Safe Streets Boulder

Striving to Make Boulder Streets Even Safer

A study of motor vehicle collisions involving bicyclists and pedestrians

February 2012

CITY OF BOULDER

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Executive Summary

This report provides an analysis of the 681 motor vehicle collisions involving a bicyclist or pedestrian which occurred in the City of Boulder from January 2008 through April 2011. It identifies the most common types of collisions, discusses behaviors that caused them, and identifies locations where collisions occur most frequently.

"GO Boulder" is intended to reflect the Great Options and travel choices provided in the City of Boulder. The community has a strong policy commitment to increasing bicycling and walking, and it is working. People walk and bike in Boulder at a rates far exceeding national averages (20 times the national average for biking and three times the national average for walking) and the city has goals to increase this mode share further. Hence, understanding and enhancing the safety of these modes is an essential element of the city's work.

Over the past year, the city built an extensive database to allow in-depth analysis into the collisions. This report provides a summary of those findings and outlines the interventions, underway and planned, to reduce the incidence of collisions. These include engineering changes at high-collision locations, enforcement efforts that target dangerous behaviors, education efforts, and ongoing evaluation. The city, as a standard practice, regularly reviews collision data and addresses problematic locations and behaviors as part of its on-going efforts to increase the safety of all modes.

The data set is comprised of the 516 collisions involving a bicyclist and a motor vehicle, and the 165 collisions involving a pedestrian and a motor vehicle which occurred over a 40 month period, from January 2008 through April 2011. Unless otherwise noted, all analysis is based on this data set.

Key findings include:

- Of over 8,500 motor vehicle collisions that occurred in Boulder over the 40-month period, 1.8% involved a pedestrian (151 collisions), 6% involved a bicyclist (516 collisions) and 0.2% involved a skateboarder (14 collisions).
- Both pedestrians and bicyclists are involved in collisions less often than would be expected, based on the high number of pedestrian and bicycle trips that occur in Boulder. This suggests that Boulder's system is relatively safe for bicycling and walking overall.
- Crosswalks are the most common locations for collisions involving bicyclists or pedestrians and motor vehicles. Crosswalks at intersections are the most common collision location for both bike/vehicle collisions (39%) and pedestrian/vehicle collisions (36%). Only a small percentage (6%) of all collisions involving a bicyclist or pedestrian and a motor vehicle occur at flashing crosswalks.
- In collisions involving pedestrians, drivers were cited three times more often than pedestrians. In collisions involving bicyclists, drivers were cited 1.8 times more often than bicyclists. In about 30% of all collisions involving a bicyclist or pedestrian, no one was cited.
- There is a spike in bicycle collisions in August and September and a spike in pedestrian collisions in January, February and March with a smaller peak in September.
- Pedestrian collisions occur most often in the afternoon, between 2 and 6 p.m. Bicycle collisions also occur more often in the afternoon, but are more evenly distributed across the day between 7 a.m. and 7 p.m.
- In general, the ages of people involved (as drivers, bicyclists or pedestrians) are consistent with the ages of Boulder's population, except that young bicyclists (20 to 29) are slightly over represented and young drivers (16 to 24) are slightly under represented in those collisions. Persons in their twenties comprise a sizable share of the City of Boulder's population and collisions involve this age demographic most frequently as bicyclists, pedestrians and drivers.

Background

A primary city transportation goal is to promote walking and cycling by providing safe and efficient facilities like sidewalks, paths, and crossing treatments such as marked and signed crosswalks, concrete median refuges, actuated flashing signs, traffic signals and grade-separated crossings. The City of Boulder Transportation Division monitors the transportation system for safety concerns and makes changes to facilities as needed, striving for continuous improvement in safety and efficiency, for all modes of travel. This data often draws from Colorado Traffic Accident Reports completed by the Boulder Police Department or community members following a collision involving a bicyclist or pedestrian. Working collaboratively with the Boulder Police Department and GO Boulder program, actions to address safety concerns also may include heightened enforcement and public education and outreach campaigns to raise awareness of common types of collisions as well as rights and responsibilities of the various roadway users sharing the transportation system.

This Boulder Safe Streets Report updates and expands previous collision analyses and efforts to improve the safety of bicyclists and pedestrians. A follow-up study similar in scope will be conducted in three to five years to evaluate the success of countermeasure actions recommended for implementation based on the findings presented in this report.

In April 2010, The Transportation Division presented an information item to City Council on Pedestrian Actuated Flashing Sign Crossing Treatments and the City of Boulder's Pedestrian Crossing Treatment Installation Guidelines.

In July 2010, City Council convened a study session on crosswalk safety to further discuss an analysis of collision statistics, and work in progress in the realms of engineering, enforcement and outreach.

Methodology

A research team led by the Transportation Division in the City of Boulder Public Works Department, with support from the Information Technology and Information Resources teams, partnered to develop a new database that allows detailed analysis of motor vehicle collisions involving a pedestrian or bicyclist. The initial information comes from State of Colorado Traffic Accident Report forms completed by the City of Boulder's Police Department accident investigation team. The form captures demographic and vehicle information for those involved in the collision, as well as a collision description, citations issued and witness statements. The research team developed a tool to import the data from the Accident Report forms into a GIS-based spatial and relational database. Maps showing high-collision locations can be generated from this database.

	2008	2009	2010	2011*	TOTAL
Motor vechicle - bike	166	148	173	29	516
Motor vechicle - pedestrian	41	47	43	22	151
Motor vechicle - skateboard	9	2	0	0	14
Total with motor vehicles	**216**	**197**	**216**	**51**	**681**
Bike - pedestrian	1	4	2	0	7
Bike only	1	11	11	1	24
Bike - bike	0	6	5	1	12
Skateboard only	0	2	0	0	2
Train - pedestrian	1	0	0	0	1
Total w/o motor vehicles	**3**	**23**	**18**	**2**	**46**

*Jan. - Apr.

Figure 1. Pedestrian and bicycle collision totals by year
From January 2008 through April 2011, a total of 8,592 collisions were investigated by the Boulder Police Department. Of these, 727 involved a bicyclist, pedestrian or skateboarder. The 46 collisions that did not involve a motor vehicle, such as bike-bike collisions, were removed from the analysis, as they were not the focus of this analysis. This leaves 8,547 collisions with 681 involving a motor vehicle and a bicyclist, pedestrian or skateboarder. For the purpose of this report, the 14 motor vehicle–skateboarder collisions were included in the pedestrian totals. Hence, the findings in this report are based on 516 bike-auto collisions and 165 pedestrian-auto collisions that occurred between January 2008 and the end of April 2011. All analysis in this report is based on this data set unless otherwise noted.

In order to perform more detailed analysis, the research team also developed a spreadsheet using a software system called SPSS which allows detailed cross-tabulations and analysis. The SPSS spreadsheet was populated by the collision information from the GIS database, and augmented by the fields identified by the Pedestrian and Bicycle Crash Analysis Tool (PBCAT). PBCAT is software developed by the Federal Highway Administration to identify details associated with collisions between motor vehicles and pedestrians or bicyclists. PBCAT uses pre-collision actions of the persons involved in a collision to understand more about the types of collisions occurring and identifies potential countermeasures to address them. The information in the PBCAT fields was filled in by the research team based on review of the narrative of each individual accident report.

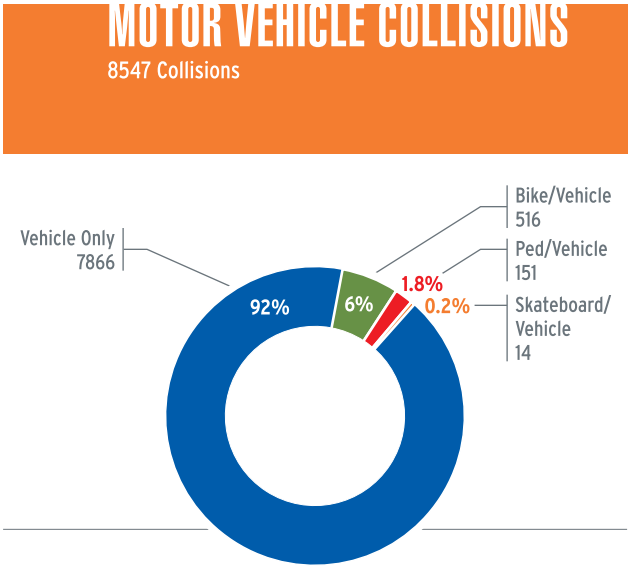


Figure 2. Motor vehicle collisions
Only 8% of motor vehicle collisions in Boulder during the study period involved a bicyclist, pedestrian or skateboarder.

Is walking and biking safe in Boulder?

By several measures, pedestrians and bicyclists are not involved in collisions with motor vehicles as often as might be expected based on how often people walk and bike. They are under-represented in collisions based on the percentage of miles traveled in the community by these modes, and the percentage of trips made by foot and bike, as identified by two different studies: a three year average (2008-2010) of work trip mode share from the American Community Survey and the 2009 Travel Diary survey conducted by the City of Boulder. In all of these measures, collisions involving bicyclists and pedestrians are lower than might be expected.

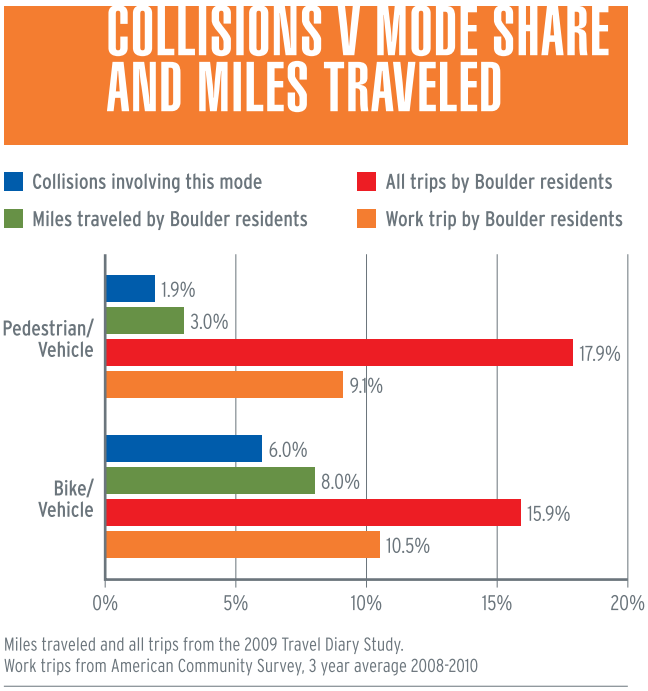


Figure 3. Collisions v mode share and miles traveled

Where are collisions happening?

Crosswalks are the most common location for the collisions involving bicyclists (56%) and pedestrians (44%) analyzed in this report. This finding makes sense, as crosswalks are points where the sidewalk and multi-use pathway systems interact with the street system. Crosswalks at intersections are the most common collision location for both bikes (39%) and pedestrians (36%). Only a small percentage (about 6%) occur at flashing crosswalks. Crosswalks at driveways are the location of 10% of bike collisions but only 2% of pedestrian collisions, potentially due to the speed of bicyclists.

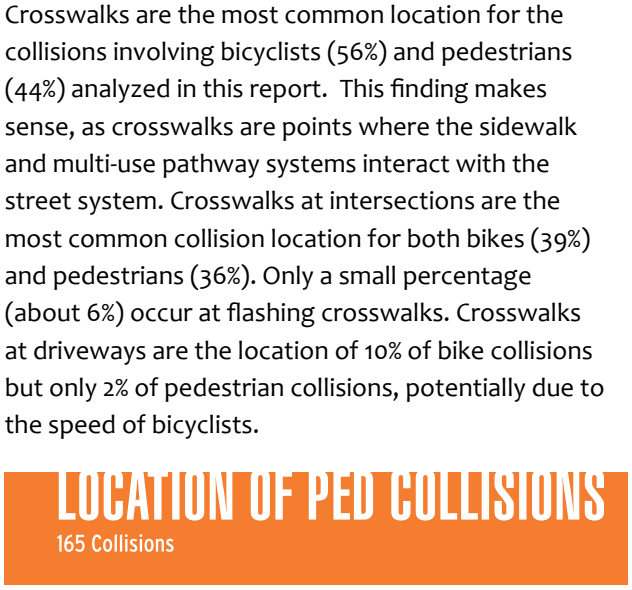


Figure 4. Location of collisions involving pedestrians

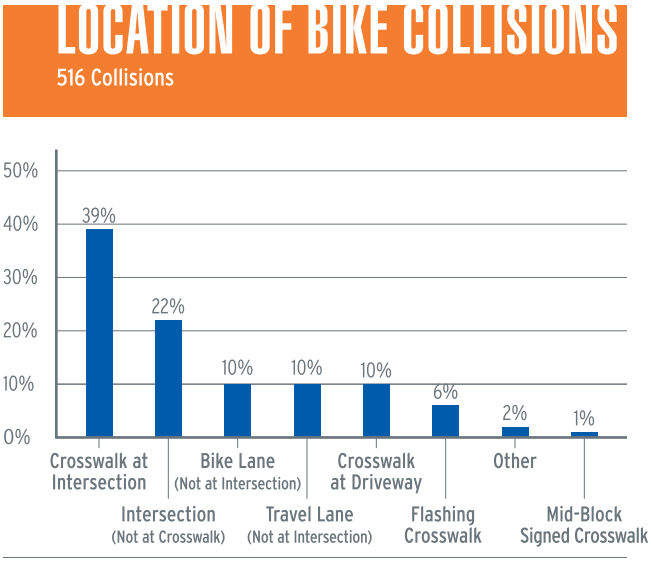


Figure 5. Location of collisions involving bicyclists

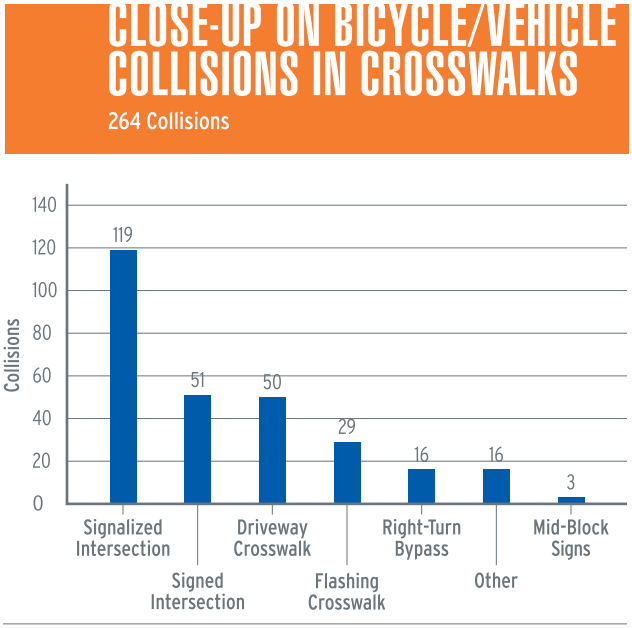


Figure 6. Breakdown of bike collisions in crosswalks
A more detailed analysis of bike collisions occurring in a crosswalk examines a variety of crosswalk locations. It shows that crosswalks at signalized intersections are the most common place for crosswalk-related collisions. It also shows that raised right-turn bypass islands, which have been installed at a number of intersections where a multi-use path parallels an arterial, are not a high-collision location

Who is at fault?

Drivers were more likely to be cited than bicyclists or pedestrians in the collisions that were analyzed. In collisions involving pedestrians, drivers were cited three times more often than pedestrians. In collisions involving bicyclists, drivers were cited 1.8 times more often than bicyclists.

In about 30% of all collisions, no one was cited. This is due to a variety of factors. In some instances, officers find it difficult to ascertain fault with enough certainty to write tickets. Sometimes vehicles and persons involved were moved, or statements from witnesses and persons involved were not consistent. In some instances, officers may refrain from citing pedestrians and bicyclists who have been injured. Some of these collisions involved hit and run incidents or cold cases where the bicyclist or pedestrian reported the collision later.

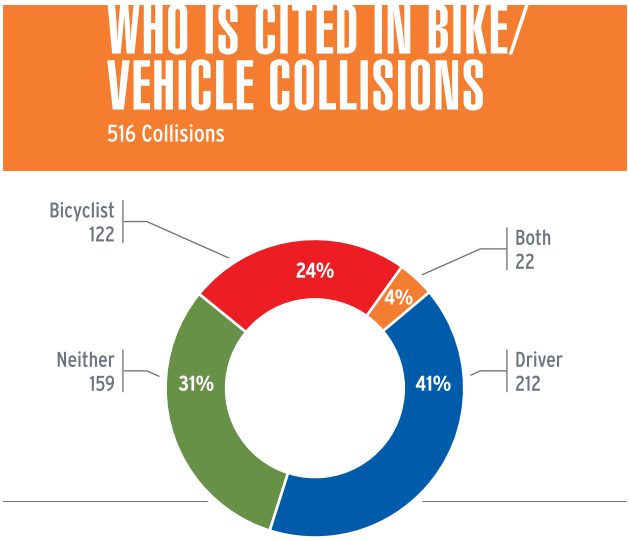


Figure 8. Citations issued in collisions with bicyclists

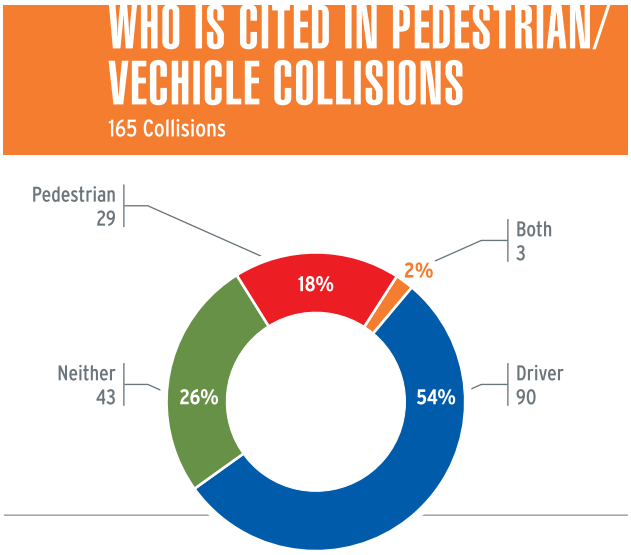
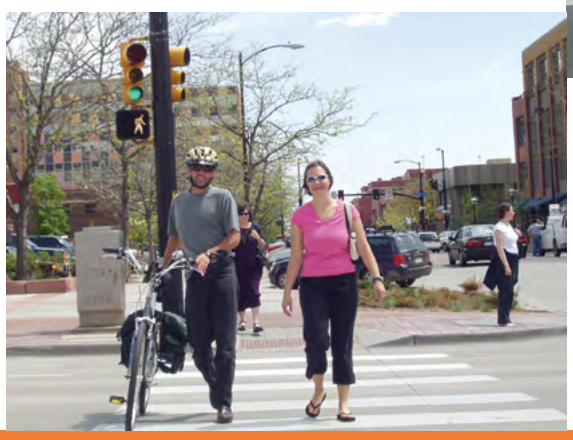


Figure 7. Citations issued in collisions with pedestrians



Who is involved?

Demographic information such as city of residence, gender and age of persons involved in collisions can provide useful information for improving safety and reducing collisions by developing messages geared toward specific target populations. It should be noted that while this information is almost always provided for cyclists and pedestrians on accident reports (less than 3% incomplete), demographic data for the motor vehicle driver is unknown for 8% of collisions involving a cyclist and 21% of collisions involving a pedestrian. This is attributed to hit and run collisions or cold reports where the cyclist or pedestrian reported a collision later. Key highlights are described in greater detail in this section.

Residence

- Boulder residents comprise the majority for all involved in the collisions – with a City of Boulder address listed for 53% of motor vehicle operators, 66% of pedestrians and 84% of cyclists.
- About 84% of all motor vehicle operators and virtually all cyclists and pedestrians are from Colorado.

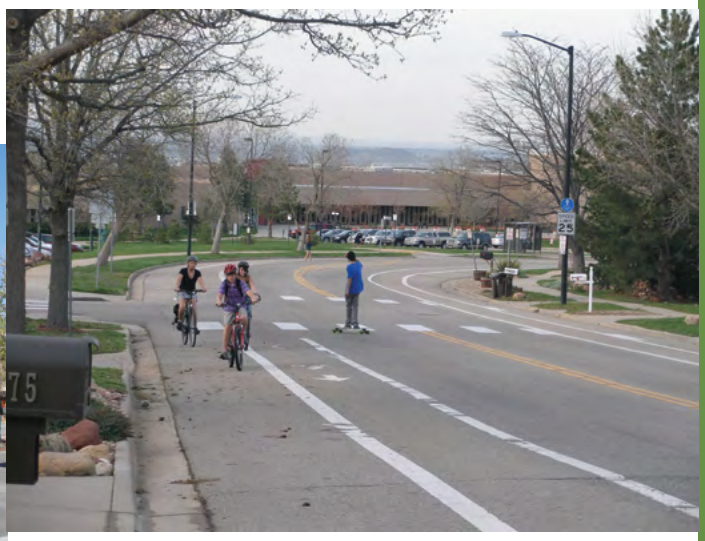
Gender

There were slightly more male than female pedestrians involved in collisions, with the exception of pedestrians aged 10 to 19 where males represented twice that of females in the same age category.

- Two-thirds of all the cyclists involved are male.
- Of accident reports with known demographics, 58% of all motor vehicle drivers are males and 42% are females.

Age

The research finds that the ages of people involved in collisions (as drivers, bicyclists and pedestrians) are generally consistent with the ages of Boulder's population. In the following charts, ages of people involved in the collisions are compared to the age distribution of Boulder residents. People who are 20 to 24 make up a significant portion of Boulder's population and are the most likely to be involved in collisions as bicyclists, pedestrians and drivers. However, these age groups are not disproportionately involved in collisions, except that young bicyclists (20 to 29) are slightly over-represented in collisions, and young drivers (16 to 24) are under- represented in collisions, perhaps due to lower rates of car ownership in these age groups.



PEDESTRIAN COLLISIONS V POPULATION

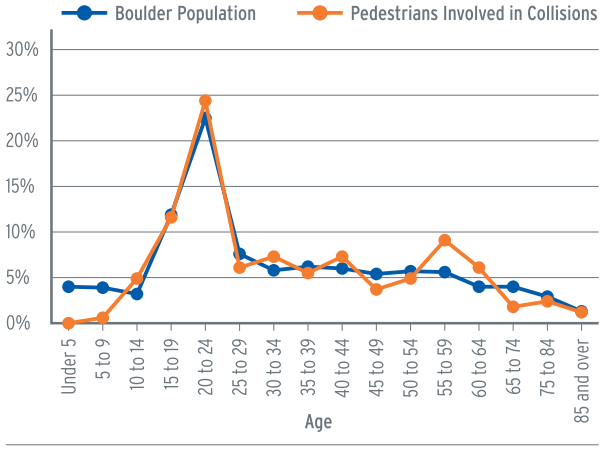


Figure 9. Ages of pedestrians involved in collisions compared to ages of Boulder population

DRIVERS V POPULATION

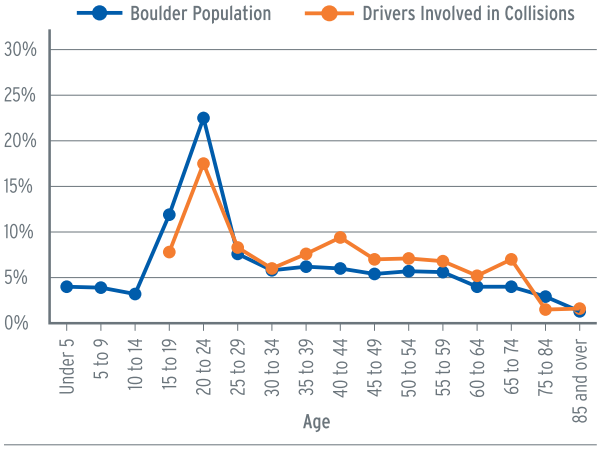


Figure 11. Ages of drivers involved in bicycle and pedestrian collisions compared to ages of Boulder population

BIKE COLLISIONS V POPULATION

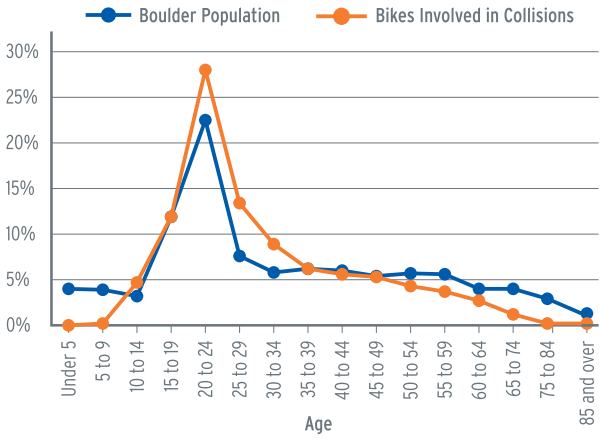


Figure 10. Ages of bicyclists involved in collisions compared to ages of Boulder population

TIME OF DAY

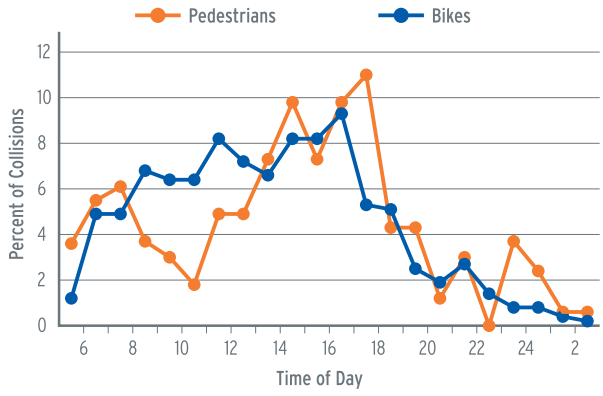


Figure 12. Time of day of collisions
The peak time for collisions is in the late afternoon and early evening hours.

TIME OF YEAR

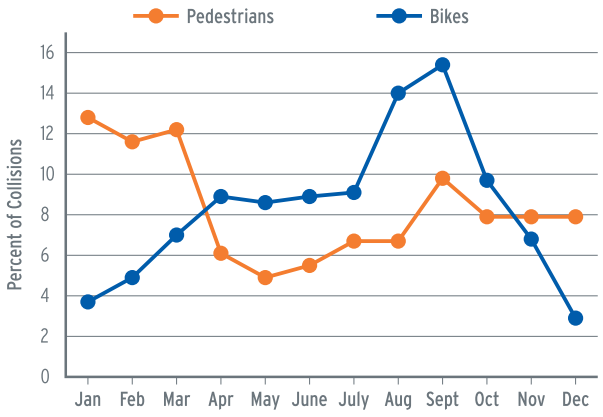
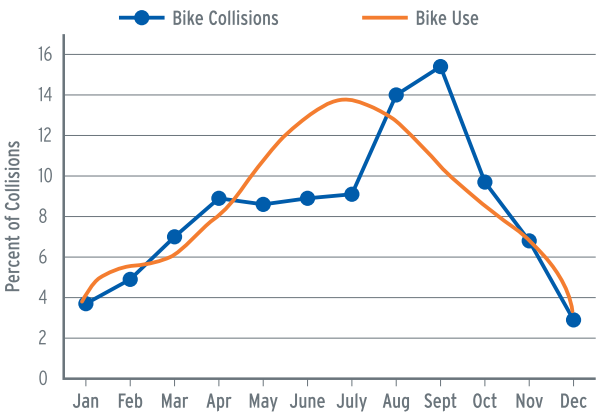


Figure 13: Time of year of collisions
Pedestrian collisions are most common in January, February and March, perhaps coinciding with months when bicycle use is lower and more people walk and ride the bus. Collisions involving bicyclists increase in warmer months as ridership increases. Bicycle collisions occur most often in August and September, perhaps coinciding with the start of school.

TIME OF YEAR: BIKE COLLISIONS & USE



Bike count data from 2008 counts at in-path sensor at Boulder Creek and Skunk Creek junction

Figure 14: Bike collisions by month compared to bicycle use
This chart overlays bicycle collisions with daily bicycle use at one count station on the Boulder Creek Path. This chart shows that bicycle collisions in May, June and July are lower than would be anticipated based on use, perhaps because bicyclists are "expected users" on the system. Various studies have suggested that as bicycle use increases, collisions do not increase proportionally because drivers come to expect to be sharing the system with bicyclists and are more aware.

Most Common Collisions

The Pedestrian and Bicycle Crash Analysis Tool (PBCAT) is an analysis methodology that sorts collisions between motor vehicles and pedestrians or bicyclists into common crash types. A lengthy list of crash types describe, in significant detail, the behaviors by motorists, bicyclists or pedestrians that contributed to the collision. The most common crash types are detailed below, with turning vehicles being the most common behavior involved. These crash types do not always assign fault, but rather seek to increase the understanding of the behaviors that lead to collisions, which then informs education and enforcement efforts. The percentages are based on all collisions involving those modes.

The most common crash types for pedestrian-motorist collisions:

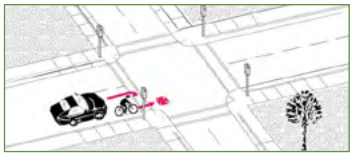
1. Motorist left turn – parallel pedestrian travel: 18.9%
2. Pedestrian dash out (jaywalking or against

the light): 14%

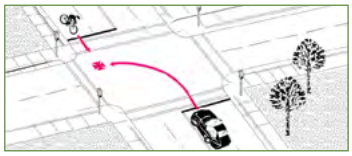
3. Motorist failed to yield: 11.6%
4. Parking lots (often backing vehicles): 10.4%
5. Unusual circumstances: 7.9%
6. Motorist right turn – parallel pedestrian travel: 6.1%

The most common crash types for bicycle-motorist collisions:

1. Motorist right turn – bicycle travelling in the same direction: 13.6%



2. Motorist left turn – bicycle travelling in the opposite direction: 13.4%

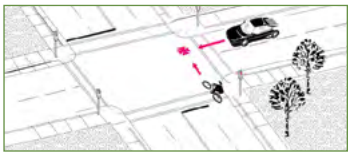


3. Motorist drive out – sign-controlled intersection: 10.5%

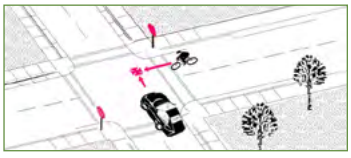
4. Motorist drive out – right turn on red: 9.5%
5. Motorist drive out at driveway or alley: 9.2%

The most common bicycle-specific behaviors that contributed to collisions:

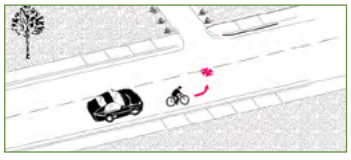
1. Bicyclist ride through – signalized intersection: 2.3%



2. Bicyclist ride out – sign-controlled intersection: 1.9%



3. Bicyclist left turn – same direction: 1.6%



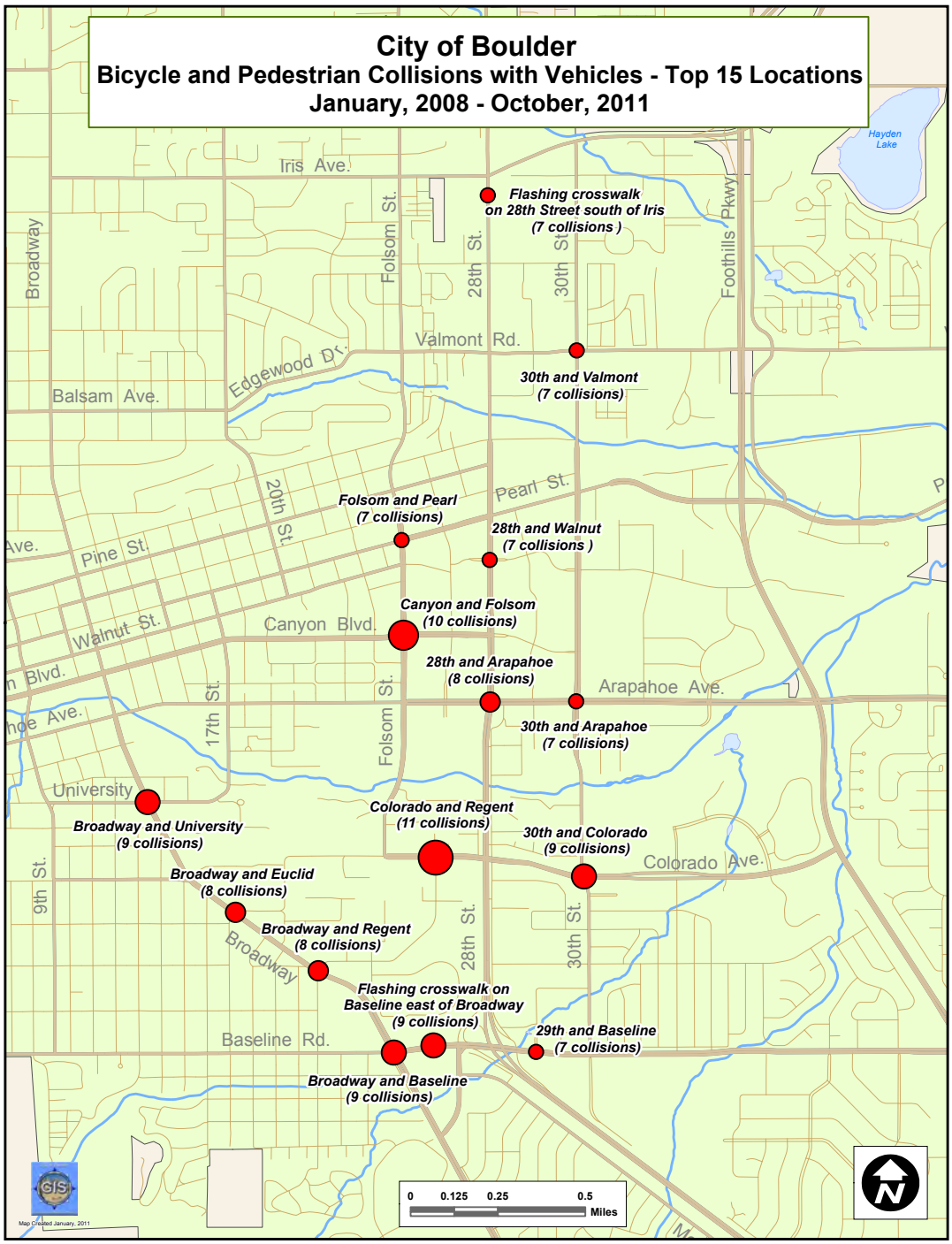


Figure 15: Most common locations for collisions

Signalized intersections were the most common location for collisions. As a standard practice, the Transportation Division examines the collision trends at high collision locations to identify possible changes to the geometry or operations of the intersections. Countermeasures have been implemented at Baseline east of Broadway (a pedestrian signal has replaced the flashing crosswalk and an underpass is planned) and countermeasures have been implemented or are being considered for all of the other locations as well.

Countermeasures: A three part strategy

The city employs a variety of strategies and tools to reduce the number of collisions. The tools of engineering, education and enforcement serve as a three-part strategy to address problem areas and encourage safe behaviors.

Engineering

Engineering refers to the physical infrastructure of the transportation system including crosswalk and intersection design, traffic control such as signals, signs and markings, and other improvements. The Transportation Division monitors the system on an ongoing basis for safety concerns and makes changes to facilities as needed, striving for continuous improvement in safety and efficiency for all modes of travel.

The Transportation Division routinely looks at intersections with high numbers of collisions or high profile collisions to understand the conflicts and trends as well as to identify possible mitigation, both in engineering and enforcement. For example, possible countermeasures have been identified to all 15 of top locations for collisions identified in *Figure 15*. These range from replacing on-street crossings with bicycle/pedestrian underpasses to considering changes in signal timing, restricting left turns by vehicles, adding green bicycle lanes, removing vegetation to increase sight lines, focused enforcement and other strategies.

On a broader level, the Transportation Division has implemented a number of engineering improvements associated with bicycle and pedestrian safety, including:

- **Signing on multi-use pathways which parallel streets (called "side paths")** – Many conflicts occur between bikes traveling on a side path and vehicles turning across the path. The city has developed special signing and striping plans for different types of conflict points on these paths. These treatments have been used on several side paths, including a problematic location on South Broadway between Dartmouth and Hanover. A before and after analysis is currently underway at this location. If this signing and striping proves beneficial, it will be used at additional side path locations.

- **Traffic Signal Operations** – Conflicts are common in crosswalks with traffic signals. This is especially true where side paths cross a traffic signal. The city has sought to mitigate these conflicts with changes in signal timing. In some locations protected only phasing has been placed on turning movements to ensure they do not conflict with legal crossings. In addition, at some downtown locations, time has been given to the pedestrian phase while motor vehicle movements remain stopped. This allows pedestrians to enter the crosswalk and start their crossing before turning vehicles can move into conflict with them. These changes in signal timing are used strategically where conflicts are observed or at high-collision locations.

- **Flashing Crosswalk modifications** – Flashing crosswalks are designed to provide pedestrians and bicyclists safe and convenient opportunities to cross major corridors. While the safety of these crossings has been questioned, this analysis shows that flashing crosswalks are not a major collision concern when installed in appropriate locations. Nationally, more and more communities are installing these treatments, so public awareness of them is increasing. The city continues to monitor their performance and address problematic locations.

  Higher numbers of collisions and roadway congestion at some flashing crosswalk locations have prompted changes at specific locations. In November 2011, the City of Boulder updated its Pedestrian Crossing Treatment Installation Guidelines (PCTIG), which outline when crossing treatments should be installed and what type of crossing treatment should be installed. Based on a study and findings of

several flashing crosswalk locations, the criteria used to determine where flashing crosswalks should be installed and when a traffic signal should be installed instead, were modified. Conditions that include a location with more than two lanes in each direction, high speed, high motor vehicle volume, high crossing volume will necessitate the construction of a traffic signal rather than a flashing crosswalk treatment. The crossings of Baseline between Broadway and 27th Way and Broadway at 17th Street were converted to pedestrian traffic signals. The intersection of Broadway at 18th Street is being reconstructed as part of the Broadway (Euclid to 18th) Transportation Improvements Project, and the flashing crosswalk has been replaced with a full intersection signal. Changes in signing and striping along with removal of landscaping that may have been an obstruction have all occurred at the flashing crosswalk locations on 28th Street at the crossings south of Iris Avenue and north of Spruce Street. If the changes in signing and striping prove beneficial, it is the city's intention to use them at other flashing crosswalk locations as well.

» **Other Crossing Treatment installations and modifications** – New pedestrian crossing treatments have been installed at a number of locations throughout the City of Boulder. New flashing crosswalk treatments were installed on 30th Street, north of Canyon Boulevard and north of Pearl Street, respectively. These flashing crosswalk treatments were installed according to the new interim approved standards by the Federal Highway Administration. As resources allow, the city is retrofitting existing flashing crosswalk locations to meet these new standards. In addition, the University of Colorado and the City of Boulder jointly funded and recently installed a new crossing treatment called a Hybrid Beacon (HAWK) crossing at the crossing of Regent Drive south of Colorado Avenue, near the Engineering building. A number of pedestrians had been hit at this location when it was only a signed and marked crosswalk.

An update of the city's Pedestrian Crossing Treatment Installation Guidelines (PCTIG) was completed in 2011. The guidelines, which were updated with input from the Transportation Advisory Board and community representatives, are used by the Transportation Division to determine where to install crossing treatments and which type of crossing treatment is appropriate for different situations. Considerations include the volume of pedestrians, number of lanes, and speed and volume of traffic. The menu of crossing treatments includes standard crosswalks, rapid flash crossing treatments, mid-block traffic signals, underpasses and newer treatments such as Hybrid Beacon (HAWK) crossings. The updated guidelines are available at www.bouldercolorado.gov, search for PCTIG.

Enforcement

Enforcement is a critical element in changing behavior. This analysis identifies the intersections where collisions most often occur, and the behaviors that lead to collisions. Based on this information, the Police Department will launch a targeted enforcement campaign at key intersections and crossings in the spring of 2012. This will be timed to follow the roll-out of the education campaigns described below, as enforcement is most effective if it is coordinated with education efforts. The communication team will ensure that the enforcement efforts are publicized to maximize their effectiveness.

Following a July 2010 Study Session with City Council on crosswalk safety, staff from Public Works, the Police Department and the City Attorney's Office reviewed laws governing the use of crosswalks in the City of Boulder. Staff recommended that three laws be added or modified to improve the enforceability and safety of crosswalk use. Changes to the Municipal Code were considered and adopted by City Council in early 2012. These changes provide clarity and improve the safety and efficiency of crosswalk interaction.

The new code amendments include:

» **The creation of Ordinance 7-4-77 "Stop at Crosswalk Required,"** which stipulates that when one vehicle stops to yield for a person in a crosswalk, another vehicle cannot overtake and pass that vehicle. Staff has observed many drivers engaging in this behavior and several collision descriptions note this behavior as a contributing factor to the collision.

» **Modifications to Ordinance 7-5-5 "Bicycle In Crosswalk"** to establish a speed limit of 8 mph for bicyclists during the immediate approach, entry and traversal of any crosswalk which spans a roadway. In addition, language will be removed that stipulates that a cyclist must enter a crosswalk at a speed no greater than an ordinary walk to establish the rights of a pedestrian, and instead will include language that requires them to enter and traverse the crosswalk at a reasonable crossing speed. Under the old wording, a bicyclist who entered a crosswalk at more than walking speed and was hit by a car was considered at fault in the collision, even if the bicyclist had the walk light. The changes are suggested as they are consistent with reasonable, cautious bike riding through crosswalks, which provides drivers adequate time to respond.

» **Modifications to Ordinance 7-5-15 "Pedestrian Obedience To Traffic Signal Required."** This change specifically targets use of flashing crosswalks by requiring a person crossing to enter the crosswalk with the warning device activated.

Education

GO Boulder, a workgroup within the Transportation Division dedicated to promoting alternative transportation options, works in collaboration with community partners to educate roadway and path uses on their rights and responsibilities when traveling in Boulder.

Current and upcoming programs include:

» **Crosswalk Crew Safety Campaign** – The city is working in partnership with Boulder Valley School District to design and implement a crosswalk safety and user awareness campaign. The campaign is scheduled to launch in the spring of 2012, funded by a federal Safe Routes to School grant and the GO Boulder bicycle and pedestrian program. It will include a public awareness campaign and volunteer crossing guard program to help address real and perceived concern for students in crossing major streets along routes to school. A primary campaign goal is to encourage motorists, bicyclists and pedestrians to become more aware of one another's presence and make smart choices when using crosswalks.

» **New Crosswalk Rules** – In January, council adopted the proposed new crosswalk rules mentioned earlier that address bicycle, pedestrian and driver behavior at crosswalks. GO Boulder will raise public awareness of the changes through a targeted effort. In addition, the Police Department will coordinate with the public awareness campaign and perform targeted enforcement to assist in educating the public about these changes.

» **Bicycle Ambassadors** – A team of Bicycle Ambassadors offers bicycle safety and commuting tips to community members throughout the peak cycling season of May through September. This program is a partnership between the City of Boulder and the nonprofit Community Cycles, which runs the program. The ambassadors create a presence in the community by attending events and scheduling appearances upon request. The ambassadors host bicycle rodeos to equip children with on-bike riding skills. They work at the Farmer's Market, with schools and camps, at recreation centers and other public places to spread the message of safe and courteous bike riding.

» **Lighten Up Boulder** – Each fall the City of Boulder teams up with CU-Boulder and local merchants to remind cyclists that riding at night without proper lighting is illegal and unsafe. Not only can cyclists not see what is ahead, but drivers can't see the cyclists. The campaign highlights the importance of using a bike light for night cycling and encourages bike light use by providing discounts on bike light accessories at participating merchants.

» **Bicycle Accessories and Safety Education program** – Supported by funding from GO Boulder, Community Cycles developed curriculum for a safety education presentation to participants in the Earn a Bike program. The 20 to 30 minute class covers helmet fit, hand signals, appropriate dress, map reading/route finding and rules of the road. It also familiarizes students with the Colorado Bicycle Manual. Students in need of bike accessories including lights, locks and bells receive them during the presentations.

Next Steps

Additional Analysis

Following the publication of this inaugural Safe Streets Boulder report, staff will run additional analyses to delve deeper into causes, factors and characteristics of collisions. This may include further analysis on time of day and year, the demographics of those involved in collisions, and other more in-depth analysis. For example, almost 16 percent of pedestrians involved in a collision with a motor vehicle were suspected of alcohol use (25 collisions). Additional analysis is desired to determine what countermeasure actions would be most effective in reducing these types of collisions. Staff also anticipates looking at collisions by corridors, both those with bike lanes and adjacent multi-use pathways, to better understand causes of collisions and to identify and consider potential countermeasures.

Future Reporting

With the construction of the database, staff will be able to continually update bicycle and pedestrian collision data and provide periodic detailed analysis and reports. Staff will update the database on a regular basis with new collision data as accident reports come in from the Police Department. This will allow staff to understand long-term trends, monitor the impact of interventions and identify and address emerging problems. Staff plans to update the Safe Streets Boulder report every three years to provide new information to elected officials, boards and the public.

Measuring Effectiveness

The new database will allow staff to measure the impact of the countermeasures, including engineering, enforcement, and education by examining changes in collision frequencies and types before and after interventions. Several of the high-collision locations are already undergoing changes to address factors that may have contributed to a high number of bicycle and pedestrian collisions with motor vehicles.