



# College-View South Platte

## Federal Boulevard Bus Stop Assessments

Planning Methods, Fall 2019

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In partnership with



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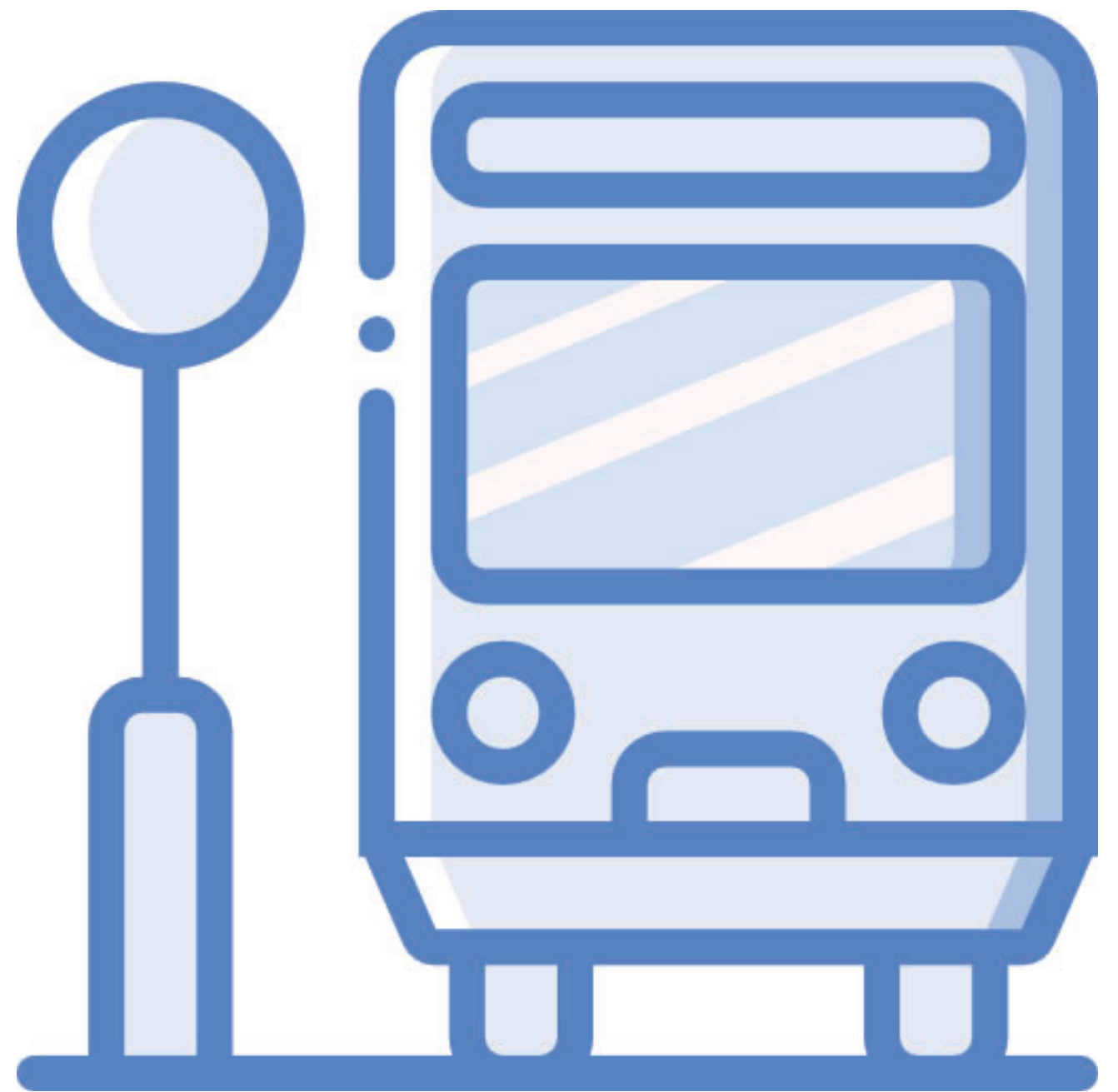
# 1 Project Context

The City and County of Denver is working to implement the City's new transit plan, *Denver Moves: Transit*. The bus stop is a fundamental element of any public transportation system, and the City and County of Denver currently contains over 2,000 of them. The conditions and comfort level of a bus stop influences ridership and thus, the system's ability to achieve its goals. Currently, a database containing the conditions of bus stops does not exist. In order to effectively implement *Denver Moves: Transit*, the City initiated a project to assess the quality and amenities of bus stops in partnership with planners at Denver Public Works, Denver Public Health and Environment, and Felsburg Holt & Ullevig.

## Methodology and Report Elements

This project is divided into three chapters. Chapter 1 includes an examination and analysis of the characteristics of the study area in terms of demographics, land use, urban fabric, and land use/transportation. Chapter 2 includes bus stop site assessments and user interviews, and Chapter 3 provides a summary of findings and recommendations. The comparative study between Denver County and the College View - South Platte neighborhood reveals trends indicative of transit needs. Moving forward, the City of Denver will apply the information in this report to bus stop amenity improvements and planning projects in the future.

The Planning Methods class assisted with the Bus Stop Inventory project along the 9.25 mile stretch of Federal Boulevard with support from WalkDenver, a non-profit organization that campaigns for more walkable streets. For this project, Federal Boulevard was divided into two project areas: North and South. Each project area was further divided into six study areas. Paige McCallister, Max Morgan, Alisa Childress, and Eli Baana studied the College View - South Platte area.

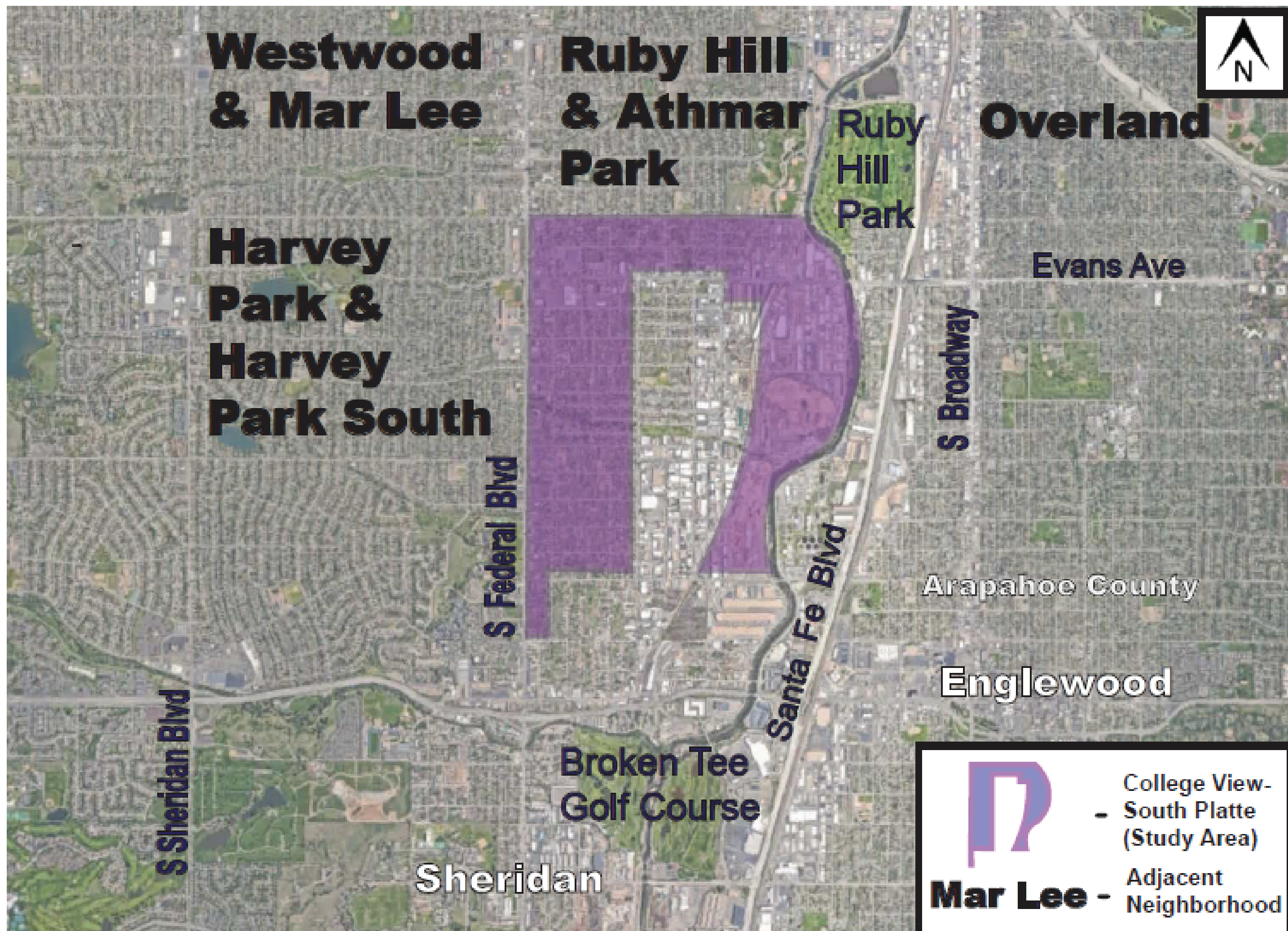


# Study Area

The College View – South Platte area is located at the southeast end of Federal Boulevard. The boundaries of College View extend generally from Jewell Avenue to the north, Dartmouth Avenue to the south, and South Zuni Street to the east. South Platte is bounded by Jewell Avenue to the north, Dartmouth Avenue to the south, the Kobert Flats neighborhood to the west, and the South Platte River to the east. Within the city, the College View – South Platte area is located southwest of downtown Denver. This is illustrated by Exhibits 1 and 2.

Exhibit 1: Study Area Location Map

## The College View- South Platte Neighborhood

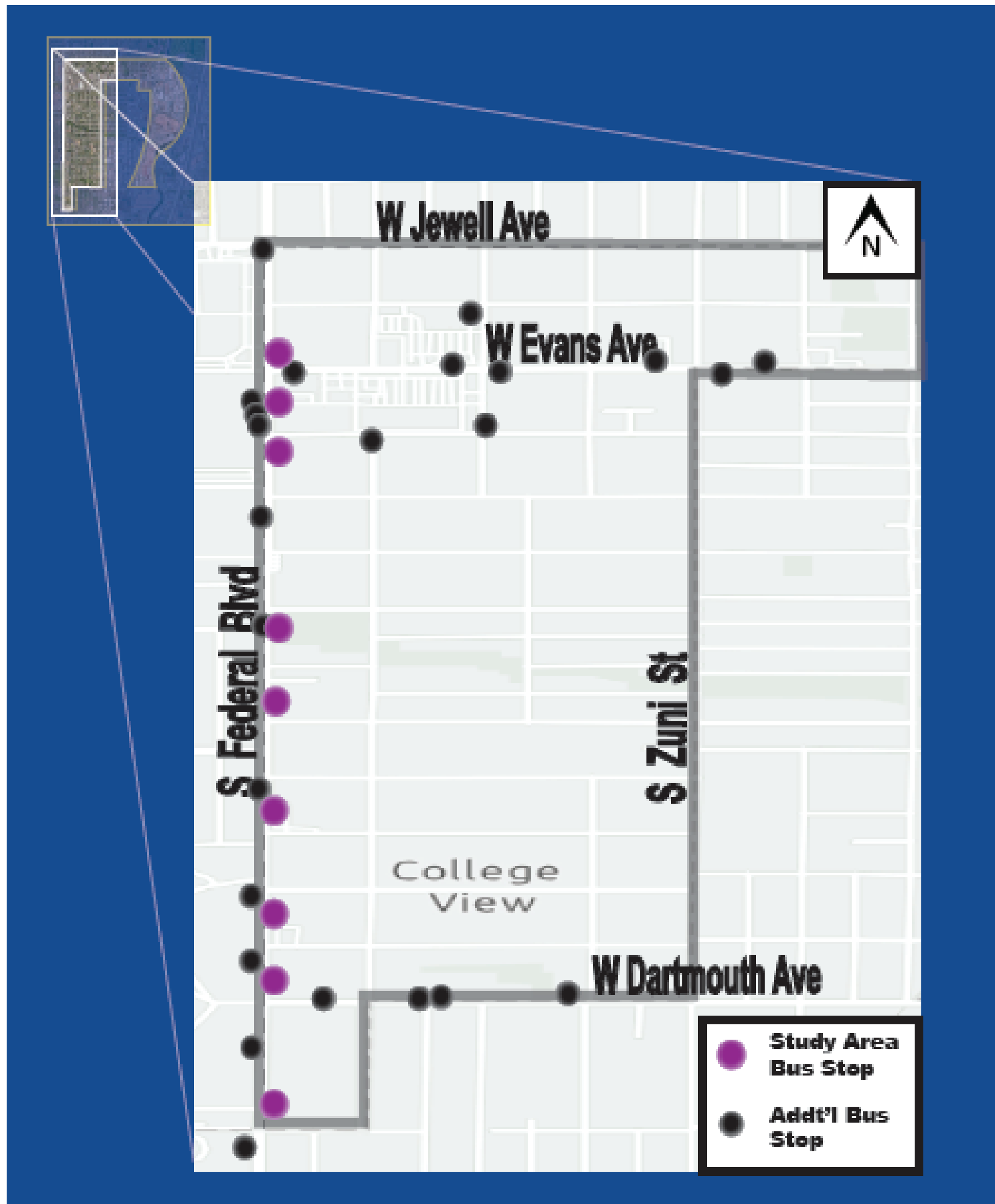


Base map source: Google Maps

# Study Area

Exhibit 2: Study Area Detail Map

## College View- South Platte Bus Stops



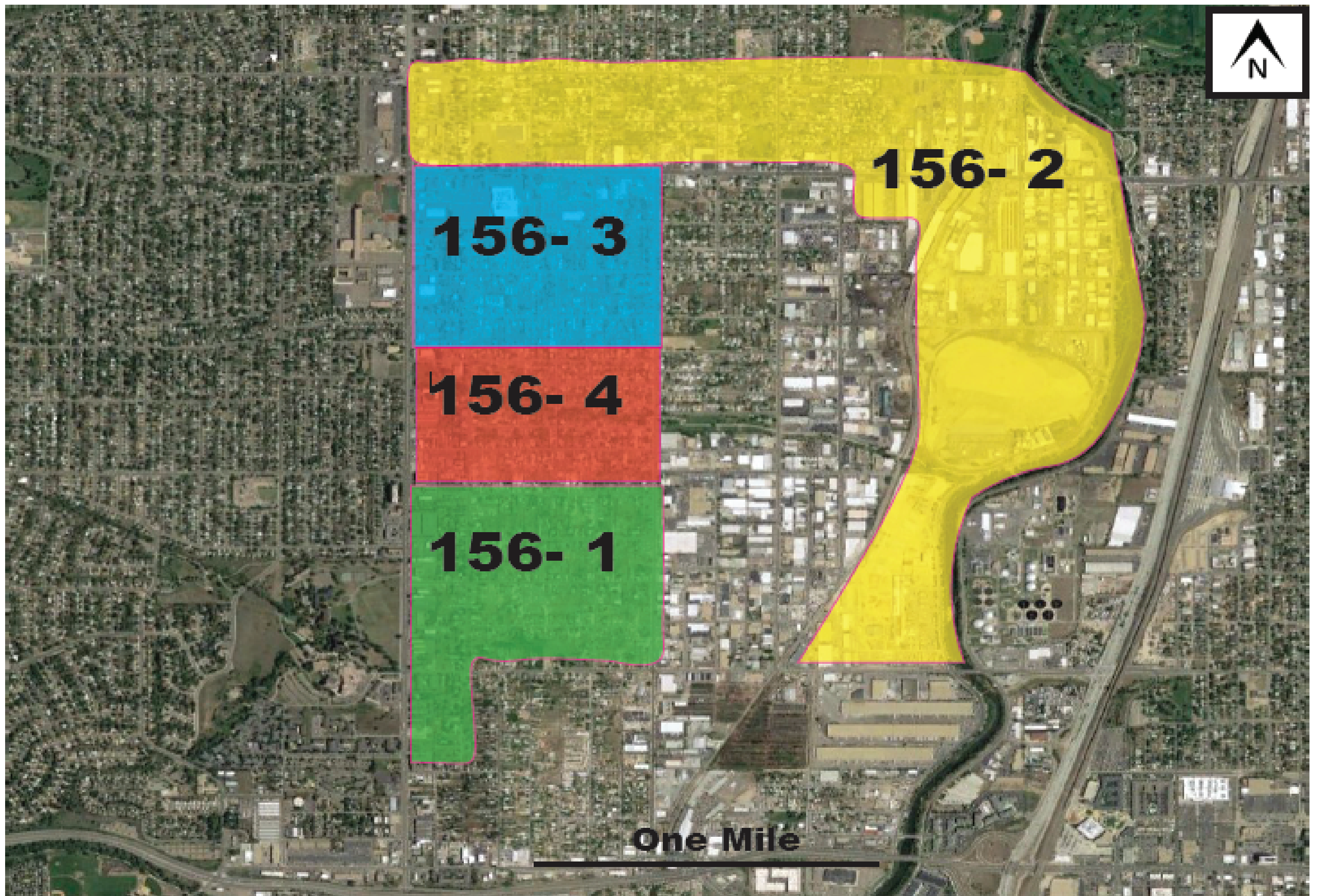
Base map source: Google Maps

# Demographic Profile

The neighborhoods of College View and South Platte contain four census block groups and house 8,536 people according to the 2013-2017 American Community Survey 5-year estimate. This information is displayed in Exhibit 3 below.

*Exhibit 3: Study Area Cenus Geographies Map*

## College View- South Platte: Census Blocks



Base map source: Google Maps

To understand the dynamics and characteristics of the College View – South Platte area, the project team analyzed four attributes and compared them to the City and County of Denver. Examining these attributes revealed important information about transit ridership and walkability in the neighborhood.

## Attribute One: Age

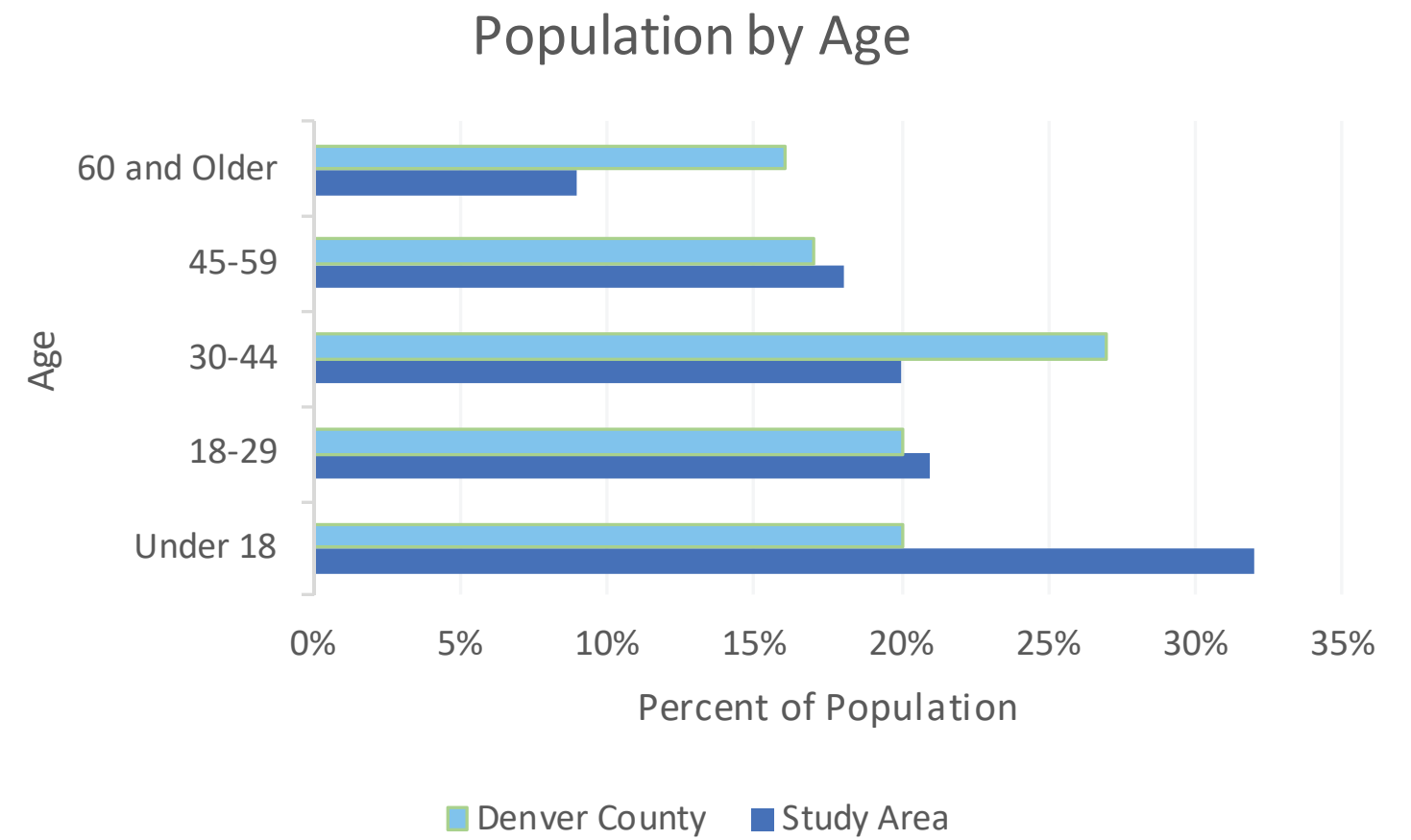
By comparing the population by age of College View – South Platte and Denver County, it can be seen that over 50% of the population of College View – South Platte is under the age of 30. This is much higher than the share of the population under the age of 30 in Denver County. Similarly, the share of the population 60 years and older in Denver County is higher than the share of the population in College View – South Platte. This is displayed in Table 1 and Chart 1 below.

Table 1: Percent of Population by Age

Age	Study Area		Denver County	
	Count	Percent	Count	Percent
Under 18	2,739	32%	138,624	20%
18-29	1,798	21%	134,103	20%
30-44	1,706	20%	180,721	27%
45-59	1,545	18%	115,656	17%
60 and Older	748	9%	109,403	16%
<b>Total</b>	<b>8,536</b>	<b>100%</b>	<b>678,467</b>	<b>100%</b>

Source: US Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (Table B01001)

Chart 1: Percent of Population by Age



The fact that College View – South Platte has a higher share of the population under the age of 30 than the share of the population in Denver County has important implications for transit ridership and walkability. First, residents may more readily take public transportation. According to recent studies, newer generations tend to walk and use alternative modes of transportation more than older generations (Davis et al. 7). Newer generations are also less ingrained in single-passenger vehicle culture. For example, a person who rides the bus at an early age may never consider the need for a car as a teen or adult (“Air Pollution,” 2016). Furthermore, teenagers and young adults may feel safer waiting for and riding the bus, which has positive implications for transit ridership in the future.

### Takeaways:



- College View has a significant portion of the population under the age of 30.
- Newer generations may take transit more readily.



## Attribute Two: Annual Household Income

In terms of annual household income, the share of households that earn less than \$25,000 annually is significantly higher in the study area than the share of households in Denver County. This information is displayed in Table 2 and Chart 2 below.

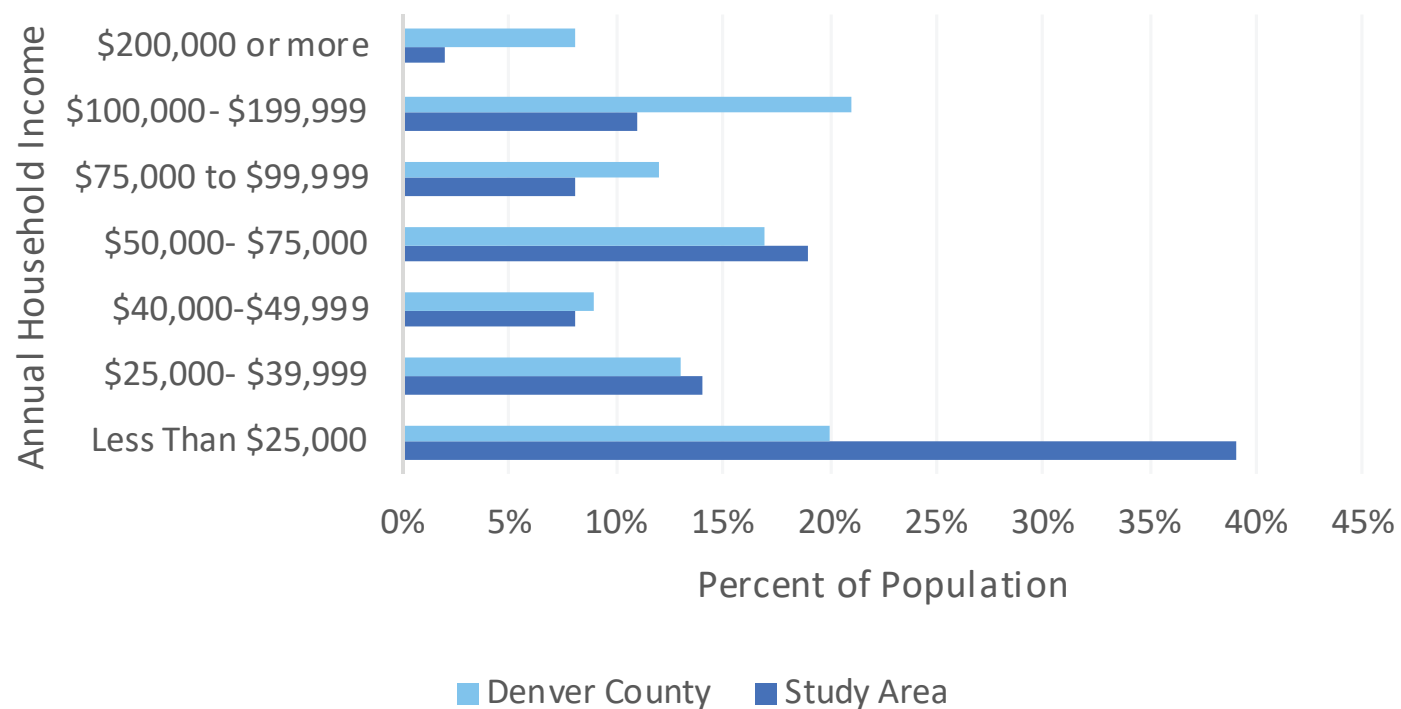
Table 2: Percent of Households by Annual Household Income

Annual Income	Study Area		Denver County	
	Count	Percent	Count	Percent
Less Than \$25,000	924	39%	58,278	20%
\$25,000- \$39,999	324	14%	37,711	13%
\$40,000-\$49,999	186	8%	24,633	9%
\$50,000- \$75,000	435	19%	49,101	17%
\$75,000 to \$99,999	194	8%	35,093	12%
\$100,000- \$199,999	249	11%	58,963	21%
\$200,000 or more	36	2%	23,483	8%
<b>Total</b>	<b>2,348</b>	<b>100%</b>	<b>287,262</b>	<b>100%</b>

Source: US Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (Table B19001)

Chart 2: Percent of Households by Annual Household Income

Percent of Households by Annual Household Income



The earning power of the area has important implications on transit ridership and walkability. Because the College View – South Platte area has a significant share of households that earn less than the Denver County average, the community may be more dependent on public transportation. It may take years of working and saving to purchase an automobile, and this demonstrates a need for reliable alternative transportation modes.

### Takeaways:



- College View has significantly less earning power than Denver County as a whole.
- Less earning power could indicate a higher reliance on walking and public transit.

## Attribute Three: Educational Attainment

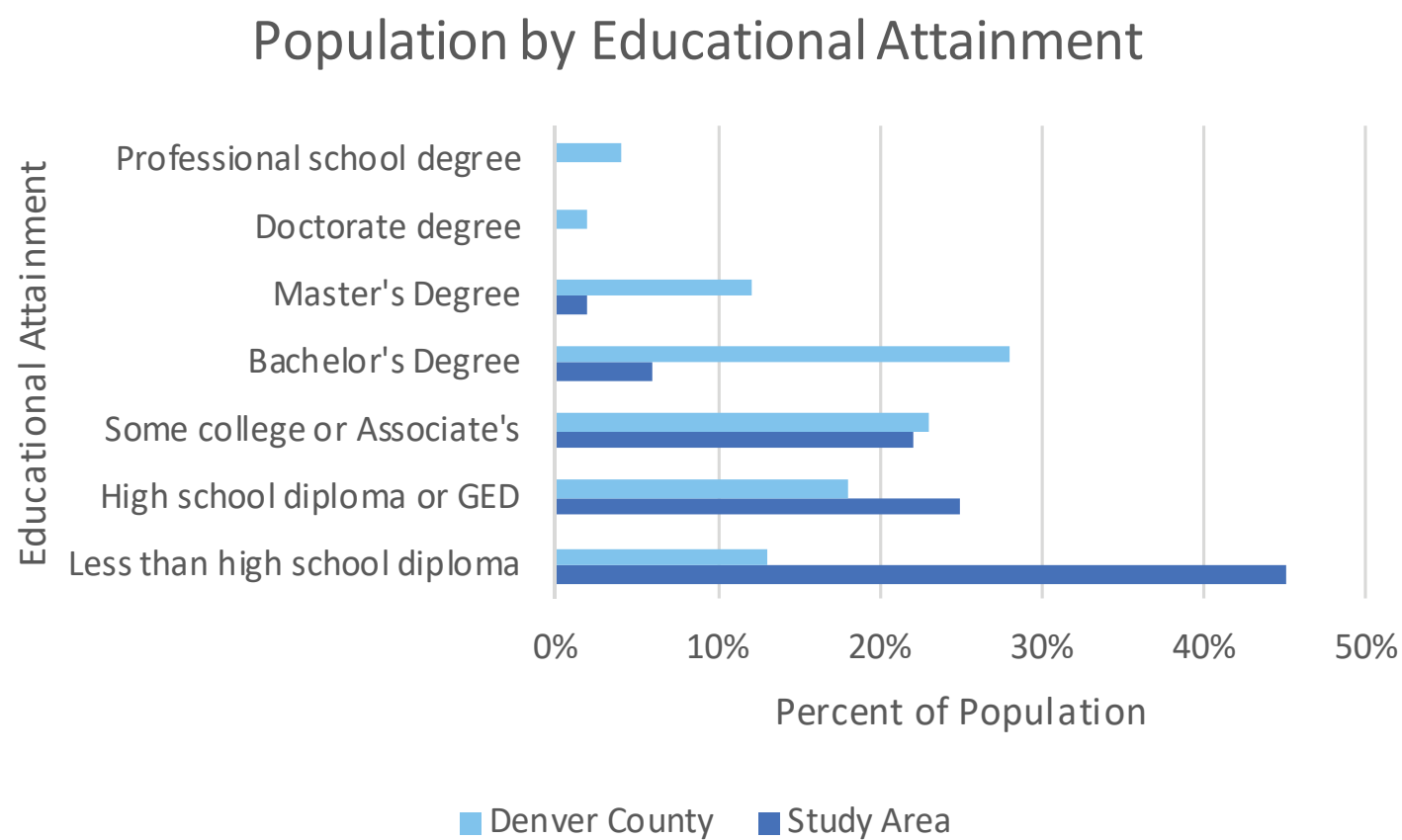
The share of the population with a high school degree or less is significantly higher in the study area than the share of the population in Denver County. Forty-five percent of residents 25 years and older in the College View – South Platte area lack a high school diploma or GED. This information is displayed in Table 3 and Chart 3 below.

*Table 3: Percent of Population by Educational Attainment*

Educational Attainment	Study Area		Denver County	
	Count	Percent	Count	Percent
Less than high school diploma	2,149	45%	64,356	13%
High school diploma or GED	1,187	25%	84,948	18%
Some college or Associate's	1,074	22%	109,198	23%
Bachelor's Degree	296	6%	137,052	28%
Master's Degree	110	2%	59,213	12%
Doctorate degree	1	<1%	9,049	2%
Professional school degree	0	0%	19,312	4%
<b>Total</b>	<b>4817</b>	<b>100%</b>	<b>483,128</b>	<b>100%</b>

Source: US Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (Table B06009)

*Chart 3: Percent of Population by Educational Attainment*



This data may reveal gaps in the public transportation system. It is possible that a lack of access to schools, universities, and jobs creates a barrier to education. This highlights a potential need for reliable, more frequent transportation to the Auraria Campus, Regis University, Denver University, and other schools. Furthermore, increasing route reliability and frequency, as well as walkability, may aid residents in obtaining jobs, increasing earning power, and thus, improving their ability to attain a higher level of education.

## Takeaways:



- A significant portion of the College View population has less than a high school diploma.
- Unreliable or infrequent transportation may create a barrier to attaining education.

## Attribute Four: Race/Ethnicity

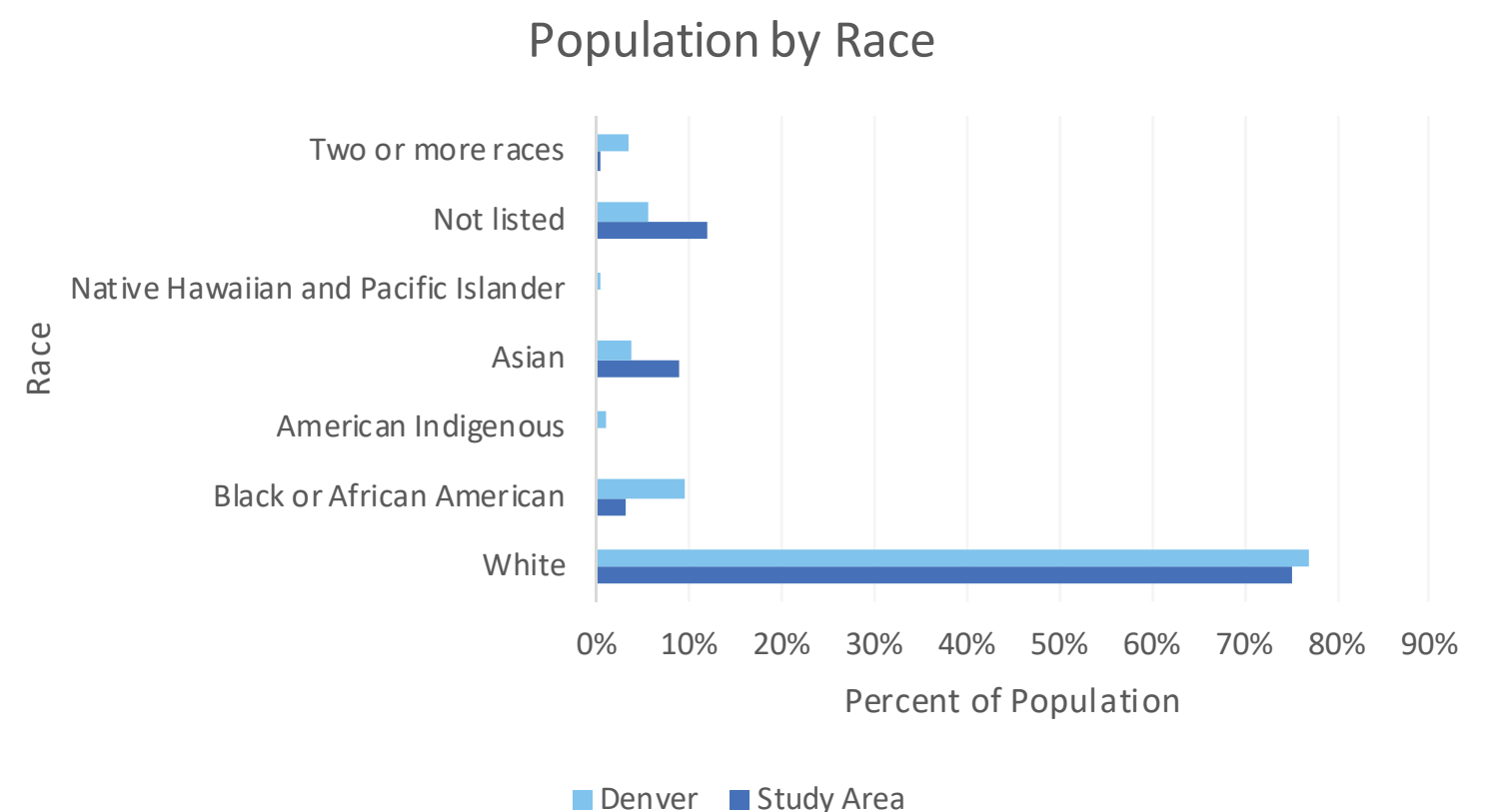
The share of the population that is Asian in the study area is higher than the share of the population in Denver County. This information is displayed in Table 4 and Chart 4 below.

*Table 4: Percent of Population by Race*

Race	Study Area		Denver County	
	Count	Percent	Count	Percent
White	6,388	75%	521,481	77%
Black or African American	274	3%	64,466	10%
American Indigenous	0	0%	6,537	1%
Asian	741	9%	24,433	4%
Native Hawaiian and Pacific Islander	0	0%	993	0%
Not listed	1,032	12%	37,216	5%
Two or more races	101	<1%	23,341	3%
<b>Total</b>	<b>8,536</b>	<b>100%</b>	<b>678,467</b>	<b>100%</b>

Source: US Census Bureau, 2013-2017 American Community Survey 5-Year Estimates (

*Chart 4: Percent of Population by Race*



In order to better understand the demographics of the population, the project team also analyzed ethnicity. From this data, it can be seen that the share of the population that is Hispanic or Latino in the study area is significantly higher than the share of the population in Denver County. The study area also has a significant Vietnamese population. This information is displayed in Table 5 below.

Table 5: Percent of Population by Ethnicity

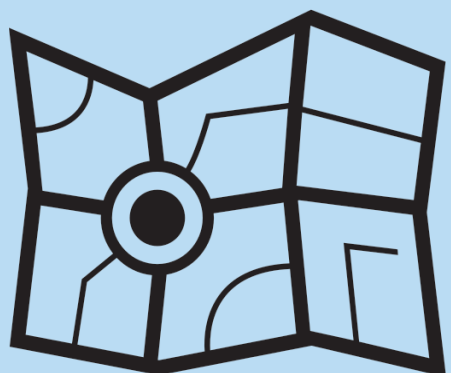
Ethnicity	Study Area		Denver County	
	Count	Percent	Count	Percent
Not Hispanic or Latino: White	1,341	16%	363,712	54%
Not Hispanic or Latino: Black or African American	180	2%	62,166	8%
Not Hispanic or Latino: Asian	741	9%	23,967	3%
Not Hispanic or Latino: Other	3	0%	5,603	1%
Not Hispanic or Latino: Two or more races	34	0%	31,838	4%
<b>Not Hispanic or Latino</b>	<b>2,282</b>	<b>27%</b>	<b>471,367</b>	<b>69%</b>
Hispanic or Latino: White	5,047	59%	157,769	23%
Hispanic or Latino: Black or African American	94	1%	2,300	0%
Hispanic or Latino: Other	1,029	12%	39,609	6%
Hispanic or Latino: Two or more races	168	2%	14,844	1%
<b>Hispanic or Latino</b>	<b>6,254</b>	<b>73%</b>	<b>207,100</b>	<b>31%</b>

The study area's race and ethnicity distribution has implications on the neighborhoods transit ridership and walkability. Because the population contains so many Hispanics and Latinos, it is possible that language is a barrier to using public transportation. Providing maps and route information in Spanish, and possibly Vietnamese, may encourage better understanding and use of the transit system.

## Summary

*Denver Moves: Transit* serves to benefit the Denver community as a whole; however, to accomplish widespread goals, the city should embrace each neighborhood's unique features. Based on the area's demographic profile, it is clear that College View - South Platte could benefit from improved public transportation and pedestrian infrastructure. To illustrate, the neighborhood would benefit from deliberate routes to local employers including two Walmart Supercenters, as well direct access to commercial districts and school campuses. By upgrading bus stop amenities to encourage ridership and improving service to opportunities outside the neighborhood, the City of Denver could guide the neighborhood towards upward trends in educational attainment and annual household income, while cultivating a population that makes decisions that are positive for health and the environment.

### Takeaways:



- College View has a significant Hispanic/Latino and Vietnamese population.
- Language accommodations may help to encourage transit ridership.

# Land Use and Transportation

## College View- South Platte Land Use



### Land Use

*Exhibit 4: Land Use Map*

Land is primarily categorized as residential in College View, with commercial development to the north and east. The South Platte side of the area is heavily industrial with commercial development to the north.

# Transportation

## College View- South Platte Transportation



## Transportation

*Exhibit 5: Transportation Map*

The bus is the primary means of public transportation in the College View Area, as there are no light rail stations in the neighborhood. In terms of active transportation, pedestrian and bicycle infrastructure is weak. Many sidewalks are narrow and in disrepair, and few roads have bike lanes. This has important implications for transit ridership and walkability in the area, as everyone who takes public transportation is a pedestrian or cyclist at some point.

# Urban Fabric

College View is a low-density neighborhood with primarily one and two-story residential lots. Historically, the neighborhood was platted for small-scale farms in half-acre lots. Although no longer a rural community, the College View neighborhood retained its sprawling nature. Today, there is a commercial corridor with multi-family housing development along Federal Boulevard, where buildings are two to four stories tall. Most buildings in the area are older and in need of repair. Roughly 12% of houses were built before 1940, and the area has a lower than average housing vacancy rate (Shift Research Lab). In terms of topography, the area is primarily flat with a few rolling hills. South Platte is industrial in nature, with one and two-story warehouse buildings and auto repair centers lining the streets. The area's urban fabric is captured in the following photos.



# Chapter 1 Conclusion

The College View - South Platte area has unique features that should be embraced when improving transit ridership and walkability in the area. In terms of demographics, the College View neighborhood has a significant portion of the population under the age of 18. Younger generations may take transit more readily than older generations, which has positive implications on future transit ridership. Furthermore, many residents of the College View population also have much lower earning power than the Denver County average. This means that reliance on public and active transportation is likely greater in this area. Additionally, nearly half of adults 25 years and older have attained less than a high school degree.

It is possible that lack of reliable and frequent transportation to education centers perpetuates this. Lastly, the College View neighborhood has a significant portion of the population that is Hispanic/Latino and Vietnamese. Thus, language accommodations may be necessary to encourage transit ridership. In terms of land use and transportation, the bus is the primary form of public transportation in the area, and land use is predominantly residential. Examining the urban fabric of the area reveals its sprawling nature and older, deteriorating buildings. Based on these findings, improvement of the transit ridership experience and walkability will serve needs in the area.

## Works Cited

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# 2 Site Assessments

## Windshield Survey

The windshield survey allowed the research team to gather firsthand, initial impressions of both the College View-South Platte neighborhood and the assigned bus stops along Federal Boulevard. This preliminary observation both complimented and expanded upon the team's initial research and analysis. From the survey, the team was able to obtain an understanding of the geography, land-use, infrastructure, and culture of the neighborhood at a level beyond the initial United States Census data analysis. Most importantly, it exposed the researchers to a new perspective on the conditions of the bus stops that was not evident from the initial analysis.

Foremost, the team was able to visually assess the bus stops, and then record and make predictions from these observations. Potential 'best' and 'worst' stops, such as the West Evans Avenue bus stop, and the West Bates Avenue bus stop were noted, respectively. This gave the team insight into the types of amenities. The team noted high

speeds and wide lanes on South Federal Boulevard, coupled with a lack of sidewalks on the east side of the street as potential safety hazards and impediments to connectivity and walkability.

Additionally, the team considered key land features and land-use patterns. This included the types of residential buildings and businesses as well as their locations, the occupancy and vacancy of buildings and land, and the condition and positioning of buildings and infrastructure. South Federal Boulevard tended to have

more commercial buildings set back from the street and fewer residential buildings located near the street. The occupancy and vacancy of buildings varied in location, and potentially a quarter or more appeared to be vacant. Along South Federal Boulevard, most of the land was developed in some way, either with a permanent structure or asphalt. The study area had few pedestrian crosswalks and signals to cross South Federal Boulevard. A smaller number of crosswalks ran parallel to Federal Boulevard at junctions with east-west avenues.



Looking north on South Federal Boulevard



# Field Assessment

Overall, the bus stops along Federal Boulevard within the study area scored relatively low in terms of infrastructure and amenities. The authors used an assessment survey that measured the level of amenities, cleanliness, safety, and connectivity of each bus stop to draw these conclusions. The team used pen and paper to conduct the assessments and later entered the data into the Google sheet provided by the client. Outlined below are brief summaries of each bus stop from north to south and the reasoning behind their respective scores.

## 1 Bus Stop ID #13809

The Evans and Federal bus stop was one of the highest rated due to access, cleanliness, connectivity, and physical condition. Safety was rated as a 3 due to high traffic speeds along Federal Boulevard. In regards to connectivity and access, the stop is located within the commercial corridor along Evans Avenue, and sidewalks are in good condition. A crosswalk along Federal is close enough to the stop that almost all transit riders would choose to use it. A shelter and trash can are on site, so the stop was generally clean. The authors also noted that the storefront by the stop was active, which increased feelings of safety.

Evans and Federal - good conditions



## 2 Bus Stop ID #23509

The Warren and Federal bus stop received an overall rating of 3. The stop has a bench and a sign, but it is located in front of multiple vacant storefronts. Additionally, lack of lighting was a concern for the authors. However, the authors collected observations during the day, so they could only speculate about nighttime conditions. The authors also observed multiple jaywalkers due to distant crosswalks. All of these factors resulted in a lower safety rating. While the stop is located near a commercial corridor, the transit rider would need to walk through large surface parking lots before reaching the place of business.

Warren and Federal - adequate conditions



### 3 Bus Stop ID #13822

Federal and Iliff received average ratings across the board. Although this stop has a bench, trash can, and wide sidewalks, the stop was not particularly clean or accessible. The main issue at this stop is pedestrian connectivity. The stop is far enough away from a crosswalk that very few people are likely to walk to use one.

### 4 Bus Stop ID #13819

The bus stop at Federal and Harvard consists of only a bench and a sign. Therefore, it was ranked as one of the lowest in the study area. With an overall score of 2, the most critical issue was cleanliness. Though the storefront is active, this seems to exacerbate the problem since the stop lacks a trash can. Furthermore, high traffic speeds and low lighting contributed to a low safety rating. Crosswalks are close enough that most transit riders would use them, but narrow sidewalks and lack of destinations to walk to decreased the overall score.

### 5 Bus Stop ID #13855

The Yale and Federal bus stop was one of the highest rated in the study area. It contains a shelter and trash can, and it is near enough to a crosswalk that many people would use it. It also connects residents from nearby multi-family housing to a bus line. Wide sidewalks increase access to riders with limited mobility, and the active storefront increases feelings of safety.

### Iliff and Federal - adequate conditions



### Harvard and Federal - needs improvement



### Yale and Federal - good conditions



## 6 Bus Stop ID #13783

The bus stop at Amherst and Federal consists of a single bench but is located under a shady tree. The bench is usable but in poor condition. Overall, the stop was relatively clean, with a few cigarette butts and chip bags littering the area. The stop is in front of a very active storefront and is close to a crosswalk. There is also a streetlight nearby. All of these factors have positive implications for safety. However, high traffic speeds and narrow sidewalks decreased the safety rating. Overall, this bus stop received average ratings in every category.

Amherst and Federal - adequate conditions



## 7 Bus Stop ID #13786

The Bates and Federal bus stop was the worst rated stop in the study area. This is because there are no amenities and high amounts of trash. The stop provides little access to those with limited mobility and almost no pedestrian connectivity. Not only is the stop entirely dirt and gravel, there is not a crosswalk nearby enough for people to use. A run-down apartment building is located near the stop, and combined with high traffic speeds, the stop feels very unsafe. Overall, the stop had a rating of 1.

Bates and Federal - bad conditions



## 8 Bus Stop ID #13806

The stop at Cornell and Federal is near multiple multi-family buildings and a few commercial uses. It has a sign and two wooden benches but no other amenities. Overall, the stop was relatively clean. Wide sidewalks increase access, and lighting from nearby buildings increases the feeling of safety. However, there is no crosswalk within reasonable walking distance of the stop.

Cornell and Federal - adequate conditions



## 9 Bus Stop ID #13816

The Floyd and Federal Stop is in front of a well-kept apartment building and had a high cleanliness rating, even without a trash can on-site. A bench is located under a shady tree, though falling leaves may pile up. At night, only streetlights provide light, and there are no active commercial uses in the area. This presents safety concerns. Furthermore, there is no crosswalk in sight, and destinations other than the nearby housing are too far to walk to. Therefore, connectivity was scored low. However, three separate transit riders were waiting at the stop when the authors completed the assessment, so the stop may seem more connected compared to an outsider's perspective.

## Floyd and Federal - adequate conditions



The breakdown of scores for each bus stop is displayed in Table 6.

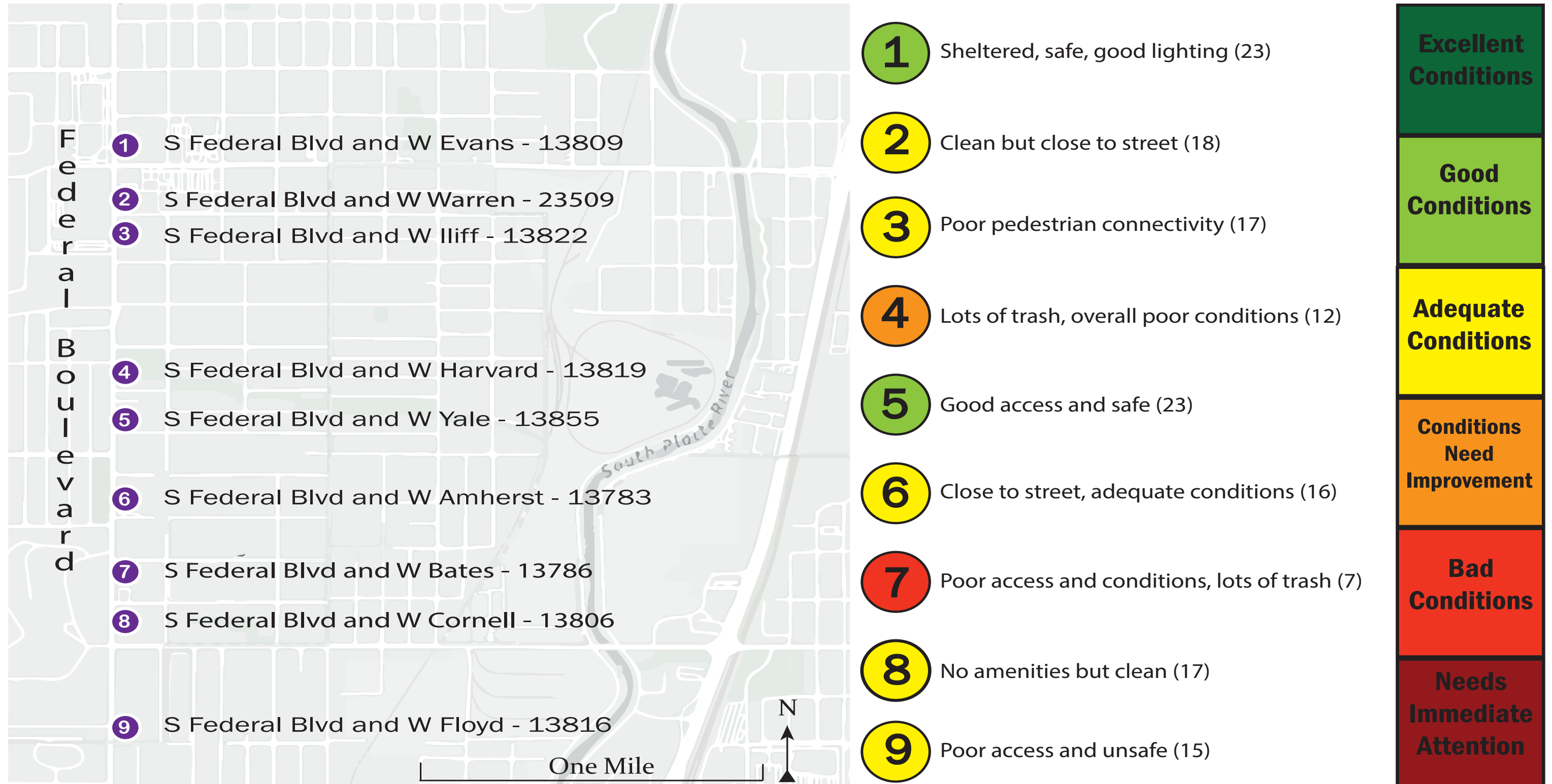
Table 6: Study Area Bus Stops by Categorical Ratings

Unique ID	Bus Stop		Physical		Disability	Pedestrian		Composite	
	Number	Cross Street	Condition	Cleanliness	Access	Connectivity	Safety	Overall	Score
1	13809	W Evans Ave	4	4	4	4	3	4	<b>23</b>
2	23509	W Warren Ave	3	4	3	3	2	3	<b>18</b>
3	13822	W Iliff Ave	3	3	3	2	3	3	<b>17</b>
4	13819	W Harvard Ave	2	1	2	3	2	2	<b>12</b>
5	13855	W Yale Ave	4	3	4	4	4	4	<b>23</b>
6	13783	W Amherst Ave	3	3	3	3	2	2	<b>16</b>
7	13786	W Bates Ave	1	1	1	2	1	1	<b>7</b>
8	13806	W Cornell Ave	3	4	2	3	2	3	<b>17</b>
9	13816	W Floyd Ave	4	4	1	1	3	3	<b>16</b>

The team categorized each bus stop based on its composite score. Bus stops with a composite score of 0-5 fall into “needs immediate improvement.” Bus stops with a composite score of 6-10 fall in “bad conditions,” and scores of 11-15 are categorized as “conditions need improvement.” Scores from 16-20 are considered “adequate conditions,” and scores from 21-25 fall into the “good conditions” category. Lastly, composite scores from 26-30 are considered to have “excellent conditions.” Exhibit 6 organizes the bus stops in the study area by location and composite scores.

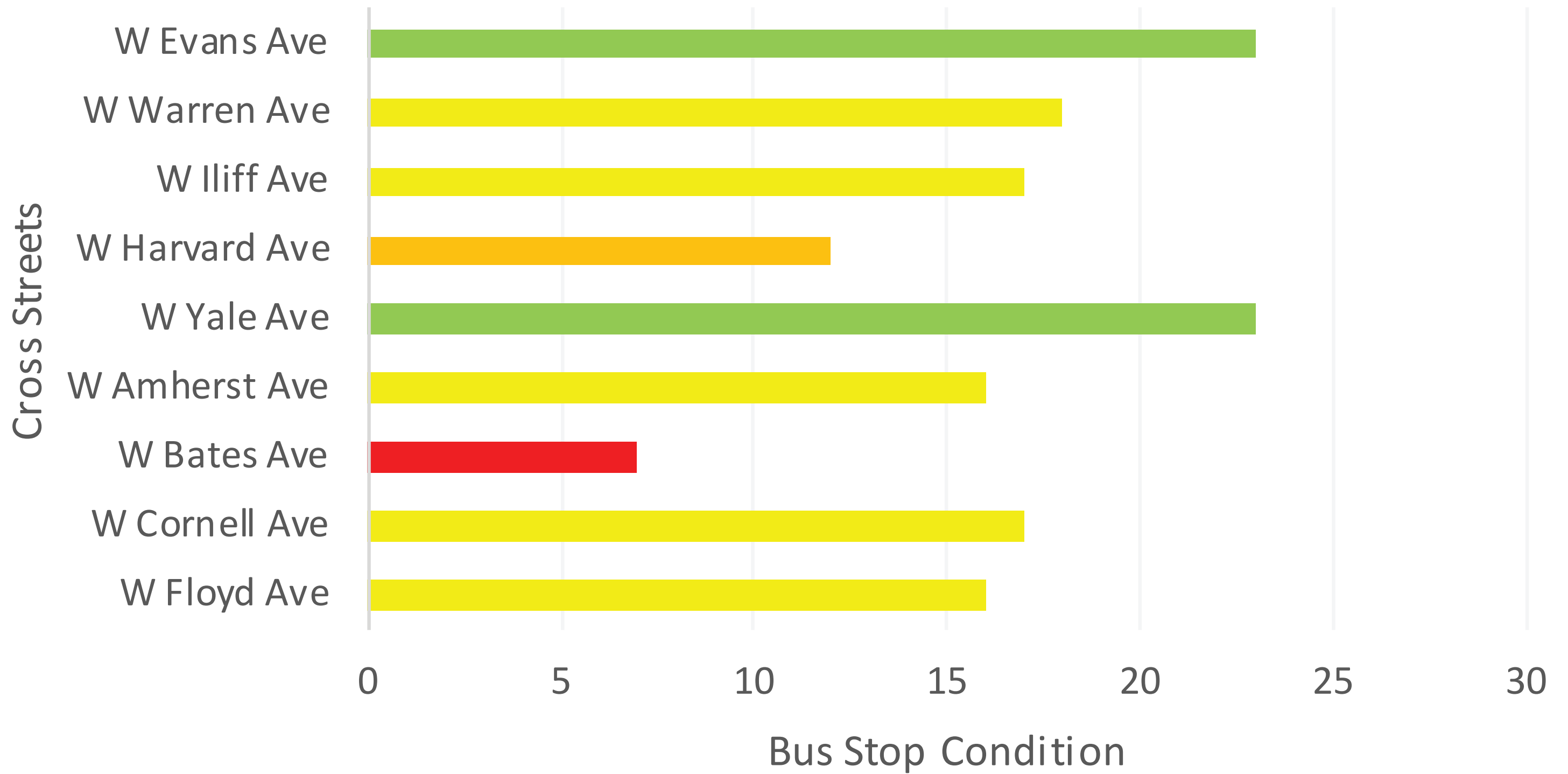
*Exhibit 6: Study Area Bus Stop Map, Description, and Composite Score Rating*

## South Federal Boulevard Bus Stop Map, Description, and Composite Score Rating



Furthermore, Chart 5 displays the bus stops in the study area by their composite scores. The chart is color coded using the same method as Exhibit 6.

## Bus Stop Ratings by Composite Scores



# Intercept Interviews

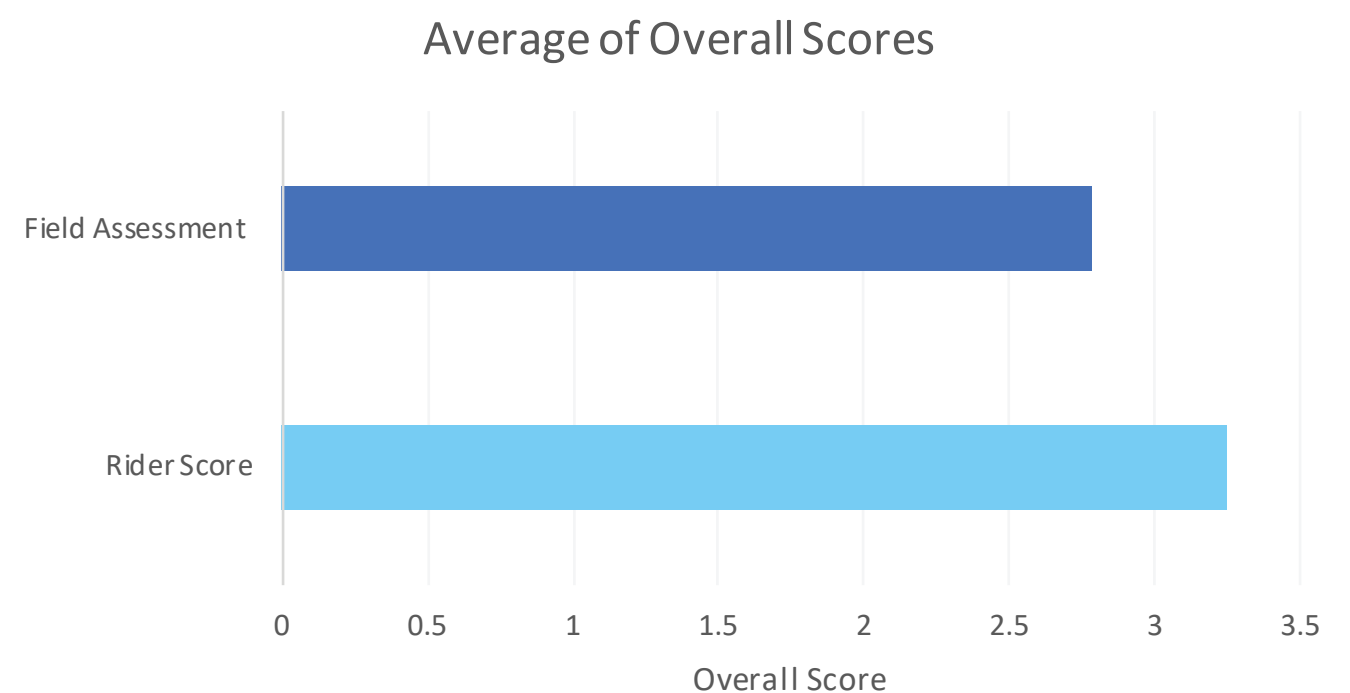
In order to conduct intercept interviews, the research team utilized questionnaires provided by the client. The team divided the questionnaire's seventeen questions into subsections categorized by rider habits, rider issues/concerns, and rider demographics. The team interviewed riders in the study area over two separate periods to obtain a total of twenty responses. The team conducted most surveys during weekday afternoons. Following the interview process, the team converted qualitative data into quantitative data using the interview coding sheet provided by the client. A complete table of quantitative data based on the intercept interviews is available upon request.

During the interview process, the research team strived to obtain an adequate demographic representation in terms of age, gender, race/ethnicity, and physical ability. The majority of respondents were middle-aged (40-59 years old) with a smaller percentage of respondents younger than 40 and older than 60. In terms of gender, 70% of interview respondents were male, and 30% were female. The majority of respondents were Hispanic/Latino, which is consistent with United States Census Bureau data and observations made during the windshield survey. In this respect, the race/ethnicity of respondents was representative of the neighborhood. In terms of physical ability, mode of arrival responses revealed that 15% of respondents relied on mobility devices. Additionally, most respondents lived, but did not work, in the neighborhood. This is consistent with the reported primary reasons for ridership. Primary reasons for ridership included commuting (40%) and errands/shopping (25%). This is also consistent with the most popular destinations: home (25%), stores (25%), and work (20%).

## Analysis

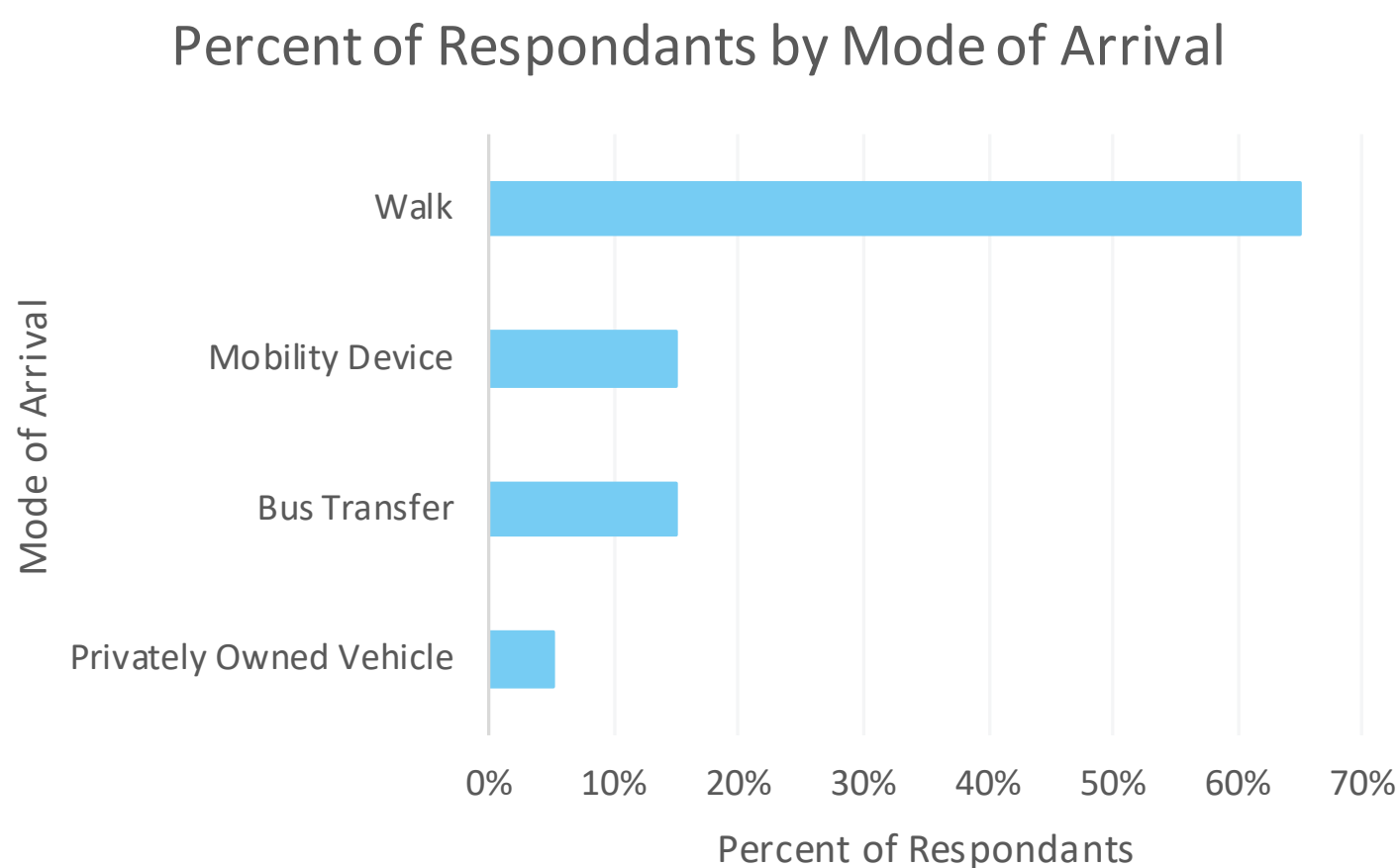
The team asked interview respondents to assign an overall score for the bus stops where they conducted interviews. This score is similar to the field assessment overall scores assigned by the research team. Averaging these scores allows a comparison to be made between the two datasets. The average intercept interview score was 3.25, while the average field assessment score was 2.78. This could indicate that riders in the neighborhood are more familiar and comfortable with the bus stop attributes and amenities than outsiders. It also suggests that there is a significant level of rider satisfaction with bus stop attributes and amenities, but some improvements could be made to raise overall scores. It is important to note that interview locations were concentrated at relatively active stops, which usually had better attributes and amenities, while the field assessment scores are a reflection of every individual bus stop.

*Chart 5: Average of Overall Bus Stop Scores*



The research team found that the majority of respondents walked or used mobility devices to get to bus stops. This information is displayed in Chart 6 below. These primary modes of arrival correspond with information gathered during the windshield survey and field assessment. Together, these findings indicate a need for more pedestrian conscious infrastructure like lighting, sidewalks, and signaling along South Federal Boulevard—especially in respect to streets that connect the residential areas of the neighborhood to the street. This would increase ease of access to the bus stops and increase overall walkability in the neighborhood. As a result, it is also likely that pedestrian safety would improve. Furthermore, the majority of respondents indicated that they would rather take a shorter walk to a bus stop with less time riding, rather than a longer walk to a stop with better amenities and more time riding.

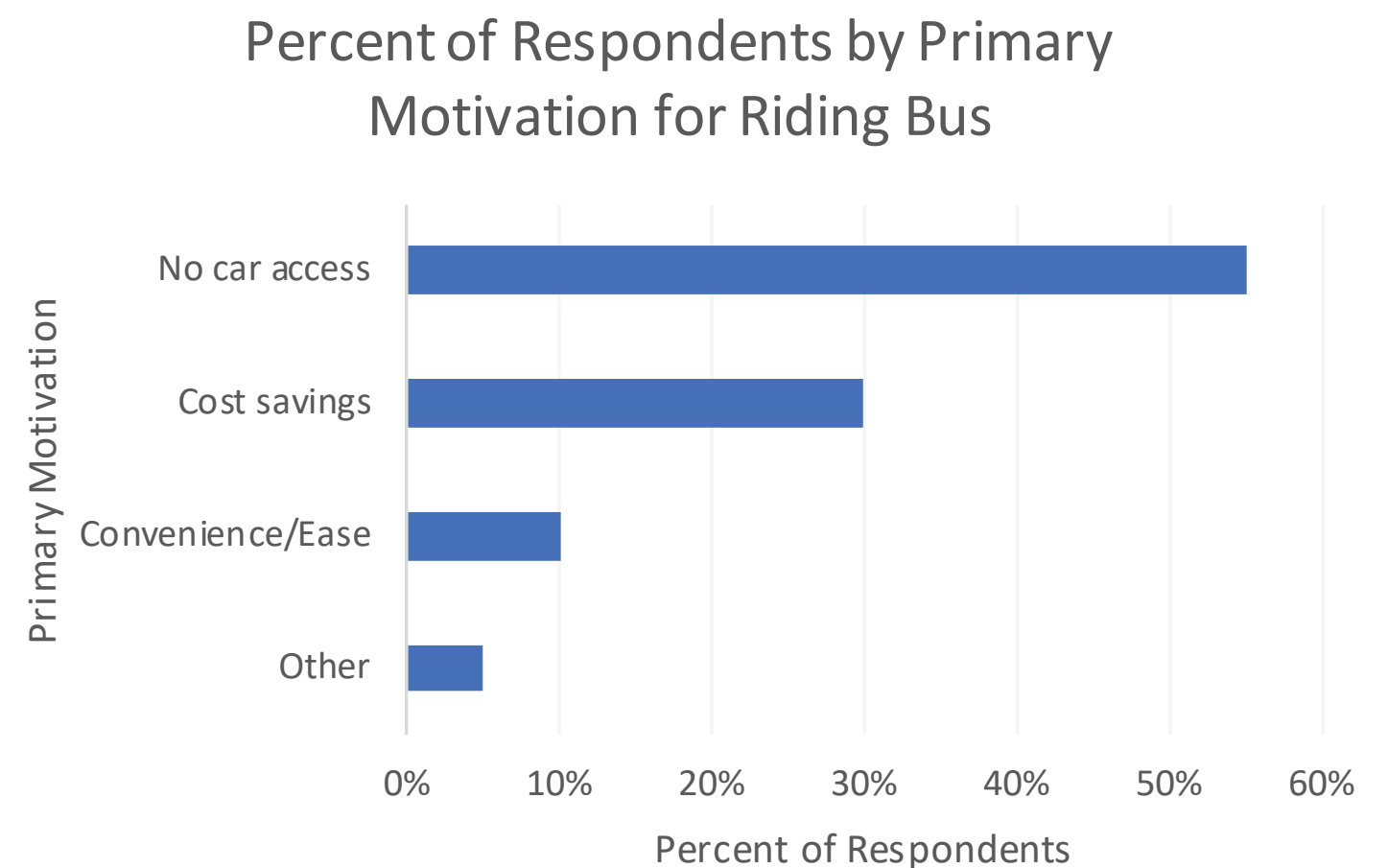
*Chart 6: Percent of Respondents by Mode of Arrival*



Additional data gives further insight into the mode of arrival data. The majority of respondents reported that their primary motivation for choosing public bus service was their lack of vehicle access. Moreover, three-quarters of respondents did not own a vehicle. Therefore, ridership in the area is heavily need-based. This statement is reinforced by the fact that nearly

half of respondents (45%) ride the bus at least once per day, and most respondents travelled between one and ten miles (70%). The distribution of responses for primary motivation for riding the bus is displayed in Chart 7 below.

*Chart 7: Percent of Respondents by Primary Motivation for Riding Bus*



The research team also considered safety conditions and perceived safety. Interview responses indicated that most respondents perceive the bus stops as safe places. It is important to note that the team conducted interviews in relatively active areas during daylight hours. Conducting interviews at other stops may reveal different perspectives on safety. The majority of respondents were male, but the research team did not identify a significant correlation between the demographics of respondents and their perceptions of safety. Most respondents identified high speed traffic and lack of pedestrian infrastructure as the primary reasons for feeling unsafe.



The majority of respondents listed real time arrival information as the most desired amenity improvement. Though a website and mobile application are available to provide this information, several riders expressed frustration with these platforms. Additionally, respondents desired route maps and schedules at each stop. Lastly, respondents expressed their desire for better shelters, heating, and trash cans.

## Rider Desired Improvements

- 1** Real time arrival information 
- 2** Route maps and schedules 
- 3** Shelters, heating, trash cans 

# Methodology Critique

After conducting the windshield survey, field assessment, and intercept interviews, there are several ways that the team's methodology could be improved. Firstly, it would have been helpful to conduct the interviews during peak travel times. In the safety and execution plan, the site assessments and intercept interviews were meant to be conducted during the same afternoon. Since the project team did the site assessments on a Sunday afternoon, it was difficult to find transit riders to interview. It would also be helpful to assess the sites at various times of day and times of the year to see how ridership changes.

While the methodology could have been improved, there were several things that worked well. Firstly, the project team created folders with worksheets for each site assessment and interview. The team also included a copy of the safety and execution plan and other helpful documents, like the Spanish language translation for interviews. Additionally, the team split the assessments by location so that work could be completed as efficiently as possible.

Conducting site assessments and intercept interviews is a particularly valuable planning effort because it allows planners to understand the problem first-hand. Intercept interviews are important to the planning process because it allows planners to get an idea of what the public perception of a place is and what those who live and work in the area are interested in seeing more or less of.

## Chapter 2 Conclusion

Conducting a windshield survey, site assessments, and intercept interviews provided valuable insight on the condition of bus stops along Federal Boulevard in the College View neighborhood. Overall, many bus stops were missing amenities such as shelters and trash cans and left much to be desired in terms of pedestrian connectivity. While the research team found the conditions of the bus stops in the study area to be below average, many riders interviewed felt that the bus stops were adequate. Based on the intercept interview data, ridership in the area is heavily need-based, and many respondents did not own cars. Respondents also expressed their desires for real time route information, route maps and schedules, as well as shelters, trash cans, and heating.



# 3 Findings and Recommendations

After conducting the field assessments, the research team synthesized their findings by determining gaps and recommendations for improvement. The gaps are divided into three categories: existing transit/pedestrian gaps, missing transit/pedestrian gaps, and transit-rider/pedestrian experience gaps. The recommendations are characterized by their scale and are divided into macro recommendations and micro recommendations.

## Gaps

### Existing Transit/Pedestrian Gaps

In terms of deficient existing infrastructure, many of the stops sit too close to Federal Boulevard. Because traffic is heavy in volume and quick moving, having stops so close to Federal Boulevard decreases feelings of safety. The stops at Warren, Amherst, and Floyd would benefit from a setback. Next, stops are located between apartment/retail ingress and egress. These areas have heavy automobile traffic, which decreases pedestrian connectivity and feelings of safety. Lastly, the few benches that exist are small and in poor conditions. Many benches have bent frames and are inconsistent in style.

### Missing Transit/Pedestrian Gaps

In terms of missing transit/pedestrian infrastructure gaps, all bus stops in the study area lack heat, real time bus arrival and departure times, and wifi. Furthermore, many stops are missing shelters. Shelters and heat are necessary because weather can be a barrier to transit users. The bus does not stop very frequently at bus stops in the study area, so riders could be forced to spend time standing at a stop in poor weather. Lack of real time arrival and departure information also causes a barrier to transit ridership. Traffic, route changes, buses leaving early or late, and other factors can make public transit a semi-unreliable mode of transportation. Furthermore, it may be difficult for transit users to use online resources for real time arrival and departure information because no stops have wifi. This means that those without cell phones or other electronic devices or unlimited data plans may be unable to access real time transit information.

### Transit-Rider/Pedestrian Experience Gaps

In terms of transit rider/pedestrian experience gaps, stops lack public art, have significant litter, and are located near hazardous construction sites. Interview responses indicated that riders would appreciate public art and were bothered by excessive amounts of trash. Additionally, connectivity and pedestrian friendly infrastructure are interrupted by construction. While this is a temporary problem, the stops lack safety controls that could make this transitional phase more comfortable for transit riders and pedestrians.

# Recommendations

## Macro Recommendations

In terms of macro recommendations for transit/pedestrian infrastructure, the project group has many recommendations. The first is to setback bus stops from Federal Boulevard through the widening of sidewalks. By increasing the setback of these stops, transit riders feel and are safer while waiting for their bus. Increased setbacks also increase the pedestrian experience for non-transit riders, increasing walkability along Federal and creating space for both types of pedestrians. A subtask of this recommendation is to complete the sidewalk network along Federal. Completing this will increase connectivity, mobility, and safety for all pedestrians.

Secondly, bicycle lanes and sidewalks should connect to trails in the study area. Identifying where the best connection points are will increase mobility and connectivity for transit riders and create a first-mile/last-mile connection. A complete sidewalk network will also contribute to completing this recommendation. To increase safety for transit riders, additional lighting should be placed. Currently, most of the stops in the study area rely on streetlight lighting, which is insufficient. Lighting can be combined with signs to create a sense of place at each bus stop. Adding the bus schedule and/or real time arrival and departure times to these poles would add additional comfort and increase the rider experience. Creating a sense of place at high traffic bus stops is extremely important, which is why the team is recommending a public art initiative. By hiring local artists or schoolchildren to create murals

or sculptures at bus stops, RTD can increase the transit rider experience.

Last, but perhaps most importantly, the project team is recommending a transit only lane along Federal Boulevard. As part of a larger “road diet” this transit lane will decrease speeds along Federal, increase frequency and reliability of transit, and separate traffic from the sidewalk. Creating this infrastructure sets Federal Boulevard up to have an extremely successful Bus Rapid Transit system in the future. To best utilize the existing width of Federal Boulevard, a combined bus and bicycle only lane could be implemented.



# Macro Gaps and Recommendations



Incomplete sidewalk network and poor conditions

Lack of bus lane and bike lane

Complete sidewalk network and improvements

Dedicated bus lane + dedicated bike lane = slower vehicle speeds



## Micro Recommendations

Specific bus stops within the study area are in need of infrastructure additions or improvements that do not apply to all of the stops. Once such improvement is the addition of benches to the Federal and Evans stop and new benches at Federal and Cornell. Federal and Evans has a high number of transit riders and adding a bench to the existing one within the shelter will increase the comfort of the riders and enhance the rider experience. Federal and Cornell, in contrast, has two benches but they are in need of repair. As the stop resides next to a multi-family lot, replacing the benches with one that matches the design of the surrounding area create an opportunity to both enhance comfort but also contribute to the public art initiative as recommended earlier in the report.

Litter was one of the main concerns that riders expressed in the intercept interviews, so adding trash

cans to high ridership stops with active storefronts nearby will increase cleanliness and the rider experience. Stops that will benefit from this addition are Federal and Harvard and Federal and Amherst. Federal and Harvard is in desperate need of a trash can, as the active storefront nearby seems to exacerbate the issue.

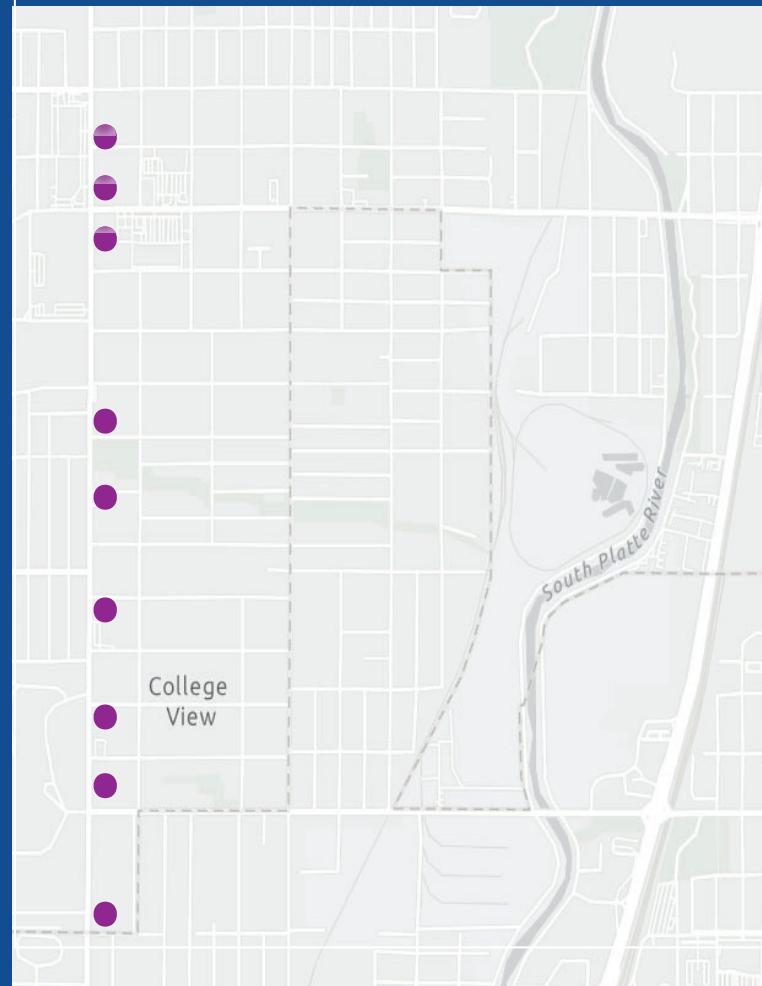
The final micro recommendation is the removal of the Federal and Bates bus stop. While many infrastructure improvements can be made to this stop, increasing the ridership experience would take much funding and effort, and bus stops in better condition with more amenities are within a quarter mile walking distance both north and south of the stop. Federal and Bates, which is shown in the photo below, lacks lighting, benches, a trash can, a proper sidewalk, and is near a vacant lot with no activity nearby. As such, the group recommends removing the stop and investing in the other, busier transit stops within the study area and improving the experience elsewhere.



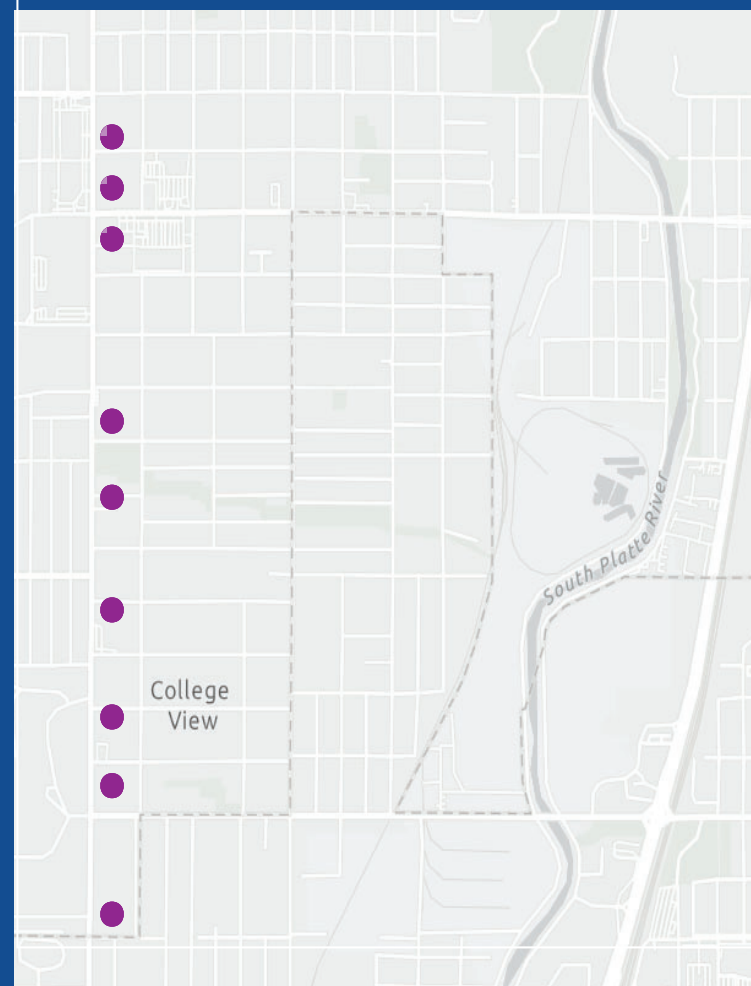
# Micro Gaps and Recommendations



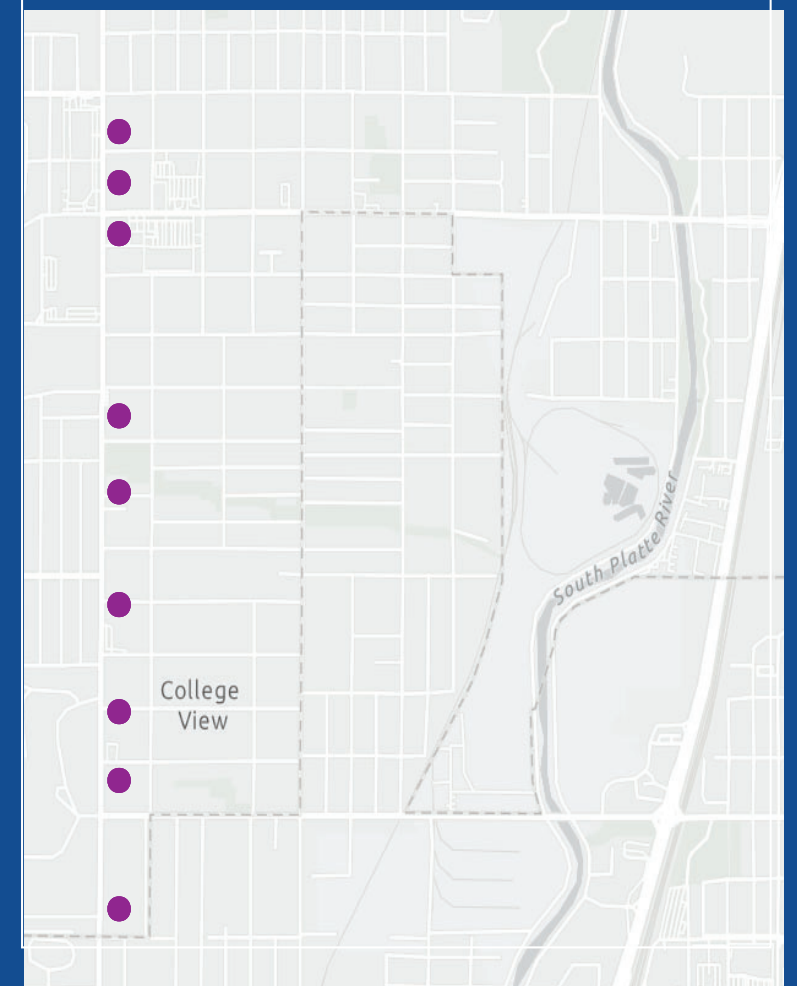
## Existing Gaps



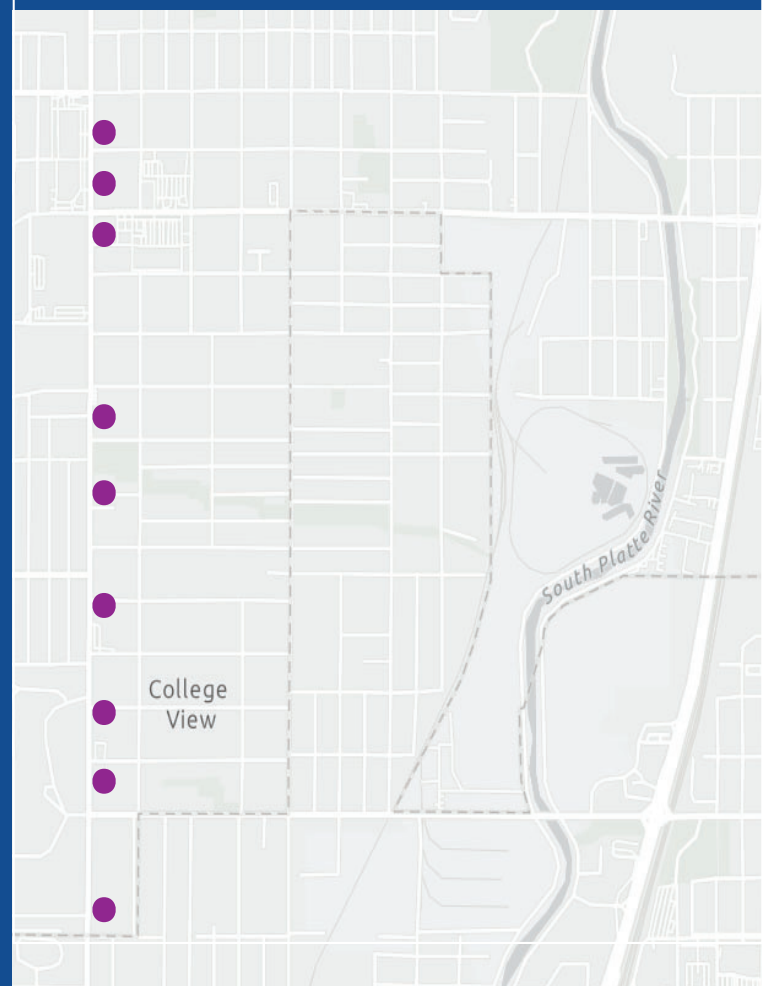
## Missing Gaps



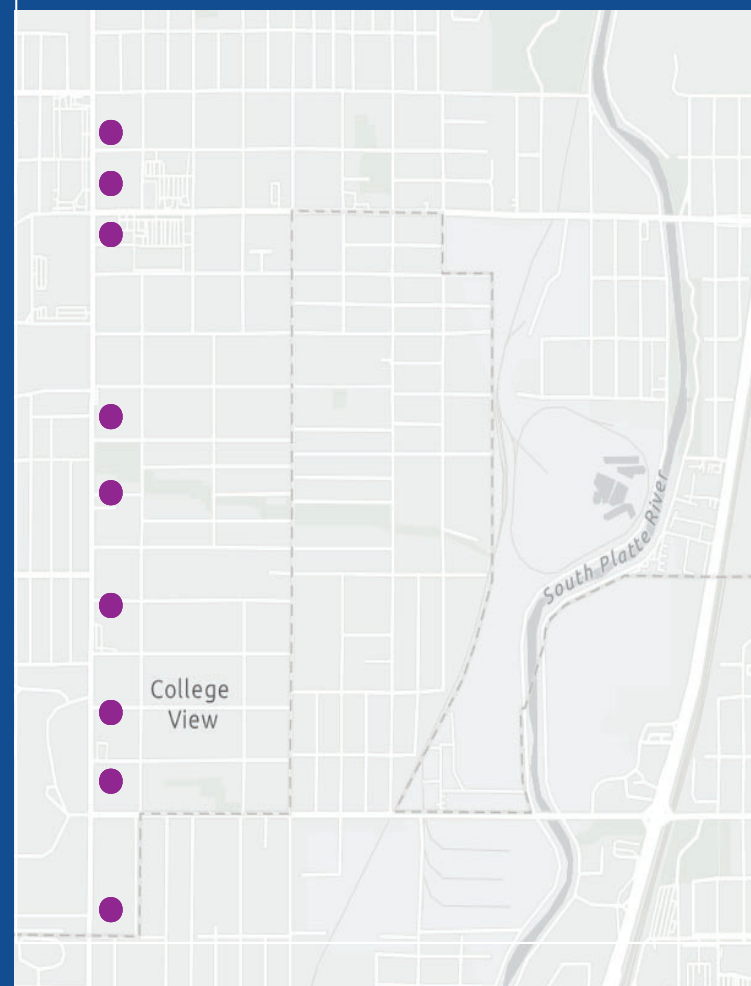
## Transit Gaps



## Existing Recs



## Missing Recs



## Transit Recs

