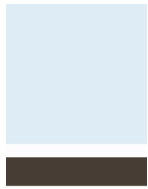


# Cultivate Health Walk Audit Final Report

*August 25, 2015*



*View of downtown Denver from Zuni Park. Image: Jeffrey Beall on Flickr*



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DENVER



## OVERVIEW

Cultivate Health is a partnership among Regis University, private real estate developers Urban Ventures and Perry Rose, the Chaffee Park neighborhood, and several non-profit organizations. The goal of Cultivate Health is to support the health and wellness of residents living in the multi-generational, mixed-income community within a four census tract neighborhood adjacent to Regis University. This project will create infrastructure and programming that promote an active lifestyle, increase access to healthy food, and offer integrated health care services. As part of these efforts, WalkDenver conducted a walk audit assessing the pedestrian infrastructure in the neighborhood; gathered feedback from residents on the walkability of the neighborhood; and developed recommendations for the formation of a wellness walk with wayfinding signage that connects neighborhood destinations.

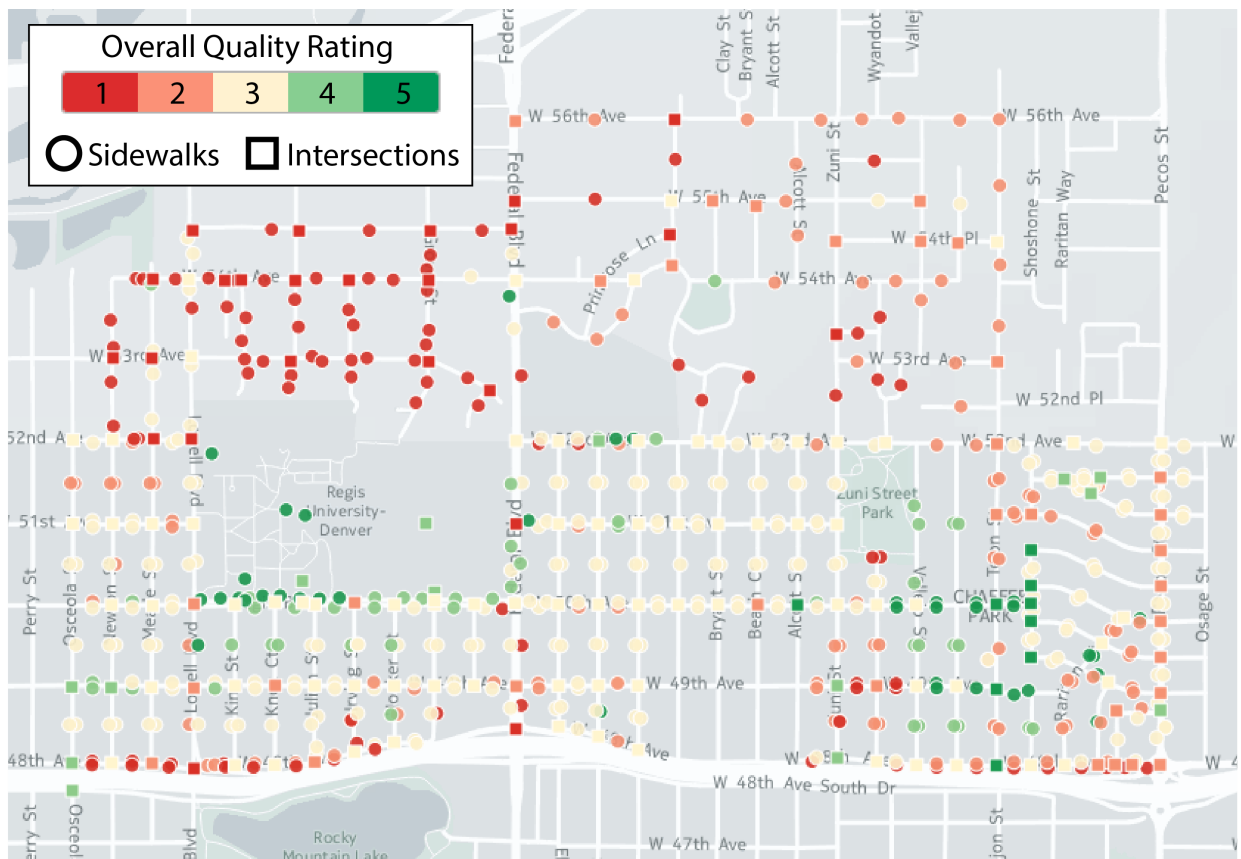
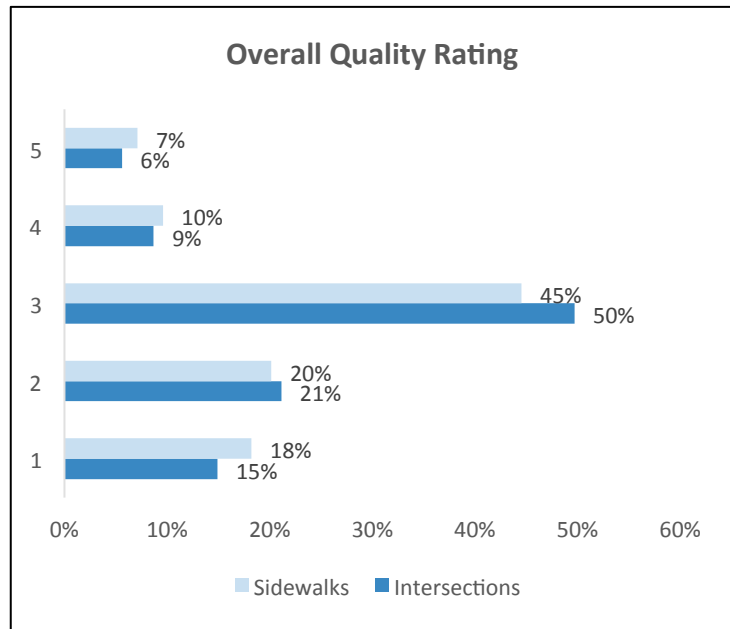
To conduct the walk audit, WalkDenver partnered with Professor Amy Hammerich's Exercise Prescription class at Regis University during the Spring of 2015. The students were trained to use the online tool WALKscope ([www.walkscope.org](http://www.walkscope.org)) to collect data on sidewalks, intersections, and pedestrian counts in the area roughly bounded by 48<sup>th</sup> Avenue/I-70 to the south, Osceola Street to the west, 56<sup>th</sup> Avenue to the north, and Pecos Street to the east. While most of this study area lies in the Chaffee Park neighborhood in Denver, the northern portion is a part of unincorporated Adams County. A total of 731 data points were collected, including 521 sidewalks, 161 intersections, and 49 pedestrian counts. Data collection was less comprehensive in the northeast quadrant, compared to the remainder of the study area, but data collected in this quadrant was representative of the conditions in the quadrant. At a community meeting on May 11<sup>th</sup>, 2015, as well as a school carnival at Beach Court Elementary on May 29<sup>th</sup>, 2015, neighborhood residents provided additional input on the walkability of the neighborhood. Major findings from this assessment include the following:

- Residents face many barriers that discourage them from walking in the neighborhood, such as dangerous intersections on Federal Boulevard, narrow or missing sidewalks, and a lack of safe connections across I-70 to the south and to the Clear Creek Trail and future commuter rail stations to the north.
- The preponderance of narrow sidewalks is especially problematic in the eastern portion of the study area around Beach Court Elementary, Zuni Park, and the area south of Aria Denver.
- Most streets in the northern portion of the study area within Adams County have no sidewalks at all.
- Older sidewalks in the southwest portion of the study area are cracked and uneven, presenting accessibility challenges.
- The study area as a whole suffers from a lack of lighting.
- A lack of marked crosswalks, high traffic speeds and volumes, and poor driver behaviors at intersections along Federal Boulevard, Pecos Street, 50<sup>th</sup> Avenue/Regis Boulevard, and several other east-west connectors in the study area contribute to feelings of unsafety for pedestrians.

This report concludes with recommendations on the specific route for a wellness walk that connects top destinations in the neighborhood, as well as long-term strategies for improving pedestrian conditions along this route.

## OVERALL QUALITY OF THE PEDESTRIAN ENVIRONMENT

Student data collectors rated the overall quality of each sidewalk and intersection on a scale from 1 (lowest quality) to 5 (highest quality). The average rating for both sidewalks and intersections was 2.7. Over 80% of both sidewalks and intersections received a rating of 3 or less, and nearly 40% received a rating of 2 or less. Only 7% of sidewalks and 6% of intersections received a rating of 5. Low quality ratings were especially concentrated in the portion of the study area within Adams County as well as along 48<sup>th</sup> Avenue, which borders the I-70 corridor



## SIDEWALK QUALITY

Three main factors were evaluated related to the overall quality of sidewalks: sidewalk type, accessibility, and safety.

### Sidewalk Type

The neighborhood includes a variety of sidewalks ranging in width, from less than three feet to more than five feet. Sidewalks less than 3 feet wide are commonly referred to as “rollover curbs” and are basically an extension of the curb that is intended to be driven over. Sidewalks wider than three feet fall into two categories: detached, which have a buffer such as trees or other landscaping between the sidewalk and the street, and attached, where the sidewalk is directly adjacent to the street.

The neighborhood’s small handful of sidewalks wider than 5 feet (only 20 of 521 sidewalks surveyed) received the highest overall quality ratings. Among these, detached sidewalks averaged a near perfect rating of 4.9. Among the neighborhood’s narrower sidewalks, detached sidewalks less than 5 feet wide (18% of sidewalks surveyed) were given moderate quality ratings, followed by the neighborhood’s many “rollover curbs” (53% of sidewalks surveyed) and attached sidewalks less than 5 feet wide (10% of sidewalks surveyed). Areas with no sidewalks at all (13% of sidewalks surveyed) were rated the lowest. The vast majority of sidewalks east of Federal Boulevard are rollover curbs, and areas with no sidewalks at all are found in the Adams County portion of the study area and along the south side of 48<sup>th</sup> Avenue.



*50<sup>th</sup> Avenue at Regis University; detached 5-foot sidewalk; overall quality rating 5 (high)*



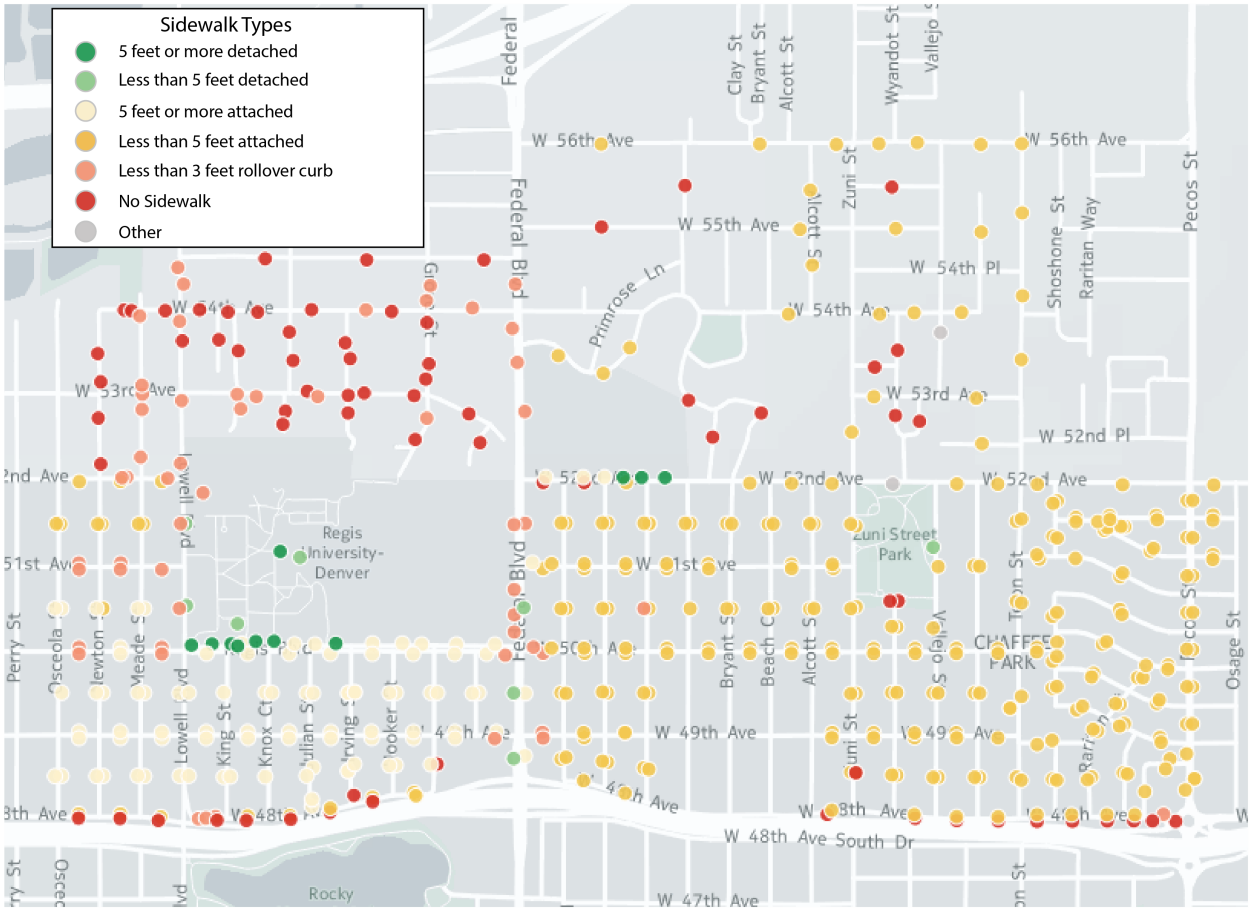
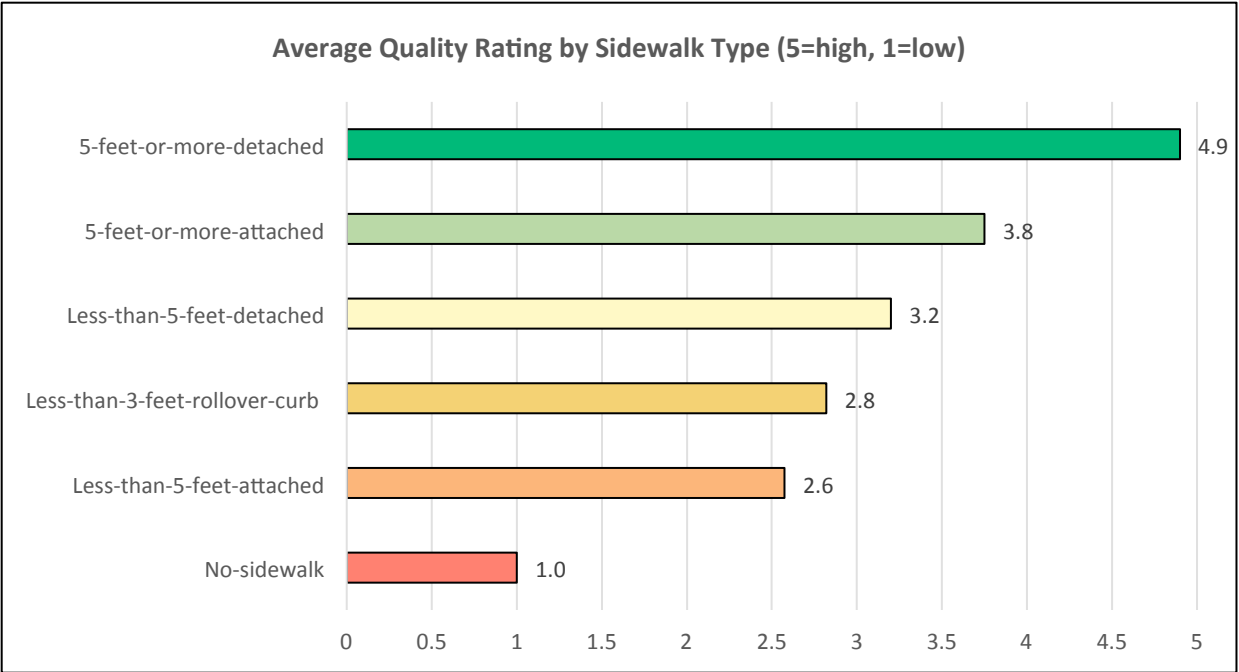
*Vallejo Street at 52<sup>nd</sup> Avenue; attached 5-foot sidewalk; overall quality rating 4 (medium-high)*



*Zuni Street at 50<sup>th</sup> Avenue; less than 3-foot rollover curb; overall quality rating 3 (medium)*



*55<sup>th</sup> Avenue at Grove Street; no sidewalk; overall quality rating 1 (low)*



## Accessibility

Sidewalks with obstructions (poles, dumpsters, parked cars, overgrown vegetation, etc.) and/or cracked and uneven surfaces present accessibility challenges, as they may be difficult to navigate for people in wheelchairs or with other mobility impairments, as well as parents with strollers. For sidewalks receiving a quality rating of 1 or 2 (lowest ratings), data collectors reported that 23% had cracked or uneven surfaces, and 11% had obstructions. By contrast, for sidewalks receiving a quality rating of 4 or 5, data collectors reported that 16% were cracked or uneven, and none had obstructions. Overall, data collectors reported that 24% of sidewalks surveyed had cracked or uneven surfaces, and 6% had obstructions. The vast majority of these accessibility problems are concentrated in the southwestern portion of the study area, where older sidewalks are prevalent.

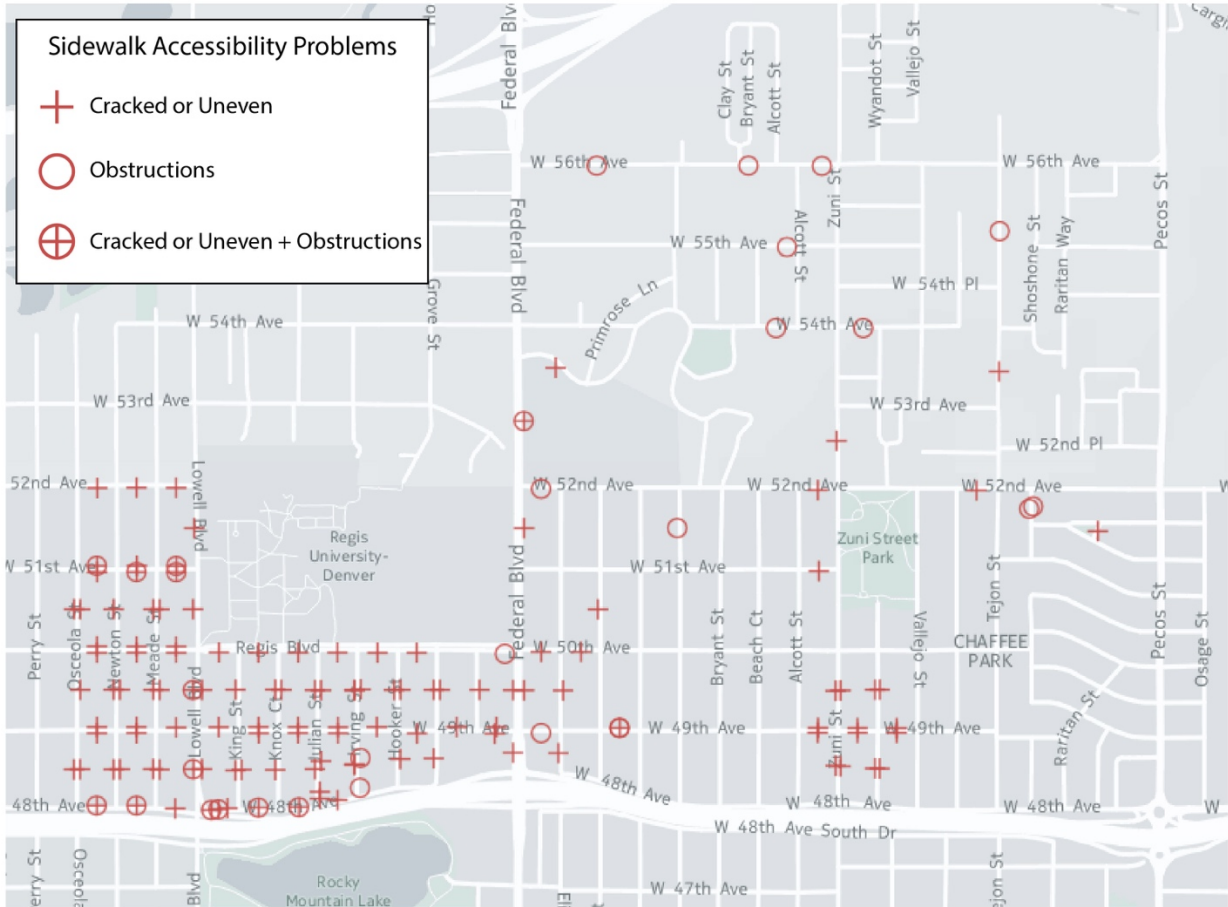
Accessibility Issues		
Percent of sidewalks with....		
	Cracked or Uneven	Obstructions
<b>Low Quality</b> Sidewalks rated 1 or 2	23%	11%
<b>Medium Quality</b> Sidewalks rated 3	27%	3%
<b>High Quality</b> Sidewalks rated 4 or 5	16%	0%



*Uneven sidewalk on Irving Street between 48<sup>th</sup> and 49<sup>th</sup> Avenues*



*Overgrown trees on 54<sup>th</sup> Avenue at Alcott Street*



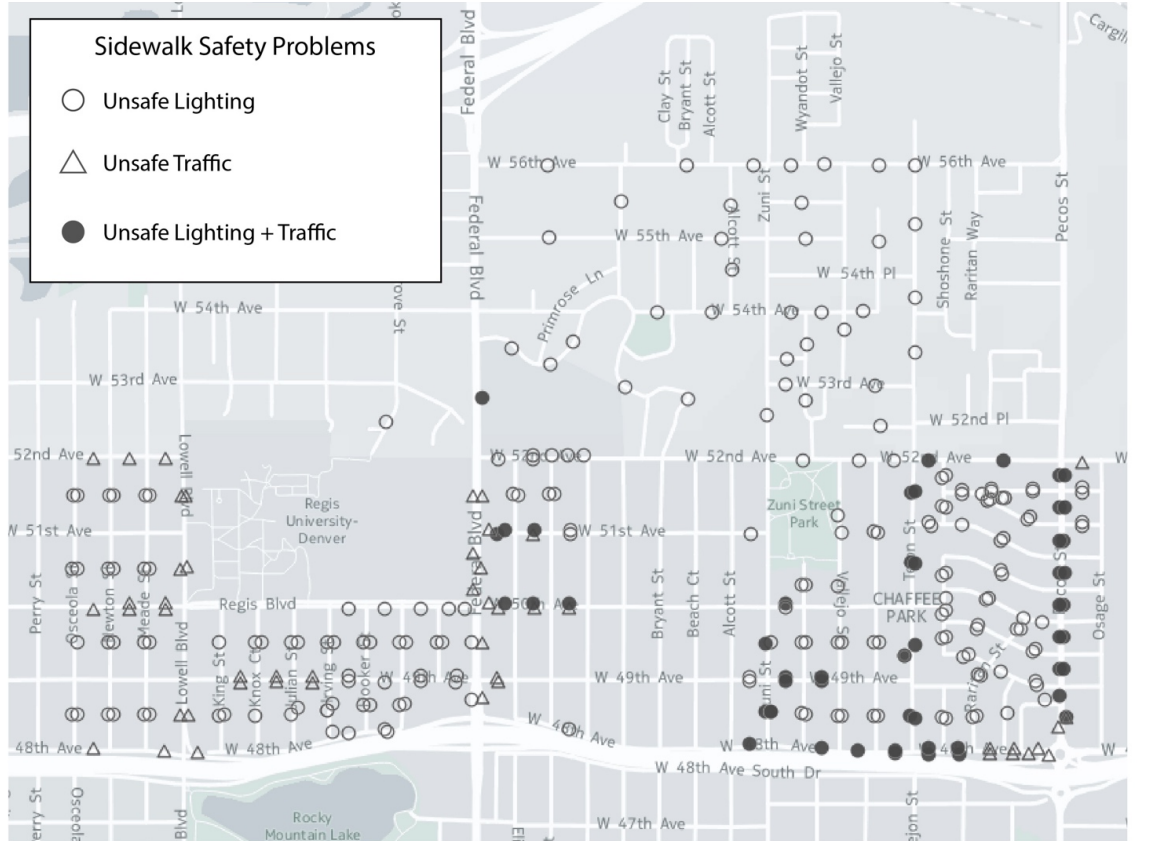
### Safety

Data collectors noted safety concerns related to the volume or speed of traffic, as well as poor lighting or visibility. In rare instances, concerns related to run-down properties were also noted. For the sidewalks that received a quality rating of 1 or 2 (the lowest possible ratings), data collectors reported that 21% had unsafe traffic speeds or volumes, and 55% had unsafe lighting or visibility. By contrast, for the sidewalks that received a quality rating of 4 or 5 (the highest ratings), data collectors reported that 6% had unsafe traffic speeds or volumes, and 32% had unsafe lighting or visibility. Overall, data collectors reported that 19% of the sidewalks surveyed had unsafe traffic speeds or volumes, and 49% had unsafe lighting or visibility. Concerns about traffic speeds or volumes were most heavily concentrated along Federal Boulevard, Pecos Street, Tejon Street, Lowell Boulevard, and virtually all the east-west streets from 52<sup>nd</sup> Avenue to 48<sup>th</sup> Avenue. Concerns about lighting or visibility were common throughout the study area.

Safety Issues		Percent of sidewalks with....	
		Unsafe Traffic	Unsafe Lighting
<b>Low Quality</b>	Sidewalks rated 1 or 2	21%	55%
<b>Medium Quality</b>	Sidewalks rated 3	22%	50%
<b>High Quality</b>	Sidewalks rated 4 or 5	6%	32%



Data collectors reported feeling unsafe due to the high volume and speed of traffic along Federal Boulevard.





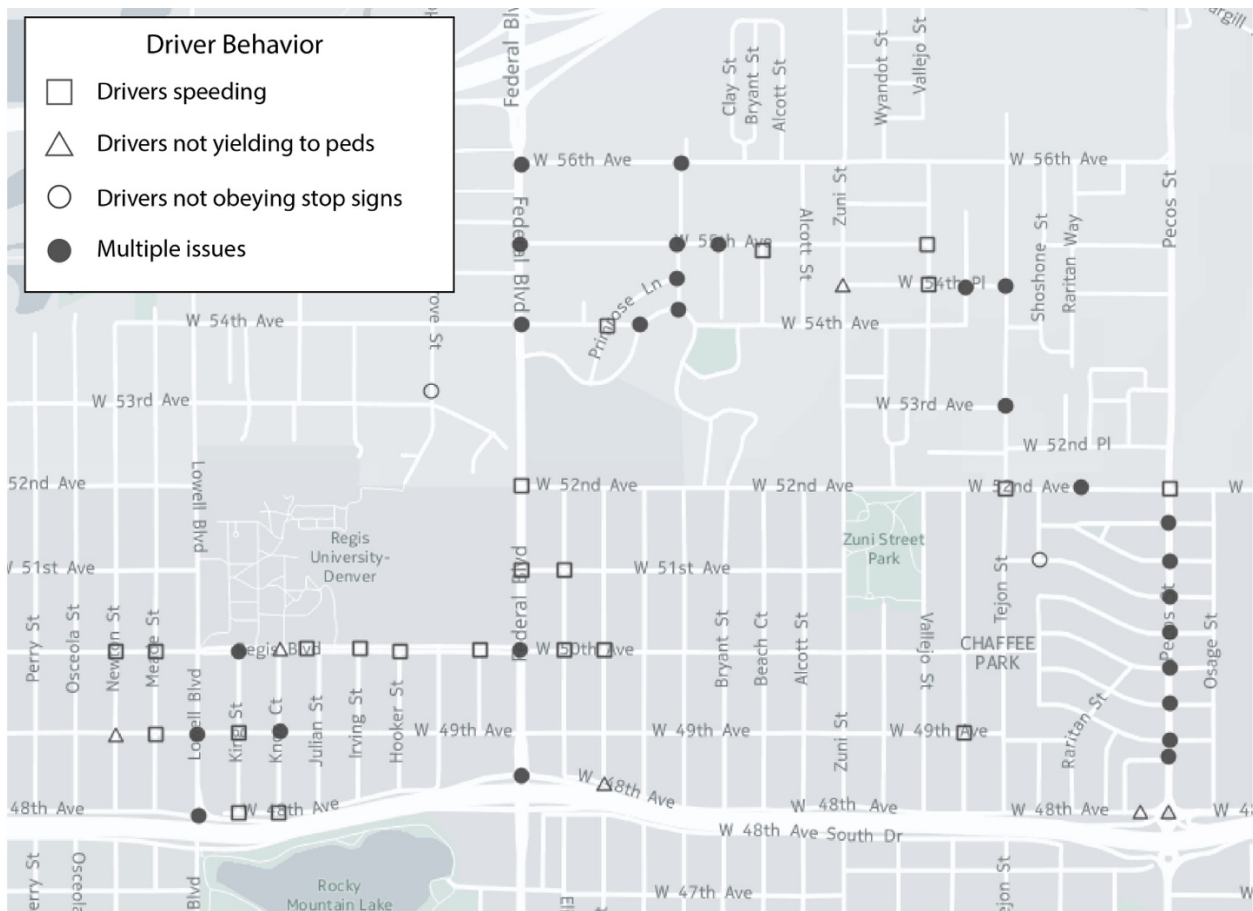
## INTERSECTION QUALITY

Three main factors related to the overall quality of intersections include driver behavior, traffic controls, and the width of the crossing (number of lanes).

### Driver Behavior

High intersection quality ratings were generally associated with better driver behavior. For intersections receiving a 4 or 5 (the highest possible ratings) data collectors reported that drivers obeyed the speed limit at 96% of the intersections, yielded to pedestrians at 91% of the intersections, and obeyed stop signs or traffic signals at all of the intersections. By contrast, for intersections rated 1 or 2 (the lowest ratings), data collectors reported that drivers obeyed speed limits at just 57% of the intersections, yielded to pedestrians at 68% of the intersections, and obeyed traffic signals and stop signs at 90% of the intersections. Overall, drivers obeyed speed limits at 71% of intersections, yielded to pedestrians at 83% of intersections, and obeyed stop signs/traffic signals at 94% of intersections. Problems with driver behavior were especially concentrated along Federal Boulevard, Pecos Street, and 50<sup>th</sup> Avenue/Regis Boulevard.

Safety Issues			
Percent of intersections where drivers...			
	Obey the speed limit	Yield to pedestrians	Obey traffic signals/stop signs
<b>Low Quality</b> Sidewalks rated 1 or 2	57%	68%	90%
<b>Medium Quality</b> Sidewalks rated 3	74%	93%	95%
<b>High Quality</b> Sidewalks rated 4 or 5	96%	91%	100%



**Traffic Controls**

High intersection ratings were also associated with the presence of traffic controls, including marked crosswalks, traffic lights, and stop signs. Of the intersections receiving a rating of 4 or 5 (the highest ratings), 9% had marked crosswalks for all crossing directions and 13% had crosswalks for some directions. For intersections that were rated 1 or 2 (the lowest ratings), only 5% had marked crosswalks for all directions and 8% had crosswalks for some directions. Overall, only 5% of intersections had marked crosswalks for all crossing directions, and 6% had crosswalks for some crossing directions. Traffic lights also were somewhat associated with higher overall ratings, as 9% of intersections rated 4 or 5 possessed traffic lights, while 5% of intersections rated 1 or 2 did. Overall, traffic lights were present at only 6% of intersections surveyed. Finally, stop signs, or at least all-way stops, were correlated with higher overall ratings. All-way stops were present at 13% of intersections rated 4 or 5 and 9% of intersections rated 1 or 2. However, 2-way (or some other configuration of stops) did not directly correlate with overall ratings. All-way stops were found at just 8% of intersections overall, while two-way (or some other configuration of stops) were found at 81% of all surveyed intersections. Although a few crosswalks are located along Federal Boulevard, several of its intersections are missing crosswalks,

making it difficult and dangerous to cross. Also, crosswalks are notably absent around Regis University, Zuni Park, and the Aria Denver site.

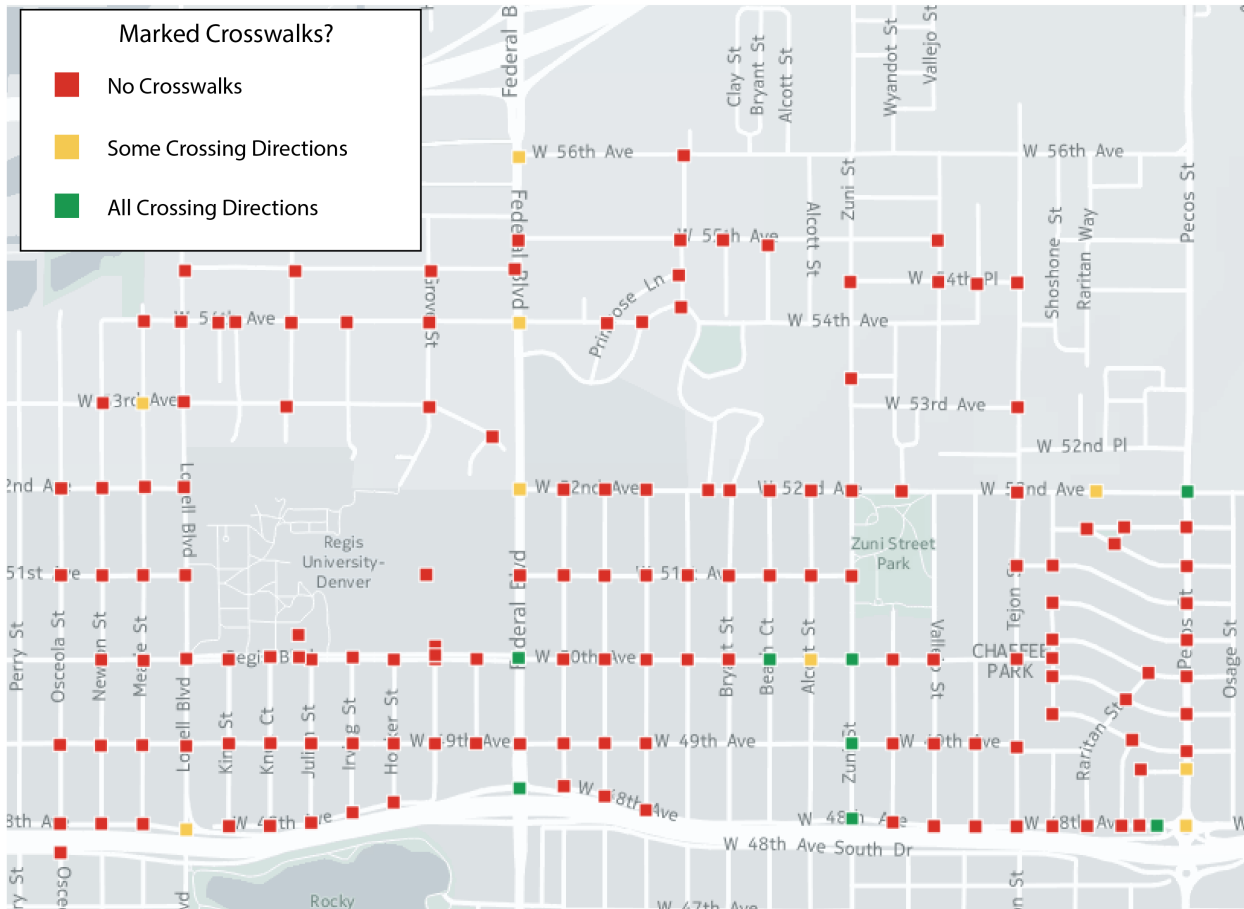
<b>Traffic Controls</b>				
Percent of intersections with...				
	<b>Crosswalks - all directions</b>	<b>Crosswalks - some directions</b>	<b>Traffic/ped signals</b>	<b>All-way stops</b>
<b>Low Quality</b> Sidewalks rated 1 or 2	5%	7%	5%	9%
<b>Medium Quality</b> Sidewalks rated 3	4%	4%	6%	6%
<b>High Quality</b> Sidewalks rated 4 or 5	9%	13%	9%	13%



*Crosswalks in all directions at the intersection of Zuni Street and 49<sup>th</sup> Avenue*



*No crosswalks at the intersection of Pecos and Beekman Place*



### Crossing Distance

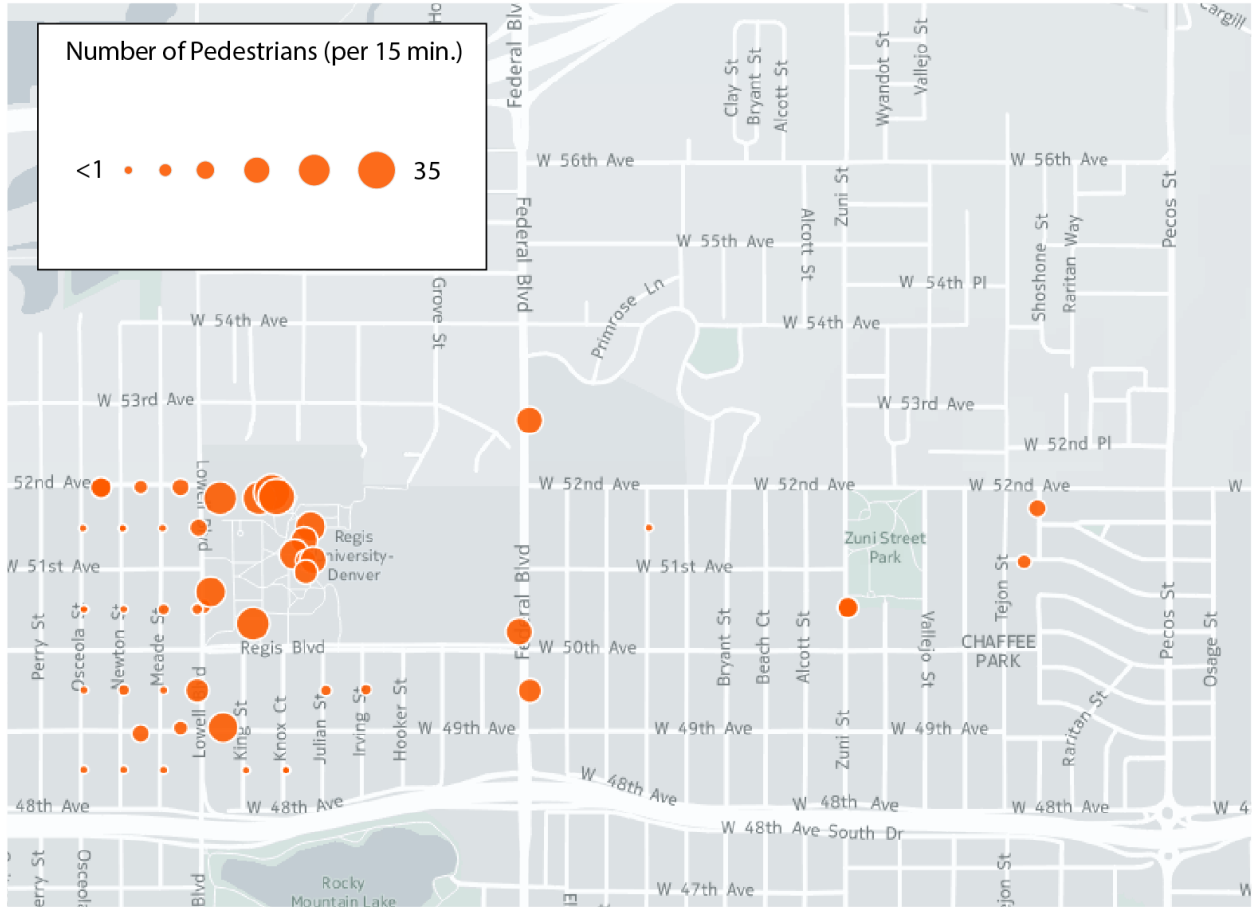
The number of lanes to cross at each intersection also correlated with overall intersection ratings. For intersections rated 1 or 2, the average number of lanes to cross was 2.6. For intersections rated 4 or 5, the average number of lanes to cross was 2.1. The vast majority of intersections in the study area have only 2 lanes to cross. Wider crossings are located along Regis Boulevard and near the intersection of Pecos Street and 48<sup>th</sup> Avenue and at Lowell Boulevard and 48<sup>th</sup> Avenue. Federal Boulevard presents the most daunting challenge for pedestrians, with 5 to 6 travel lanes to cross at each intersection. Although not measured as part of this study, travel lane width can also contribute to pedestrian safety concerns. Wider lanes encourage cars to drive faster and are correlated with higher crash rates. While 12-foot lanes are standard on many state highways such as Federal Boulevard, 10-foot lanes are generally safer, and can still accommodate high volumes of traffic.

Crossing Distance	
	Average number of lanes to cross
<b>Low Quality</b> Sidewalks rated 1 or 2	2.6
<b>Medium Quality</b> Sidewalks rated 3	2.4
<b>High Quality</b> Sidewalks rated 4 or 5	2.1



## PEDESTRIAN COUNTS

Data collectors conducted a limited number of pedestrian counts at selected locations throughout the study area. Most chose locations in and around the Regis University campus. The counts were conducted at various times of the day, so comparisons across locations should be made with caution. Not surprisingly, the highest numbers of pedestrians were observed on the Regis campus. Higher pedestrian traffic was also observed along Federal Boulevard, which was also an area of generally low sidewalk and intersection quality.

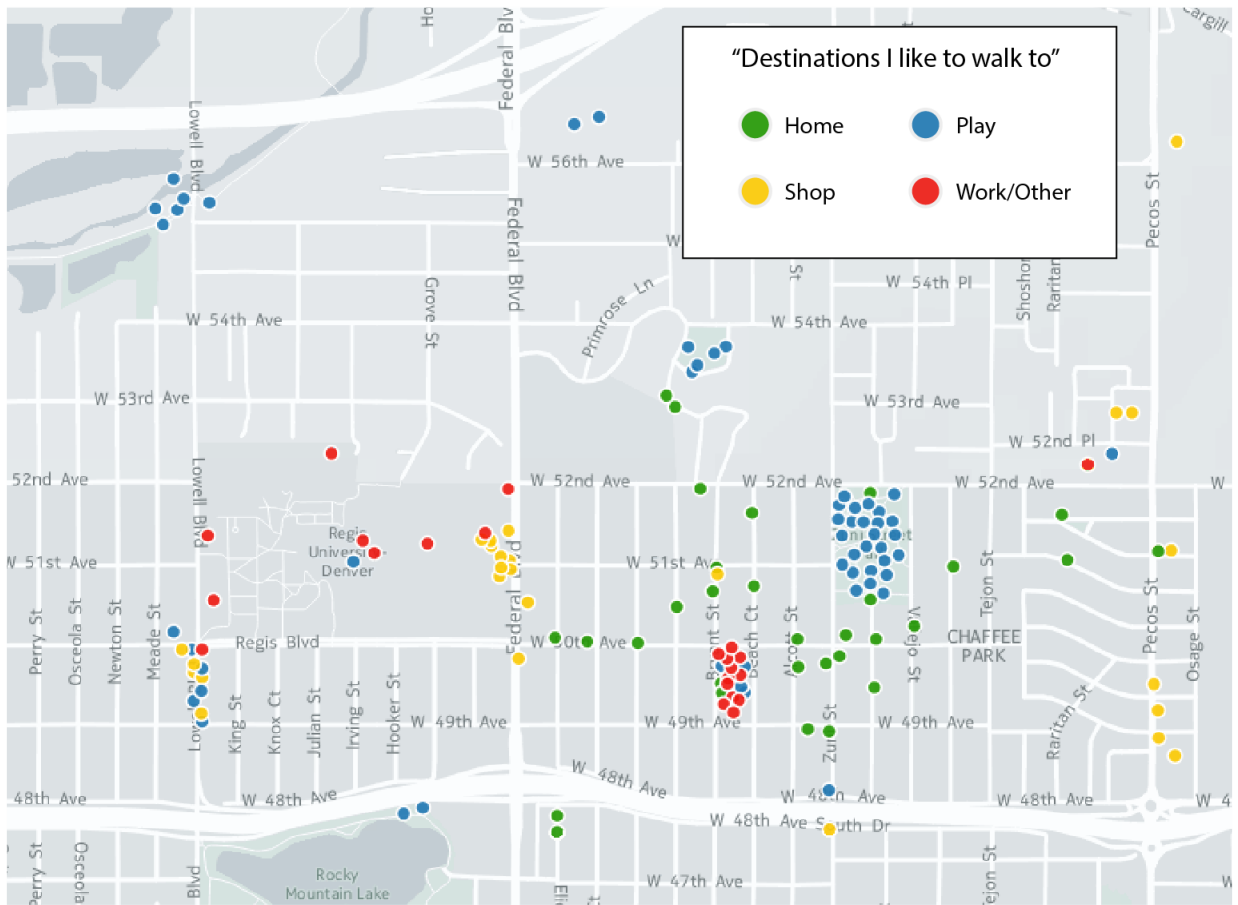


## COMMUNITY INPUT

At a community meeting on May 11<sup>th</sup>, 2015, hosted by the Chaffee Park Neighborhood Association, 42 neighborhood residents provided input on the walkability of the neighborhood. Additional input was collected from residents at a school carnival at Beach Court Elementary on May 29<sup>th</sup>, 2015. Residents were asked to place colored dots on a map indicating neighborhood destinations they like to or would like to walk to; draw lines on a second map to mark routes they like to walk along or would like to walk along, if improved; and place sticky notes on a third map to explain barriers that discourage them from walking in the neighborhood. Overall, the community’s feedback paints a picture of a neighborhood that is rich with destinations but lacking in adequate pedestrian infrastructure linking those destinations.

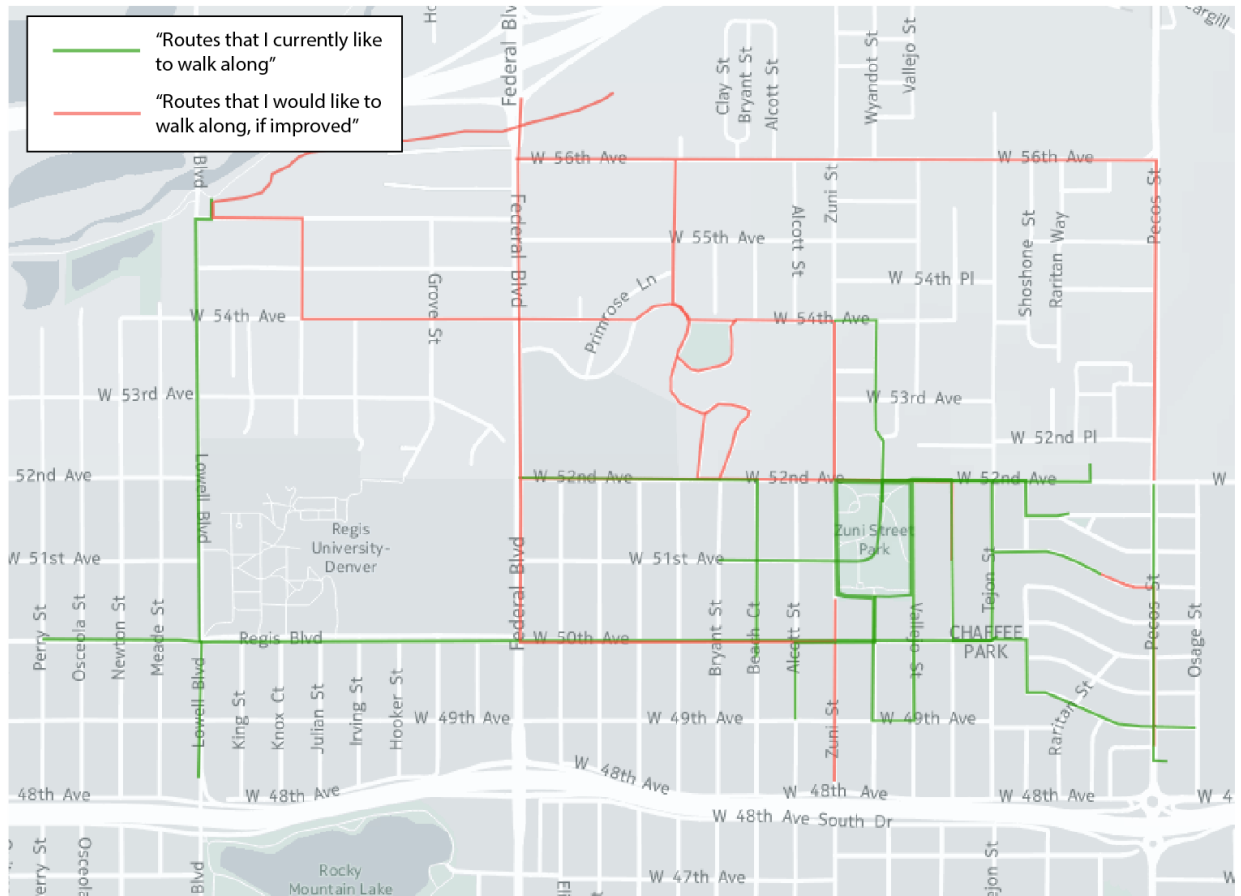
### Destinations

A number of areas in the neighborhood stand out as important destinations for neighborhood residents. Regis University and Beach Court Elementary are key destinations that people walk to for work and school. Residents also like to walk to shops and restaurants along Lowell Boulevard, Federal Boulevard, and Pecos Street. Key destinations for “play” include Zuni Park, Berkeley Hills Park, the Clear Creek Trail, and Beach Court Elementary.



## Routes

Residents used colored highlighters to draw routes that they currently like to walk along as well as routes they would like to walk along, if improved. A number of residents indicated that they like to walk routes in the southeast portion of the neighborhood, which is a quieter residential area with several destinations important to residents, including Beach Court Elementary, Zuni Park, shopping on Pecos Street, and the homes of many of the residents who participated. Areas in which residents marked routes that they would like to walk along, if improved, include much of the northern portion of the study area, including the area around the Aria Denver site. Residents also indicated that improvements are needed along the length of Federal Boulevard and along significant portions of 50<sup>th</sup> Avenue, Zuni Street, and Pecos Street.

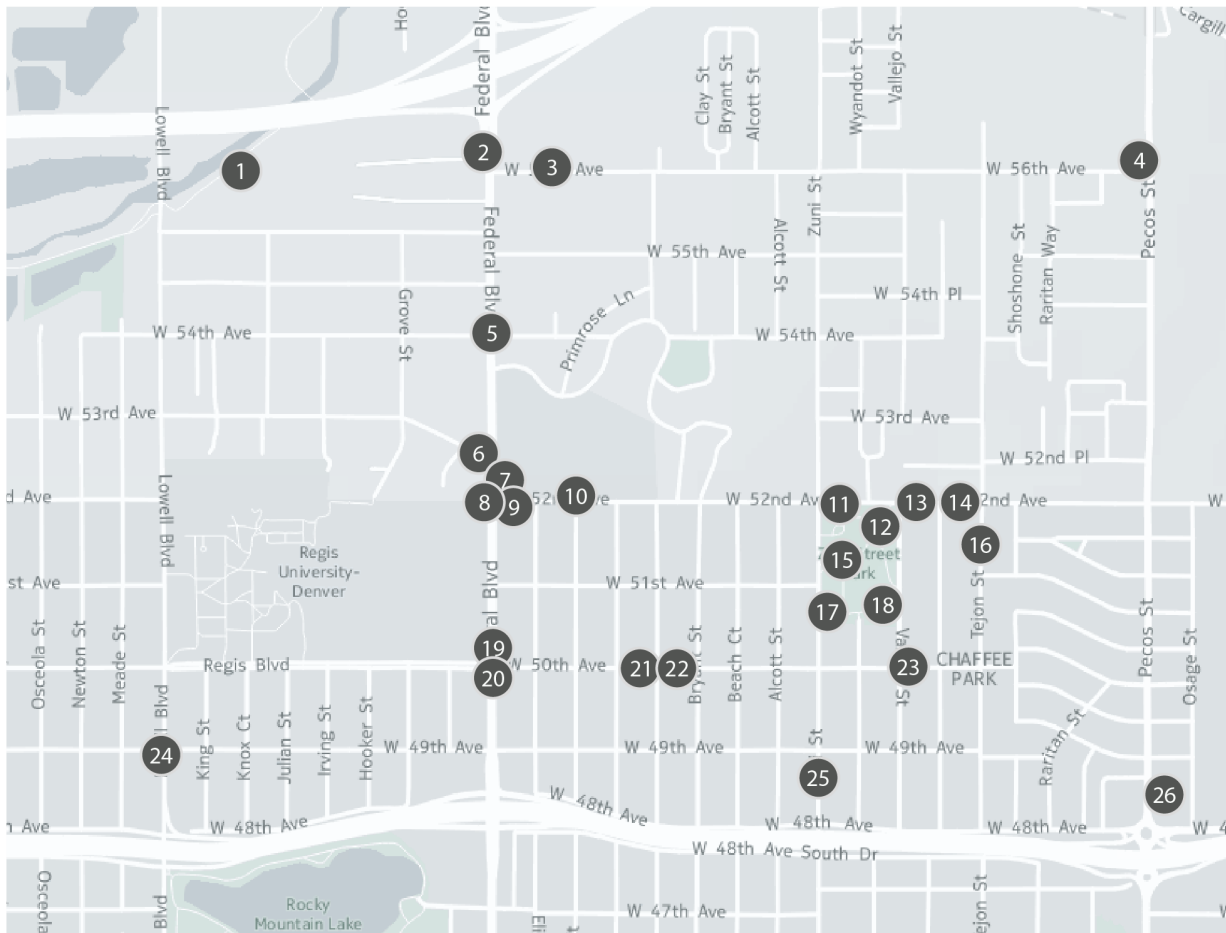


## Barriers

Residents also used sticky notes to identify and explain barriers that discourage them from walking in the neighborhood. Common themes that emerge from residents' feedback include the following:

- Sidewalks in many places are too narrow to walk along, especially with children or a stroller. This problem is most pronounced in the eastern portion of the neighborhood where less than 3-foot rollover curbs are the norm.
- Intersections along Federal Boulevard are unsafe for pedestrians, particularly at 50<sup>th</sup>, 52<sup>nd</sup>, and 54<sup>th</sup> Avenues.
- There is a lack of pedestrian and bicycle connections to the Clear Creek Trail and to future commuter rail stations at Clear Creek/Federal and Pecos Junction.





- |   |   |   |
|---|---|---|
| <p>1 "A bike path to the new light rail station would be FABULOUS!"<br/>"I agree"</p> <p>2 "Pedestrian/bike crossing to get to rail station on east side of tracks?"</p> <p>3 "Barrier to get to trails off of 56th w/o crossing over Federal"</p> <p>4 "Pedestrian/Bike access to Pecos St light rail"</p> <p>5 "Not safe to cross"</p> <p>6 "Semi-regular place for guys to drink and no lighting.<br/>+ restaurants!"</p> <p>7 "Audible pedestrian signal"</p> <p>8 "Major streets have heavy traffic and no place for pedestrians/cyclists."<br/>"I agree!"</p> <p>9 "Not safe to cross"</p> <p>10 "Sidewalks end on the north and south side of the road."</p> | <p>11 "Lighting along 52nd"</p> <p>12 "The outside path around the park is too narrow"</p> <p>13 "52nd too narrow sidewalk w/ traffic to get to park w/ kids"</p> <p>14 "Cars going too fast to feel safe walking or biking with kids, especially uphill @ 52nd"</p> <p>15 "Zuni walk is too narrow between 50th and 52nd"</p> <p>16 "Super narrow sidewalks. "<br/>"+agree!"</p> <p>17 "Mile markers around Zuni Park"</p> <p>18 "Dog poop bag stands + another water fountain"</p> <p>19 "Intersection at 50th and Federal can be hazardous when biking/walking. The east side by gas station is especially bad."</p> | <p>20 "Federal + 50th is awful. It has the highest amount of crime incidences. We cross Federal to get to Regis. We also walk N on Zuni to go to Zuni Park + Berkeley Hills Park."</p> <p>21 "Sidewalks up 50th are too narrow for strollers."</p> <p>22 "Narrow sidewalks force you to walk in the street which is busy"</p> <p>23 "Sidewalk too narrow to walk kids to school or the park along 50th"</p> <p>24 "ALL neighborhood sidewalks are too narrow. Can't walk side by side w/ my child or use a stroller. :("</p> <p>25 "There is no good way to go under here. Broken glass, broken sidewalks." [Refers to the Zuni underpass at I-70]</p> <p>26 "Save-a-lot - would like neighborhood market w/ regular predictable products, brand-name products, more produce choices"</p> |
|---|---|---|

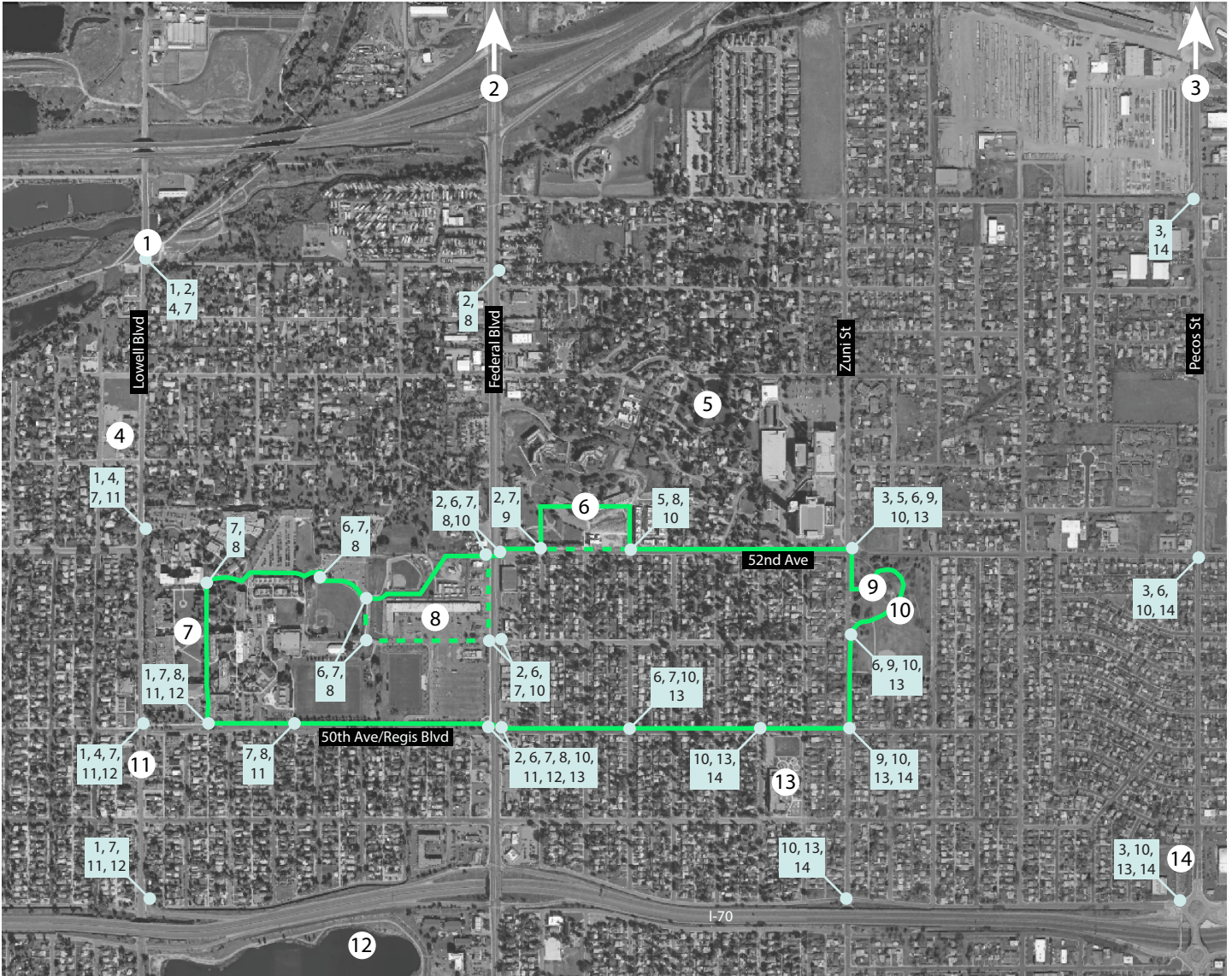
## WELLNESS WALK

### **Recommended Route**

Based on the WALKscope walk audit and community input, WalkDenver recommends the following route for the Wellness Walk, and locations for wayfinding signs indicating the walking distance (in minutes) to top neighborhood destinations. Research suggests that time is a more important factor than distance when people are deciding whether or not to walk, and that people tend to overestimate how long it takes to destinations in urban neighborhoods.

# Cultivate Health

## Wellness Walk & Wayfinding Plan (Draft)



### Destinations Key

1. Clear Creek Trail Access
2. Clear Creek/Federal Commuter Rail Station
3. Pecos Junction Commuter Rail Station
4. Berkeley Gardens Elementary
5. Berkeley Hills Park
6. Aria Denver
7. Regis University - Boettcher Common
8. Regis Square - Restaurants and Shops
9. Zuni Park - Skyline Overlook
10. Zuni Park - Outdoor Gym
11. Lowell Blvd - Restaurants and Shops
12. Rocky Mountain Lake Park
13. Beach Court Elementary
14. Pecos St - Restaurants and Shops

### Legend

- Wellness Walk route (long-term)
- - - - Wellness Walk route (short-term)
- 1 Destinations
- 1, 2, 3, 4 Wayfinding sign locations & destinations they should point to

## Recommended Pedestrian Enhancements

To enhance pedestrian safety and comfort along the Wellness Walk route, WalkDenver recommends the following improvements.

### Short term

- Add wayfinding signs and pavement markings along the Wellness Walk (see recommended locations for wayfinding signs above). Temporary wayfinding signs/markings could be used for a initial pilot test of the Wellness Walk route.
- Add a leading pedestrian phase and restrict right turns on red at intersections along the Wellness Walk that currently have traffic signals: 50<sup>th</sup> Avenue and Lowell Boulevard; 50<sup>th</sup> Avenue and Federal Boulevard; and 52<sup>nd</sup> Avenue and Federal Boulevard. Conflict with turning vehicles is a primary cause of pedestrian crashes. Allowing pedestrians to begin crossing the street before cars receive the green light reduces this conflict.
- Add audible and pedestrian countdown signals to all controlled intersections along Federal Boulevard.
- Improve the bus stops at 52<sup>nd</sup> Avenue and Federal Boulevard by adding amenities such as shelters, trashcans, and public art (e.g., a mural on the wall of the Dollar Tree on the east side of Federal).
- Add crosswalks in all directions to the intersections that currently have four-way stops: 50<sup>th</sup> Avenue and Decatur Street, and 52<sup>nd</sup> Avenue and Zuni Street.
- Add stop signs and crosswalks to additional key intersections along the Wellness Walk: 52<sup>nd</sup> Avenue and Lowell Boulevard; 50<sup>th</sup> Avenue/Regis Boulevard and Julian Street, and 52<sup>nd</sup> Avenue and Elm Street (the eventual “front door” of Aria Denver). For offset intersections such as 52<sup>nd</sup> Avenue and Lowell Boulevard, apply midblock crossing treatments, such as the City is planning at 33<sup>rd</sup> Street and Brighton Boulevard.



Example of pavement markings along the Indianapolis Cultural Trail. Image source: Indystar.com



Planned mid-block crossing at 33<sup>rd</sup> Street and Brighton Boulevard. Image source: City and County of Denver.

- Reduce 50<sup>th</sup> Avenue/Regis Boulevard between Lowell Boulevard and Federal Boulevard to one lane in each direction by adding on-street parking and/or bike lanes. This is the only stretch of 50<sup>th</sup> Avenue that is currently two lanes in each direction; the Avenue is only one lane in each direction to both the east and west. “Rightsizing” the Avenue in this way can be very cost effective (potentially requiring little more than paint to restripe the road), will help calm traffic, and allows the introduction of bulb outs at intersections in the longer term (see below). This recommendation is consistent with current plans to add bike lanes/sharrows to 50<sup>th</sup> Avenue as part of Cultivate Health.



*50<sup>th</sup> Avenue/Regis Boulevard could be reduced to one lane in each direction by adding a buffered bike lane like this one. Image source: NACTO Urban Street Design Guide.*

### *Long term*

- Widen existing sidewalks to at least five feet and reduce the width of travel lanes along 50<sup>th</sup> Avenue, 52<sup>nd</sup> Avenue, Zuni Street, and Vallejo Street.
- Add sidewalks where missing on 52<sup>nd</sup> Avenue, as planned as part of Cultivate Health.
- Increase the amount of pedestrian-scaled street lighting along the entire route of the Wellness Walk.
- Install shade trees along the entire route of the Wellness Walk.
- Install landscaping, street furniture (benches, trash receptacles, planters, etc), and public art along the entire route of the Wellness Walk.
- Add medians along Federal Boulevard from 48<sup>th</sup> to 52<sup>nd</sup> Avenue, complementing existing medians to the north and south. The medians should include pedestrian refuge areas at all intersections.



*Median refuges allow pedestrians to pause safely part way across the street. Image source: NACTO Urban Street Design Guide.*

- At the intersection of 50<sup>th</sup> Avenue and Federal Boulevard add directional curb ramps and eliminate the right turn lane on the east side of Federal and the analogous “cutout” on west side of Federal south of 50<sup>th</sup>, thereby extending a consistent curb line all the way to the intersection.
- Add bulb outs to shorten the pedestrian crossing distance on 50<sup>th</sup> Avenue at the intersections with Lowell Boulevard, Julian Street, and Federal Boulevard.
- Consider installing pedestrian-activated signals at the intersections of 52<sup>nd</sup> Avenue and Lowell Boulevard, and at 50<sup>th</sup> Avenue and Julian Street. Although more expensive than stops signs (the short-term improvement recommended above), pedestrian-activated signals only require traffic to stop when pedestrians are present.



*Bulb outs extend the sidewalk and shorten pedestrian crossing distances at intersections.*