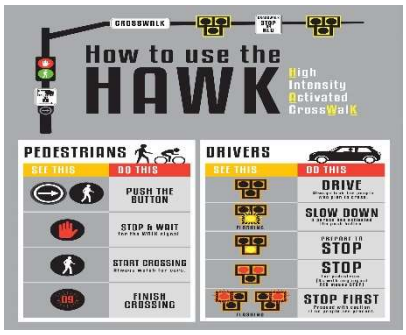
Safety Concern Themes

The survey responses about the Hendrick intersection on 133 reveal critical concerns about pedestrian safety, particularly for children attending the nearby Montessori school. The main themes emerging from the survey are:

1. **Non-compliance with Crossing Signals**: Vehicles often ignore the push-button yellow signals, leading to near-miss incidents where pedestrians are almost hit by cars.
2. **High Vehicle Speeds**: Respondents frequently mention the high speeds of vehicles on 133, exacerbating the risk to pedestrians trying to cross.
3. **Lack of Adequate Crossing Infrastructure**: The absence of pedestrian islands and adequate lighting at the crossing is a significant safety issue, making it difficult for pedestrians, especially children, to navigate the wide road safely.
4. **Visibility and Attention Issues**: Drivers' inattention to the crossing and its signals and potential visibility issues prevent drivers from seeing pedestrians in time to stop.

Prioritized Infrastructure Changes

1. **Upgrade to More Effective Crossing Signals**: Replace the existing push-button yellow signals with more prominent and effective crossing signals, such as Pedestrian Hybrid Beacon (PHB) or High-Intensity Activated Crosswalk (HAWK). Such beacons allow protected pedestrian crossings, stopping vehicular traffic only as needed. Until an upgrade beacon is installed, ensure all push-button beacons are accessible to people in wheelchairs. (See text page 50, paragraph 5.)



Rationale for Prioritization: This should be the top priority as it addresses drivers ignoring the current yellow flashing signals. More conspicuous signals like HAWK beacons have a higher compliance rate and can significantly improve pedestrian safety.
Pedestrian Hybrid Beacons increase driver awareness of pedestrians crossing mid-block or at unsignalized intersections, overcoming driver inattentiveness or distraction and reducing pedestrian crashes by 55%. (https://publichealth.jhu.edu/sites/default/files/2023-03/recommendations-of-the-safe-system-consortium.pdf) [15]

2. **Install Pedestrian Refuge Islands**: A pedestrian safety island reduces the exposure time in the intersection. Given 133's width, a pedestrian island in the median would provide a safe waiting spot for pedestrians crossing one direction of traffic at a time, reducing the risk of accidents.

Pedestrian Island

Pedestrian Island with HAWK beacon

Rationale for Prioritization: A Pedestrian Island is crucial for allowing pedestrians, especially children, to cross more safely. This should follow the implementation of more effective signals and speed reduction measures.

3. **Implement Speed Reduction Measures**: Lowering the speed limit near the crossing and installing physical speed-reducing infrastructure such as speed bumps or raised crosswalks would decrease vehicle speeds and improve pedestrian safety.
   Rationale for Prioritization: Reducing vehicle speed is critical as it directly affects the severity and likelihood of accidents. "A driver traveling at 30 miles per hour who hits a pedestrian has a 45 percent chance of killing or seriously injuring them.[1] At 20 miles per hour, that percentage drops to 5 percent.* (https://safety.fhwa.dot.gov/provencountermeasures/appropriate-speed-limits.cfm) This should be a high priority due to its immediate effect on improving safety for all road users. [16]
4. **Enhance Lighting and Visibility**: Improving Street lighting around the crossing and ensuring that crossing signals are obvious can help increase the visibility of pedestrians and the crossing itself, especially during low-light conditions.
   Rationale for Prioritization: Recent studies have found that crosswalks are most effective when they are well-lit at night and have signage to alert drivers they are coming up on a crosswalk. (https://journalistsresource.org/politics-and-government/pedestrian-safety-crosswalks-research/) [17] Improving lighting and visibility is essential for vulnerable users and drivers can see each other and react appropriately, especially during early morning and evening hours. This should be implemented alongside the above measures to maximize safety improvements.

Relevant Recommendations from Previous Studies

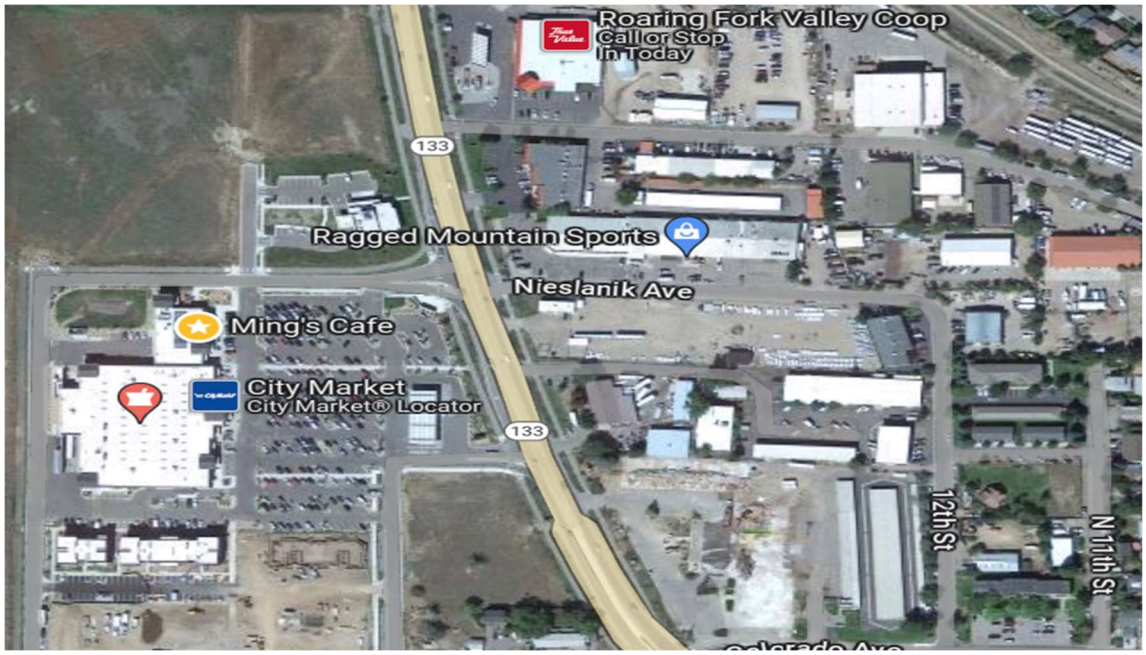
1. **2013 Access Control Plan Recommended Infrastructure Changes** [5]
   a. Close the south driveway of Crystal Valley Mobile Home Park and the north driveway to Wells Fargo

b. Create a new combined right-in, right-out entrance to Wells Fargo and Crystal Valley Mobile Home Park.
c. Realign Hut.
d. Close south driveway at Hendrick Road and Sopris Avenue to create an intersection with a light or roundabout (also called Sopris Avenue) to La Rumba Plaza

2. **2007 Safe Routes to School recommended the following for all schools**
   a. Pedestrian-activated light- completed.
   b. Reduce speeds, including visual cues to slow down.
   c. Safety flags at crossings and resurrect the crossing guard program.
3. **Comments From Our Walk CDOT And Wheelchair Users**
   Two residents using wheelchairs identified many of the same barriers noted by many who completed the mapping exercise. All the following factors make this intersection dangerous for everyone. For those with mobility challenges who must cross here the danger is further increased. Speeding cars, yellow flashing lights outside of the driver's central field of vision, an exceptionally wide roadway with no pedestrian refuge island, and a lack of high-visibility striping.

NEWS FLASH: In an April 29, 2024 follow-up email from CDOT's traffic engineer William Crawford, he wrote they will be adding white thermoplastic crosswalk bars at Hendrick Drive to be completed about mid-June.
He also wrote they will be installing an In-Street-Pedestrian sign at the crosswalk at Hendrick Drive.

City Market Jaywalking Crossing
(Includes Nieslanik Avenue and Industry Way)
******THE NUMBER 1 INTERSECTION SAFETY ISSUE ON 133******



A few anecdotes:
People make illegal left turns. There was too much traffic; I witnessed a person making an illegal left turn and nearly missing a pedestrian on the side path walking north.
Industry Way needs to connect so Wheel Circle/Carbondale North can walk/bike to the grocery store without going to the roundabout.
People are frequently jaywalking. There are lots of concerns about crossing without an intersection.
I witnessed a person running across 133 from the east to the west side to get to the City Market Entrance. He was nearly hit by a car.
I walk to shop from my home on Lincoln Ave but have difficulty crossing at City Market. I am partially disabled, and traveling an extra distance is difficult, so I had to hire a shopper.

Safety Concern Themes

1. **Illegal and Risky Maneuvers**: Numerous illegal left turns and vehicles that do not respect pedestrians' right of way, increasing the risk of accidents, particularly for pedestrians and cyclists.

2. **High Traffic Volume and Speed**: The area is heavily trafficked, which naturally elevates the risk of accidents, especially when vehicles or pedestrians make unpredictable moves.
3. **Lack of Adequate Infrastructure**: The absence of a marked crosswalk, traffic signal, and pedestrian island on 133 makes it difficult for pedestrians, cyclists, and wheelchair users to navigate the area safely. In the absence of infrastructure, this is a major jaywalking crossing.
4. **Vehicle-Pedestrian/Cyclist Interactions**: Multiple accounts of near misses involving pedestrians, cyclists, and vehicles indicate a high level of danger, particularly for those on foot or bike, who are more vulnerable in traffic.

5. **Time-Specific Traffic Challenges**: Some responses highlight dangerous times, like evening rush hour, suggesting that traffic volume and behavior vary at different times, affecting safety.
6. **Community Accessibility**: The need for better bike/ped connectivity to improve access to essential services like grocery stores reflects a broader concern about the area's pedestrian and cyclist infrastructure and is one reason for unwanted reliance on automobiles.
7. **Lack of Awareness or Caution by Drivers**: Distracted or careless drivers are reflected in reports of drivers not stopping at crosswalks or making close calls with pedestrians and cyclists. (Education does not change this behavior. The environment has to be modified to grab drivers' attention.)

Prioritized Infrastructure Changes

1. **Create a legal safe way to cross 133 at Nieslanik Avenue – to eliminate the need for jaywalking**
    a. Install a roundabout at Nieslanik Avenue: This unsignalized intersection calls for **immediate** infrastructure enhancements. The distance between the signalized crossings at Village Road and the roundabout is 7/10th mile. The east side of 133 is densely populated, and the only grocery store is on the west side of town directly across from Nieslanik Avenue. This situation makes many people choose jaywalking to get across 133. Pedestrians, cyclists, and wheelchair users crossing 133 dodge cars making illegal left turns out of the Marketplace and vehicles turning left out of Nieslanik Avenue heading south on 133 as well as through traffic.
    b. Install a Temporary Marked Crosswalk, Pedestrian Island, and Solar Operated Traffic Signals: This is the critical intervention for immediately addressing the needs of the most vulnerable users and creating connectivity between the east and west sides of the town.
    c. Better than b, if possible, install a temporary roundabout pending option a, which will at best, take one to two years.

    Rationale for Prioritization: The existing condition – 7/10th of a mile on a 35 mph highway without a single safe crossing and the town's new retail core dead in the middle -- is dangerous and unacceptable.
    The infrastructure improvements above will significantly enhance pedestrian, cyclist, and wheelchair user safety. Providing a designated and visible place for crossing and controlling vehicle movement reduces the likelihood of accidents. Given the high traffic volume and reported number of close calls, these measures could proactively mitigate the risk of pedestrian-vehicle collisions.
2. **Enforcement of Traffic Laws:** Strict enforcement of speed limits and traffic laws, especially regarding illegal turns and yielding to pedestrians, is essential. Although some studies recommend increased police presence, using traffic cameras would decrease the possibility of racially biased enforcement.

    Rationale for Prioritization: While enforcement is recognized as a deterrent against risky maneuvers that endanger vulnerable users, proactively transitioning to a Safe Systems approach reduces the need for enforcement. "Pedestrian crossings and bike paths are designed so that walkers and cyclists find that the easiest way to get across traffic is the safe way. These designs save lives and reduce the need for traffic law enforcement to achieve safety https://visionzeronetwork.org/national-recommendations-addressing-safety-equity-with-the-safe-system-approach) [18]

3. **Traffic-calming measures:** These give drivers more time to react and reduce the severity of potential accidents.
4. **Improved Signage and Road Markings:** Well-maintained Road markings are crucial for guiding traffic and showing safe pedestrian crossing zones.
5. **Infrastructure Improvements for Pedestrian and Cyclist Connectivity:** In the long term, improving overall connectivity for pedestrians and cyclists can provide safer and more direct routes, reducing the need to cross dangerous sections.
6. **Time-Specific Interventions:** Addressing specific times of high risk, such as rush hour traffic management, can alleviate congestion and reduce the chances of accidents during peak times.

   Rationale for Prioritization: The prioritization is based on immediate impact and feasibility. Installing a roundabout, marked crosswalk, pedestrian island, and traffic signals addresses the most pressing safety concerns. Enforcement and traffic calming are subsequent due to their relatively quick implementation and significant impact on behavior. The remaining interventions, while important, are more about long-term behavior change and infrastructure planning.

Relevant Recommendations from Previous Studies

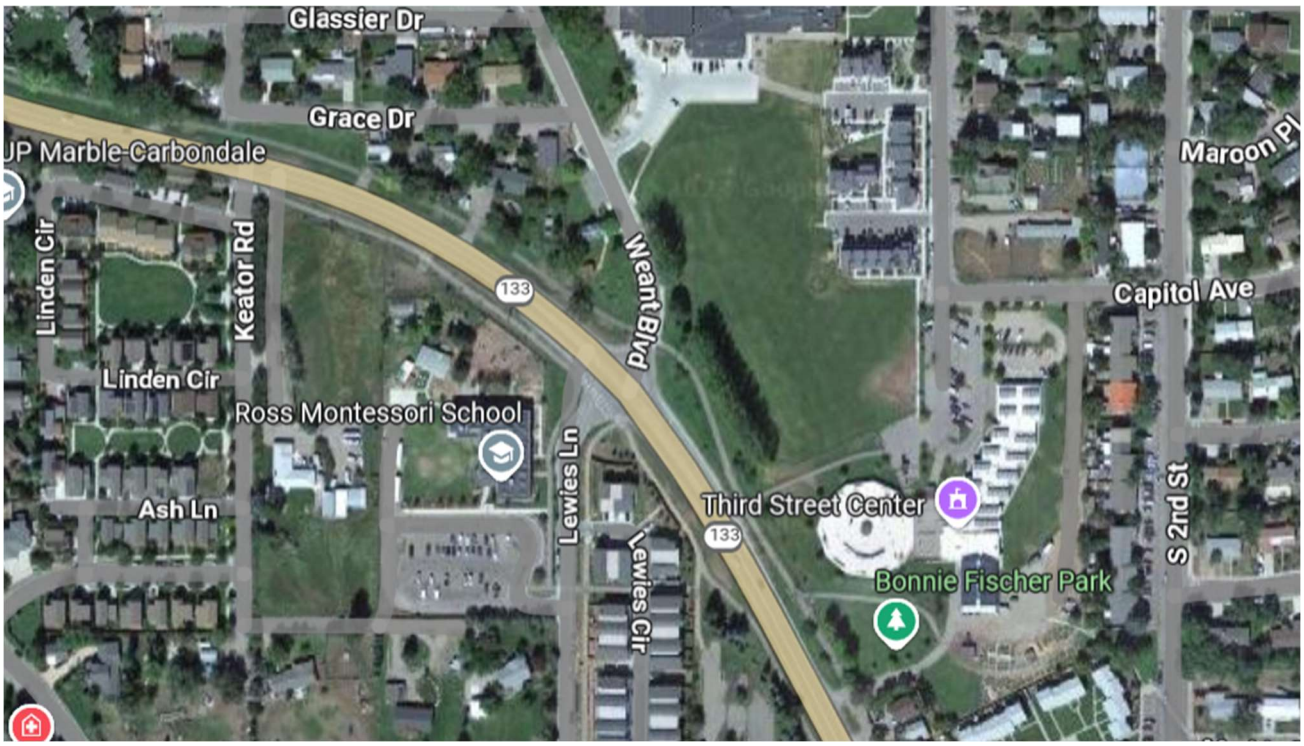
1. **Note from the 2013 ACP** (before Marketplace development.)[5]
   The Town is concerned with the lack of locations where they feel pedestrians/bicyclists can safely cross 133 from the east to the west and vice-versa. With only three signalized intersections and long distances between these signals, the Town feels that pedestrians/bicyclists do not travel to these locations to safely cross the street on a green light but rather wait for a perceived large enough gap in traffic and cross and various locations along the corridor. One possible solution could be the addition of safe crossings at midblock locations throughout the corridor. The design and placement of these crossings is not within the scope of an ACP. The project team worked with the Town, however, to ensure that the final recommendations of the ACP would not limit the possibility that the Town and CDOT could work together in the future to implement marked pedestrian/bicyclist crossings along the corridor.

2. **2020 City Market Traffic Impact Study:**
   "The purpose of this study is to identify project traffic generation characteristics, to identify potential project traffic-related impacts on the local street system, and to develop mitigation measures required for identified impacts."
   "Based on traffic projections, the addition of project traffic on the Nieslanik Avenue access along 133 is anticipated to increase traffic volumes by more than 20 percent over what was initially planned;"

Comment: The study, specific to vehicle traffic, does not take pedestrians, cyclists, and wheelchair users into account. The recommendation for a roundabout at Industry Way should be reconsidered as it does not reflect the safety of vulnerable users who will continue to jaywalk at Nieslanik Avenue.

3. **Comments from Our Walk with CDOT and Wheelchair Users:**
   The lack of a legal and signalized crossing on 7/10th of a mile distance between Village Road and Main Street roundabout creates medical safety issues. For one, prolonged sun exposure is dangerous since he cannot sweat. He uses a power wheelchair. Traversing the increased distance runs his battery down, putting him at increased risk of being unable to complete his planned outing. Another uses a manual wheelchair. The extra distance contributes to fatigue, putting him at further risk for Repetitive Strain Injuries. Both engage in very risky "jaywalking" to avoid the dangers of crossing 133 without designated crosswalks.

Weant Boulevard, Lewies Lane and Keator Road



A Few Anecdotes

I was riding my bike and was nearly hit by a speeding car.
Witnessed kids running across 133 from Montessori because it's too far to cross at Snowmass or Sopris to get to 3rd St. Center.
Tons of people cross here on bikes and on foot. No easy crossing and no crosswalk. People are not willing to walk more than 1/3 mile in either direction to get to a crosswalk. School children at Ross Montessori.
Struggle with breaks in traffic to cross 133 from Keator Road to 7th St. It is the quickest and most convenient access to downtown.
It says no crossing but it is too far from the lights so people just cross without crosswalks.

Safety Concern Themes

This area of 133 encompasses pedestrians, of who are students that cycle to and from Ross Montessori School from the Keator Grove neighborhood and neighborhoods on the east side of 133, The Third Street Center, the library, and Main Street. Many students attending the school live on the opposite side of 133. They make frequent trips in both directions and have established a pattern of jaywalking at Lewies Lane and Weant Boulevard and at Keator Road because of the distance to the existing crosswalks.

1. **Inadequate Crossing Points:** There is a significant distance between existing crosswalks, leading to jaywalking as people choose the most direct route, which often does not include a designated crossing.
2. **Speeding:** Excessive vehicle speeds make the crossings more dangerous.
3. **Visibility and Safety at Crossings:** There are reports of close calls, especially involving children and cyclists, with motorists not seeing or yielding to those crossing.
4. **Non-compliance with Traffic Signals:** Even where crosswalk signals exist, drivers are not always complying, further endangering pedestrians.
5. **Perceived Danger for School Children:** The proximity to schools like the Montessori School and the presence of many school children make safe crossings especially crucial.

Prioritized Infrastructure Changes

1. **Install Additional Crosswalks:**

   Add two crosswalks in this area; one at Keator Road where adults (including at least one wheelchair user) and children from the Keator Grove neighborhood are currently jaywalking, and the other at the Ross Montessori School where children are also jaywalking. Both crosswalks would require geometric and crosswalk treatments as previously recommended in the Crossings Concepts portion of the 2022 Comprehensive Plan due the width of the roadway and the tendency of drivers to increase their speed as they exit the town.

   Rationale for Prioritization: These crosswalks would be the highest priority to provide safe crossing points and discourage jaywalking to protect children and other vulnerable users. We realize crosswalks will only be effective if speed is also reduced in this area.
2. **Traffic Speed Reduction:**

   Speed Limit: Decrease the speed limit in the school zone to 20 mph during school hours and increase speed limit signage.

   Rationale for Prioritization: 35 mph is and unconscionable speed in a school zone. Studies are clear that fatalities and serious injury are significantly reduced with a 20 mph speed limit. The school zone extends from Keator Road to slightly south of the Snowmass Drive and River Valley Ranch Road

intersection. There are flashing school zone signs at each end but the distance between them is long. Increasing the signage over this distance will help increase drivers' awareness of the zone over its length.

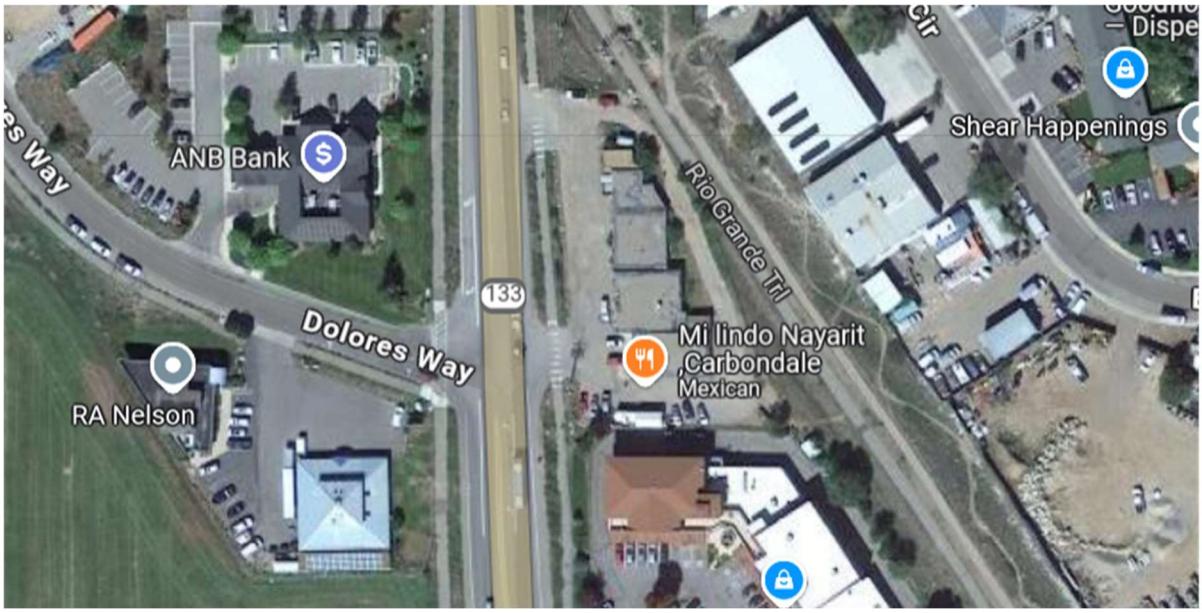
a. **Traffic Calming Measures:** Introduce traffic calming measures such as speed humps, narrowing lanes, or chicanes to reduce vehicle speeds. This should be the second priority as it would have a wide-reaching impact on the safety of all road users.
b. **Enforcement:** Increase enforcement of existing speed limits, particularly in areas with frequent pedestrian activity. This would likely have an immediate impact on safety and could be relatively quick to implement.
   Reason for Prioritization: Slowing down traffic will reduce the likelihood and severity of collisions.
c. **Improved Signage and Visibility:** Improve signage and road markings to increase the visibility of crosswalks. Enhance lighting around crossings to make pedestrians and cyclists more visible to motorists.
   Rationale for Prioritization: Improvements to signage and visibility can be implemented relatively quickly and at a lower cost.
d. **Pedestrian and Cyclist Education:** Implement ongoing educational programs for school children on safe crossing practices, and for drivers on the importance of yielding to pedestrians.
   Rationale for Prioritization: Education and enforcement are ongoing processes that support physical infrastructure changes and promote a culture of safety.
e. **Crosswalk Signals Compliance:** Consider adding automated enforcement such as cameras that can issue citations to ensure that existing crosswalk signals are obeyed.

Relevant Recommendations from Previous Studies

1. **2013 Access Control Plan (numbers in parentheses reference Figure 15 of the ACP):**
   a. close driveway north of Grace Dr (48)
   b. make entrance to Keator Rd right-in, right-out only (49)
   c. close driveway just south of Keater Rd (50) - completed
   d. close 4 driveways (total both sides of 133) (51,52,53,54)
   e. realign Lewies and Weant (completed) to create an intersection with light or roundabout (55,93) [5]
2. **Comp Plan 2022/Crossings Concepts:**
   133 and Weant Blvd/Lewies Lane: Speed reduction during school zone time, pedestrian refuge island, curb extensions, high-visibility crosswalk markings, RRFB (including nighttime lighting, crosswalk warning signs) [18]

3. **Safe Routes to School:**
   traffic calming, speed bumps
4. **2019 Letter to CDOT from Darryl Fuller former BPTC chair:**
   The full letter was sent to Bill Crawford along with a cover letter from Dan Richardson, Mayor.
   "On the subject of safe mobility for young people is perhaps an even greater concern regarding Safe Routes to Schools at 133 and Weant Blvd across from Ross Montessori. To my mind, this is a tragedy waiting to happen and completely irresponsible. Not only do we see students darting across the road at the school (why wouldn't they? Expecting anyone, let alone every elementary age child at the school to walk out of their way to cross at signalized crosswalks at Snowmass Drive or Hendrick Drive is not realistic). Additionally, the school zone speed limit here is 35mph! Thirty-Five mph is the same speed limit at both adjacent segments of 133. Without the addition of a signalized crossing at Weant and 133, and/or a decreased speed limit I fear it is only a matter of time before we have an otherwise avoidable accident." [19]

Dolores Way



A Few Anecdotes

Everyday scary problem with making left turns. There is much traffic - school, Black Diamond moving and commercial trucks. There are middle lane problems. Bike crossing is sketchy, DANGEROUS.

I live off Dolores in Satank. There needs to be a safer crosswalk at the intersection. I have witnessed many close calls with pedestrians.

No break in south- or northbound traffic. Cars turning south from Dolores often speed through intersection to beat next wave of traffic.

Lots of truck and school traffic in and out and across this bad, dangerous intersection.

Safety Concern Themes

1. **Difficulty Making Left Turns:** Numerous responses about the high risk and difficulty of making left turns onto 133, primarily due to continuous traffic flow without sufficient gaps.
2. **Pedestrian Safety:** There are significant concerns about pedestrian safety at the intersection, with reports of close calls and the need for safer crossing options.
3. **Speeding:** The tendency of drivers to speed through the intersection to beat traffic increases the danger for all intersection users, particularly during turning maneuvers.
4. **High Traffic Volume:** The intersection is burdened by a high volume of diverse traffic, including school buses and commercial trucks, complicating navigation and increasing collision risks.

5. **Growth:** The area has grown recently, with the addition of new businesses and a low-income housing development. There is room for added growth that will likely occur. Thus, existing dangers at this intersection can only be expected to become worse.

Prioritized Infrastructure Changes

1. **Installation of Signalized Crosswalk over 133 (south side):** Either a RRFB or PHB with a pedestrian refuge, nighttime lighting, and a highly visible crossing painting pattern such as the ladder style.
   Rationale for Prioritization: To provide a safe crossing for pedestrians, cyclists, and other vulnerable users. Per the Carbondale Crossings Concepts study in the 2022 Comp Plan: "CO 133 at Dolores Way has between 13,000 and 15,000 vehicles per day. This high volume of vehicle traffic, coupled with a wide crossing distance of four lanes and no marked east-west crosswalk, makes this location a dangerous intersection for people crossing the street. Though there is a signalized crossing to the north at Village Road, the public noted that walking to that intersection and back adds more than a quarter mile to the journey and expressed concerns about drivers speeding along Dolores Way. This intersection's proximity to both Carbondale Community School and Colorado Rocky Mountain High School reinforces the need for an enhanced crossing." [3] Additionally, the proximity of this intersection to numerous residential, retail, and eating establishments, and the resulting high use by non-motorized users, justifies the need for an enhanced crossing.

2. **Enhancements for existing Dolores Way Crosswalk:** Signs at the crosswalk and eastbound on Dolores Way in advance of the crosswalk warning of the pedestrian/cyclist crossing.
   Rationale for Prioritization: To clearly delineate crossing areas and improve visibility and safety for pedestrians, cyclists, and other vulnerable users.

3. **Speed Reduction Measures:** Such as speed bumps, rumble strips, or enhanced signage to encourage reduced speeds near the intersection.

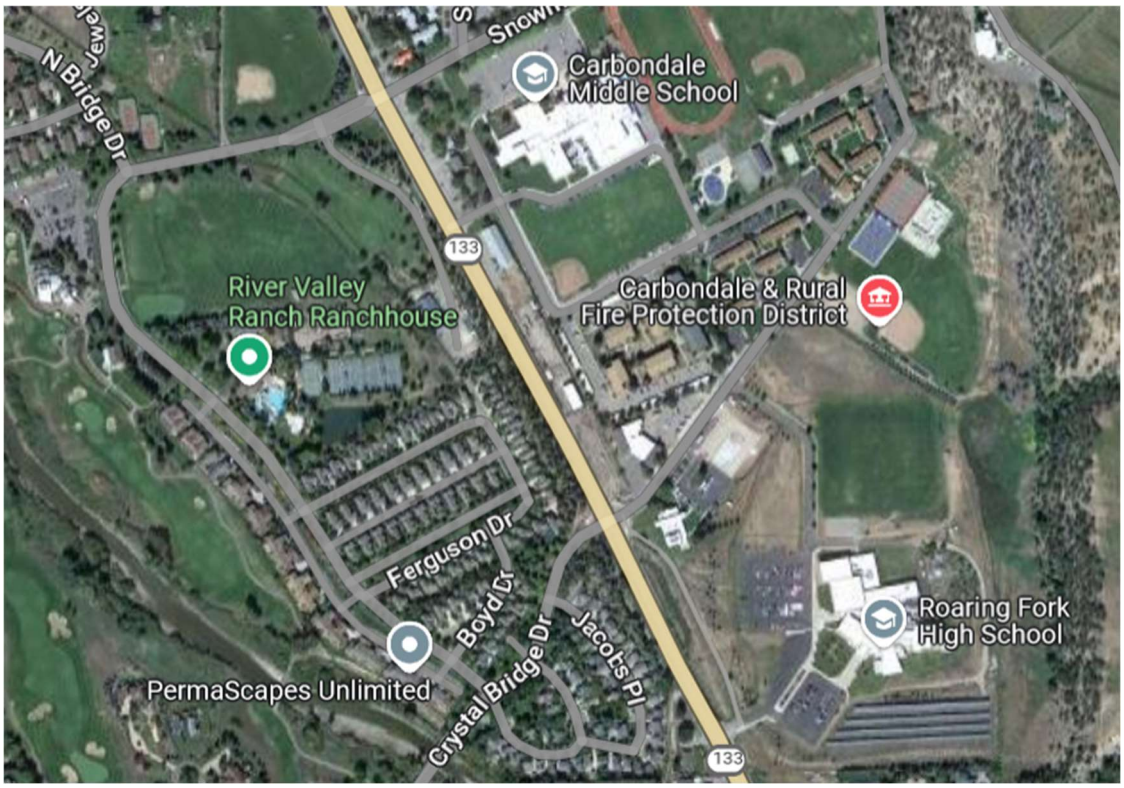
   Rationale for Prioritization: Speed reduction measures coupled with enhanced crosswalks further support the addition of a signalized crosswalk over 133, will create a safer environment for crossing at this busy intersection.

Relevant Recommendations from Previous Studies

1. **2013 Access Control Plan (numbers in parentheses reference Figure 12 of the ACP):**

a. close north driveway into strip building next to Rio Grande Trail and restrict south driveway to right-in, right-out (12,14)
b. Dolores Way to right-in, right-out (13)
c. close driveway south of Basalt Bike and Ski (15) – completed [5]

RVR Area
River Valley Ranch Road/Snowmass Drive
to
Crystal Bridge Drive/Meadowood Drive



A Few Anecdotes

I nearly hit a small child on a bicycle as the light changed. Cyclists and pedestrians should be able to activate a turn or cross light to delay cars.

I have noticed near misses of cars turning too fast to get off 133 and not seeing children crossing.

After waiting for the flashing walk light, a car made a left from the RVR light onto 133 and nearly hit me (cyclist). I had to swerve into a parked car to avoid an accident.

Any time you cross there is rarely any response from Law enforcement, so what is the point. We are on our own.

People turning left at the light often need to remember/get impatient about pedestrians. I regularly have to run or yell for cars to stop and allow me/kids to cross.

Safety Concern Themes

1. **Poor Visibility for Turning Vehicles:** Vehicles turning on to 133 seem to have difficulty seeing pedestrians and cyclists leading to near misses.
2. **Unsafe Crossing for Cyclists and Pedestrians:** Turning issues at traffic lights cause instances of cyclists and pedestrians nearly being hit by cars.

3. **Inadequate Response Time for Pedestrians:** Timing of traffic lights doesn't allow enough time for pedestrians to safely cross; some are forced to run or yell to stop cars.
4. **Unexpected Entry Points:** Children and cyclists entering the road from non-designated areas like dirt patches create unforeseen hazards for drivers.

Prioritized Infrastructure Changes

1. **Speed Reduction Measures:** Decrease the speed limit at the Snowmass Drive and River Valley Ranch intersection to 25 mph combined with a decrease to 20 mph during school hours as part of the school zone designation.
2. **Improved Lighting and Signage:** Enhanced lighting and clearer signage at intersections to increase the visibility of pedestrians and cyclists, especially for vehicles making turns.

   Rationale for Prioritization: Most incidents involve the interaction between pedestrians, cyclists, and moving vehicles. These interventions would directly prevent or safely manage these interactions and should be implemented first.

Relevant Recommendations from Previous Studies

1. **2013 Access Control Plan (numbers in parentheses reference Figures 16 & 17 of the ACP):**[5]
   a. restrict driveway to emergency access only (56) – no signage currently, but roadway is restricted - completed
   b. make driveway right-out only with construction of frontage road (57)
   c. close 6 driveways (58,59,60,61,62,64)
   d. make driveway right-in only (63)
   e. install light (65,66) - completed
   f. close 7 driveways (67,68,69,70,72,74,75)
   g. close public roadway (71)
   h. restrict driveway to right-in, right-out (73)
   i. create new public roadway (94)
   j. install light (76,77) – completed
2. **Safe Routes to School:** provide pedestrian refuge at River Valley Ranch Road/Snowmass Dr. crossing (traffic light installed instead)

Village Road

A Few Anecdotes

I was crossing east to west. I waited for a green light. I looked both ways. A driver in a PU truck on his phone tried to beat a yellow light and speeded on red.

There are people going to/from the Bus Station and people are on bikes crossing for the Rio Grande trail So there is lots of foot/bike traffic. The walk light does not allow enough time for all the traffic.

There is lots of motorized traffic due to the dense residential neighborhood and bus stop. A bus driver driving the circulator barely missed hitting me when he was making left onto 133 and I was already in the crosswalk going west/east with a green light.

The Village Road crossing has too much traffic coming out of the Bus Station. It is unsafe for bikes to cross. I stay away when I am riding with my kids.

Safety Concern Themes

1. **Insufficient Crossing Time:** Pedestrians and cyclists report that the walk light duration needs more time to cross safely, considering the foot and bike traffic volume, especially those coming from or going to the bus station and the Rio Grande trail.
2. **Non-compliant Motor Vehicle Behavior:** There are reports of vehicles, including a pickup truck and a bus, attempting to rush through the intersection at yellow or red lights, failing to yield to pedestrians and cyclists who have the right of way, and not signaling intentions.

3. **High Traffic Volume:** The intersection experiences a high volume of mixed traffic, including motor vehicles, bicycles, pedestrians, and buses, exacerbated by the proximity to a bus station and residential areas.
4. **Safety Concerns:** The current layout and signal timings at the intersection create confusion and unsafe conditions for all users, particularly vulnerable ones like cyclists, pedestrians, and children.

In 2019 Darryl Fuller, the original Chair of the Bicycle Pedestrian Commission and outdoor educator for Rocky Mountain School, wrote a letter to CDOT advising the Traffic Engineer of the following:
"This intersection is deficient for pedestrians and cyclists. In particular, there is significant automobile volume on 133, as well as cars exiting the neighborhood and businesses on Village Road from the east. The intersection is often very congested, more often than not crosswalk markings are worn off, and there are not stop bars on Village Road (discouraging motorists from queuing up in the pedestrian crosswalk. Additionally, the sidewalk/ collection area at the southeast side and northeast side of the intersection are cramped and far too small. Often there is simply not enough room for the number of pedestrians and cyclists queuing to cross 133, thus forcing people to wait on the curb in a vulnerable location. Northbound cars on 133 turnings east onto Village Road have a very narrow turning radius, often rolling tires up onto the curb cut. The crossing time is also short, and since cars coming from Village Road turning southward on 133 do not have a turn signal there are often close calls as cars try to dart ahead of the short green signal interval. Finally, the RFTA buses coming and going from the Park and Ride do not stop for pedestrians queuing at crosswalks. All of this makes for a running the gauntlet feeling to simply getting through and across 133."[19]

Prioritized Infrastructure Changes

1. **Extend Crossing Times & Implement Countdown Timers:** Install a traffic signal to separate vulnerable users and vehicular traffic crossing times (vehicles will be stopped while users cross) and increase the duration of walk signals to allow sufficient time for pedestrians and cyclists to cross safely. Countdown measures should be included to inform users of the time they have to cross, enhancing predictability and safety.

Rationale for Prioritization: These are crucial for immediate safety improvements, providing enough time for all users to cross, while all turning vehicles wait and reducing the risk of accidents due to rushing.

2. **Traffic Calming Measures:** Introduce speed bumps, raised crosswalks, or narrowed lanes near the intersection to slow vehicle traffic.
   Rationale for Prioritization: "The importance of reducing vehicle speeds cannot be overstated in an area where there is potential for conflict between a pedestrian and a motor vehicle. The slower the speed of the motor vehicle, the greater the chances are for survival for the pedestrian. If struck by a motor vehicle travelling at a speed of 20 miles per hour or less, a pedestrian is typically not permanently injured. If struck by a motor vehicle travelling at a speed of 36 miles per hour or more, a pedestrian is usually fatally injured." [20]
   https://highways.dot.gov/safety/speed-management/traffic-calming-eprimer/module-2-traffic-calming-basics

3. **Enhanced Signage and Road Markings:** Improve signage to direct traffic flow and delineate areas for distinct types of users (vehicles, cyclists, pedestrians).
   Rationale for Prioritization: Clear guidance can significantly reduce confusion and improve the orderly movement of diverse traffic types.

4. **Dedicated Right Turn Lane Signals & Advanced Stop Lines for Cyclists:** Implement separate signal phases for the right turn lane to prevent conflicts with pedestrians and cyclists crossing the road. Create designated areas at the front of traffic lines for cyclists to wait, increasing their visibility and safety.

Rationale for Prioritization: These changes address specific conflict points and improve visibility and safety for cyclists and pedestrians.

5. **Install a four-way decorative crosswalk with bike boxes:** This intersection has side paths in three directions and intersects with the Rio Grande Trail and the RFTA. bus depot. The traffic light is on the South-East side, but no sidewalk leads to the light forcing pedestrians to walk on the dirt or in the street. A new pathway runs on the west side from the intersection, going North towards 133. A 4-way crosswalk and extended time for vulnerable users will increase safety.

Rationale for Prioritization: Decorative crosswalks use distinctive patterns and pavement treatments to make the crosswalk more visible. They help define the pedestrian space and discourage vehicles from encroaching upon the pedestrian crossing area.

Relevant Recommendations from Previous Studies

1. **Access Control Plan**:
   Light or roundabout (light installed)
2. **Infrastructure Maintenance and Improvements**
   In 2019 Darryl Fuller, the original Chair of the Bicycle Pedestrian Commission and outdoor educator for Rocky Mountain School, wrote a letter to CDOT advising the Traffic Engineer of the following:

"This intersection is deficient for pedestrians and cyclists. In particular, there is significant automobile volume on 133, as well as cars exiting the neighborhood and businesses on Village Road from the east. The intersection is often very congested, more often than not crosswalk markings are worn off, and there are not stop bars on Village Road (discouraging motorists from queuing up in the pedestrian crosswalk.

Additionally, the sidewalk/ collection area at the southeast side and northeast side of the intersection are cramped and far too small. Often there is simply not enough room for the number of pedestrians and cyclists queuing to cross 133, thus forcing people to wait on the curb in a vulnerable location. Northbound cars on 133 turnings east onto Village Road have a very narrow turning radius, often rolling tires up onto the curb cut. The crossing time is also short, and since cars coming from Village Road turning southward on 133 do not have a turn signal there are often close calls as cars try to dart ahead of the short green signal interval. Finally, the RFTA buses coming and going from the Park and Ride do not stop for pedestrians queuing at crosswalks. All of this makes for a running the gauntlet feeling to simply getting through and across 133."[19]

NEWS FLASH: On April 29, 2024, we received a follow-up email from Mr. Crawford, CDOT traffic engineer. He wrote they will be adding white thermoplastic crosswalk bars at Village Road that should be complete about mid-June.
He also wrote they will be installing In-Street-Pedestrian signs to place at the existing crosswalk at Village Road.

He also wrote "Kevin Schorzman indicated that the town will be installing a pedestrian refuge island at the Cowen Crossing this year, so we will not do anything at this crossing."

WALKABOUT WITH WHEELERS AND CDOT

For someone with a disability, being able to live as independently as possible is a goal and a tremendous source of pride when achieved. However, it is often not the person's actual disability that sabotages their independence, it is the physical barriers around the community that limit them. Herein lies a paradox. People with disabilities are not often seen in the community so decision-makers do not "see" the need to budget for their accessibility. However, the reason they are not out and about is because mobility barriers are too frustrating or downright dangerous.

Whether due to temporary or permanent disabilities, be they congenital, or traumatic, or medical or from normal aging, Carbondale has many residents who are ambulatory, but not sure-footed. Others with more complicated disabilities may depend on wheelchairs for mobility. Some of these individuals were attracted to visit or even live in the area because of the acclaimed valley programs, Challenge Aspen, and Bridging Bionics. However, outside their participation in these programs, there are precious few opportunities for accessible community involvement, and a potentially deadly barrier in Carbondale is the lack of safe crosswalks on 133.

AFC interviewed two "wheeler" residents (A and B) to learn about the mobility challenges and concerns they, and others they know, experience navigating around Carbondale. Both gentlemen have gone through formidable rehabilitation to achieve their present level of independence and confidence. Nonetheless, they are still experiencing environmental barriers that limit their independence and 133 they told us, is one of the worst.

A is a father with quadriplegia who uses a power wheelchair for mobility and has a service dog who accompanies him everywhere. B is an accountant with paraplegia who pushes a manual wheelchair for mobility. These two men estimate that there are at least 10 other Carbondale residents who depend on wheelchairs for mobility either part time or full time.

AFC is working with resident users of wheelchairs (A and B) to locate other "Wheelers" to listen to and amplify their stories.

They highlighted the following mobility barriers and safety risks:

City Market: The distance between legal crosswalks at the Village Road intersection and the roundabout creates unnecessary burdens. The need to go approximately ½ mile out of their way to cross 133 and then double back to reach a destination creates the following health problems.

A: The distance prolongs his sun exposure which is potentially dangerous for him because he is unable to sweat. It also increases the risk of running his wheelchair battery down prematurely and being stranded.

B: Because he uses a manual wheelchair, the extra distance added to his intended excursion puts him at further risk for Repetitive Strain Injuries (RSI). Manual wheelchair users are already at risk of developing pain and degenerative changes from RSI in their shoulders and hands. Trying to manage unnecessary distances makes staying healthy even more challenging.

To avoid these health risks, both A and B have been engaging in dangerous jaywalking to cross 133 at the Coop, Dollar Store and Nieslanik Avenue.

Lewies Lane and Weant Boulevard intersection and Keator Road: The same issues exist for these areas, and they admit jaywalking in both locations.

Hendrick Drive and Sopris Avenue: Both A and B have experienced close calls while trying to cross. In their observation, southbound cars increase their speed as the roadway widens and the flashing beacons (RRFBs), which are only in drivers' peripheral vision, are easily overlooked.

As this report was being finalized, an additional young man who depends on a power wheelchair for mobility was briefly interviewed. This gentleman lives in Glenwood Springs and comes to Carbondale about twice a week for personal business. He was emphatic about his difficulties crossing 133. At signaled crosswalks, he explained that he does not have enough time to make it across before the flashing beacons stop and asked that a pedestrian island without a curb be installed at the Hendrick crossing.

Roundabout: One of the graded curbs presents a particular challenge for A. It is too steep for his wheelchair so he must almost come to a stop to negotiate the curb without jostling himself or damaging his chair. This puts him in harm's way in a crosswalk where drivers are often preoccupied with negotiating two lanes of traffic around the circle. A secondary challenge is that the pedestrian alert push buttons are not within his reach. (Mr. Crawford thought that he would be able to facilitate this latter hazard quickly. He comments that he has no control over Town's electrician.)

Understanding that infrastructure change takes years, A and B's requested temporary crosswalks at City Market and at Lewies Lane/Weant Boulevard. Mr. Crawford indicated that the speed limit of 35 mph is too high to permit a safe temporary crosswalk in either location but said that he would meet with other CDOT designers to do some creative problem solving this summer. He added that this issue would be a high priority.

At Hendrick Drive and Sopris Avenue, A and B requested a pedestrian island without a curb be placed in the middle of the crossing with additional flashing lights within the central field of vision of approaching drivers. They also requested painted, high-visibility reflective borders along the red asphalt crossing borders to give more warning to approaching drivers. Mr. Crawford noted this request and expressed optimism regarding a prompt solution. Per his follow-up email, white thermoplastic crosswalk bars will be installed by mid-June. The pedestrian island and the rapid rectangular flashing beacons (RRFBs) will be more involved and take longer. He is optimistic, but the details will need to be worked out.

A final issue expressed by residents who use wheelchairs was snow clearance. Snowplows often pile snow in spots that block curb cuts, preventing anyone who depends on those cuts from using them. They requested that snowplow drivers be instructed to choose alternative areas to pile snow. Mr. Crawford stated that both CDOT and the Town participate in plowing and that educating drivers would need to be a joint effort.

In reviewing previous government contracted reports and studies about safety on 133, it was noted that NONE made any reference to safe accessibility for people with disabilities, surely the most vulnerable users of our roadways. During Mr. Crawford's visit, he was made aware of the 2023 CDOT Vulnerable Road Users (VRU) Safety Assessment, with which he was still unfamiliar. This document requires the state to identify and proactively address areas where vulnerable road users are at risk of injury. Notably, the document's Executive Summary states, "People should be able to use the roads without fear of being injured". [4]

CONCLUSIONS AND SUMMARY

This is a study of opinions from a volunteer sampling of the Carbondale community. The "data" represents perceptions of how safe community members feel when they are travelling 133 as pedestrians, cyclists or motorists. Perceptions have been represented as arithmetic totals. Since not everyone responded to each opportunity to provide input (survey, post-its, and mapped comment cards; raw data linked in Appendix A-D), we believe we heard from 500 or so individuals.* With Carbondale's estimated population of 6800, and most, if not all, of the contributors living in Carbondale, we believe we reached more than 5% of our population. This suggests that more than 95% of the overall population feels similarly. (survey monkey calculator) [21]

People feel unsafe on 133. The compelling "Dangerous by Design" review of public roadways shows that to date, development in Carbondale has put motorized vehicles first without regard for impacts on other users. Nationwide and in Carbondale, people would prefer to be able to safely walk or cycle more comfortably along public roads. In Carbondale, the inability to do so is most likely related to significant growth over recent years in both commercial and residential development along 133 without including the kind of roadway infrastructure that would accommodate that growth.

Forty eight percent of our respondents reported experiencing or witnessing near-accidents that could easily have resulted in property damage and/or personal injury. Even accounting for bias, potential duplicate reports, and no real definition of "near accident," that seems a rather frightening number. Fully 16% reported being in or witnessing actual accidents. That speaks for itself. Commercial and residential growth, and the inevitable (and fully predicted) increase in traffic without appropriate infrastructure and regulatory improvements has created a very unsafe situation.

In 2023, CDOT finally developed a written policy of being proactive rather than reactive about accident prevention. It was long overdue. Now that we finally have it, let's put it into action as quickly and fully as possible. On second thought, let's put it into action much faster and more completely than even we believe we possibly can. It's a matter of life and death.

Many of the recommendations in this report will be costly to implement. Others can be implemented more quickly and at a lower cost. Some will be done this summer. Speed reduction along the entire corridor is an example of an easy fix that could be made to happen now. This study strongly identifies the community is in favor of Carbondale's local government doing everything they can to facilitate the progress on these issues that has been talked about since 2013.

REFERENCES

1. Smart Growth America; https://smartgrowth.org/dangerous-by-design-2019-a-report-from-smart-growth-america/ (use of "Dangerous by Design")
2. Carbondale Comprehensive Plan 2013 https://cms7files.revize.com/carbondaleco/Carbondale%20Comprehensive%20Plan%20-%20Final.pdf

3. Carbondale Comprehensive Plan 2022 https://carbondalegov.org/departments/planning/comprehensive_plan.php

4. 2023 CDOT Vulnerable Road Users (VRU) Safety Assessment. https://www.codot.gov/safety/traffic-safety/assets/stsp/2023-colorado-vru-safety-assessment-full-report-with-appendices.pdf

5. https://www.codot.gov/projects/archived-project-sites/sh133carbondale/sh-133-final-recommended-acp/indexes/appendix-a/sh-133-acp-table.pdf (133 2013 Assess Control Plan)
6. Carbondale Marketplace Traffic Impact Study (included in Planning and Zoning Commission meeting 5/28/2020, pages 156-279 https://cms7files.revize.com/carbondaleco/P&Z%20Packet%205-28-2020.pdf
7. https://fdocuments.net/document/roaring-fork-valley-roaring-fork-valley-safe-routes-to-school-program-school-and.html?page=1

8. https://nacto.org/wp-content/uploads/2020/07/NACTO_CityLimits_Spreads.pdf
9. https://www.strongtowns.org/journal/2020/7/24/understanding-the-85th-percentile-speed
10. https://ssti.us/2023/09/25/colorado-takes-new-approach-to-setting-speed-limits/
11. https://leg.colorado.gov/content/state-speed-limits
12. https://law.justia.com/codes/colorado/2016/title-42/general-and-administrative/article-1/part-1/section-42-1-102/
13. https://keep.lib.asu.edu/items/154324/view
14. https://www.codot.gov/business/designsupport/bulletins_manuals/cdot-roadway-design-guide-2023 CDOT2023 Roadway Design Guide, Chapter 9, Roundabouts, pg 20
15. https://publichealth.jhu.edu/sites/default/files/2023-03/recommendations-of-the-safe-system-consortium.pdf
16. https://safety.fhwa.dot.gov/provencountermeasures/appropriate-speed-limits.cfm
17. https://journalistsresource.org/politics-and-government/pedestrian-safety-crosswalks-research/

18. https://visionzeronetwork.org/national-recommendations-addressing-safety-equity-with-the-safe-system-approach
19. 2019 Letter to CDOT from Darryl Fuller former BPTC chair, in Appendix D
20. https://highways.dot.gov/safety/speed-management/traffic-calming-eprimer/module-2-traffic-calming-basics

21. https://www.surveymonkey.com/mp/margin-of-error-calculator/

Appendix A online only
https://www.dropbox.com/home/Appendix%20A%20-%20Post-It%20Notes%20Comments

Appendix B online only
https://www.dropbox.com/home/Appendix%20B%20-%20Survey

Appendix C online only
https://www.dropbox.com/home/Appendix%20C%20-%20Comment%20Cards%20from%20Map

Appendix D online only
https://www.dropbox.com/home/Appendix%20D%20-%20Previous%20Reports%20and%20Surveys