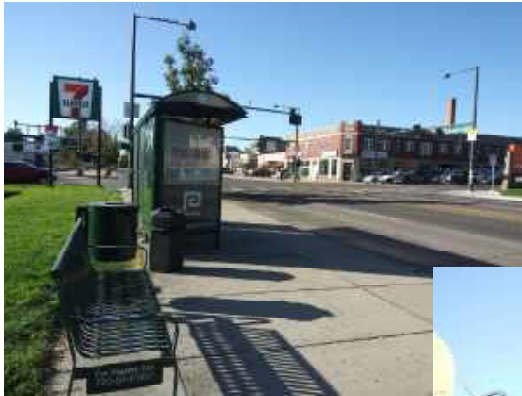


# Sunnyside & Chaffee Park

## Transit Amenity Study



URPL 5010 Planning Methods Fall 2019

Natasha Albert, Kyle Hendricks, Adison Petti, Tom Shanks

## Chapter 1

### *Project Introduction*

#### **Introduction to the University of Colorado Denver**

For more than a century, the University of Colorado Denver has brought expertise, knowledge and learning to the heart of the Mile High City. The College of Architecture and Planning (CAP) at CU Denver offers accredited degrees in architecture, landscape architecture, historic preservation, urban planning and urban design. CAP also offers certificates in design build, classical architecture, geographic information systems, and integrated construction management. Students and faculty engage directly with our vibrant city, dynamic community, and magnificent landscape by working on real projects that make a real difference. Studios and workshops are focused on riverfront and downtown revitalization, green and connected infrastructure, affordable housing, mobility improvements, social equity, environmental justice, disaster recovery, adaptive reuse, and more.

#### **Introduction to College of Architecture and Planning Team 6**

Natasha Albert earned her Bachelors in Geography and a minor in English at UCLA. She obtained a postgraduate certification in Regional and Territorial Planning from the University of Basque Country, Spain. She is a GIS Research Assistant for the Hurricane Harvey Michael and Irma Affordable Housing Project at the Colorado Center for Community Development. Natasha is especially interested in zoning and land use for mobility projects.

Kyle Hendricks earned his Bachelors in Geography with a focus on Geographic Information Systems and Environmental Geography at the University of Oregon. As a GIS technician, he provided data and maps for university planning, facilities management, and public safety departments. Kyle looks forward to applying his environmental systems interest and data management skills to aid in city decision making for this project.

Adison Petti earned his Bachelor of Arts in Feminist and Gender Studies and Political Science at Colorado College. Adison is a social justice practitioner committed to promoting public participation projects for equitable development. He is passionate about connecting public transit to affordable housing and living wages for everyone. He would also like to explore linking bus stops to solar grids or neighborhood mural and improvement projects.

Tom Shanks is currently finishing a Bachelor of Arts in Urban Studies and Planning at the University of Colorado at Denver. He is a GIS Research Assistant Intern with the Hurricane Harvey and Vulnerable Housing Study. His focus is on the intersection of sustainable development, community development, natural resource management, and open-source geospatial technology.

**Introduction to Partner Planning Firm**

Felsburg, Holt & Ullevig (FHU) is a multidisciplinary consulting firm specializing in transportation planning, multimodal planning, traffic engineering, transportation operations and safety, environmental services, water resource engineering, civil engineering design, structural design, construction management, and rail/transit services.

**Introduction to Client**

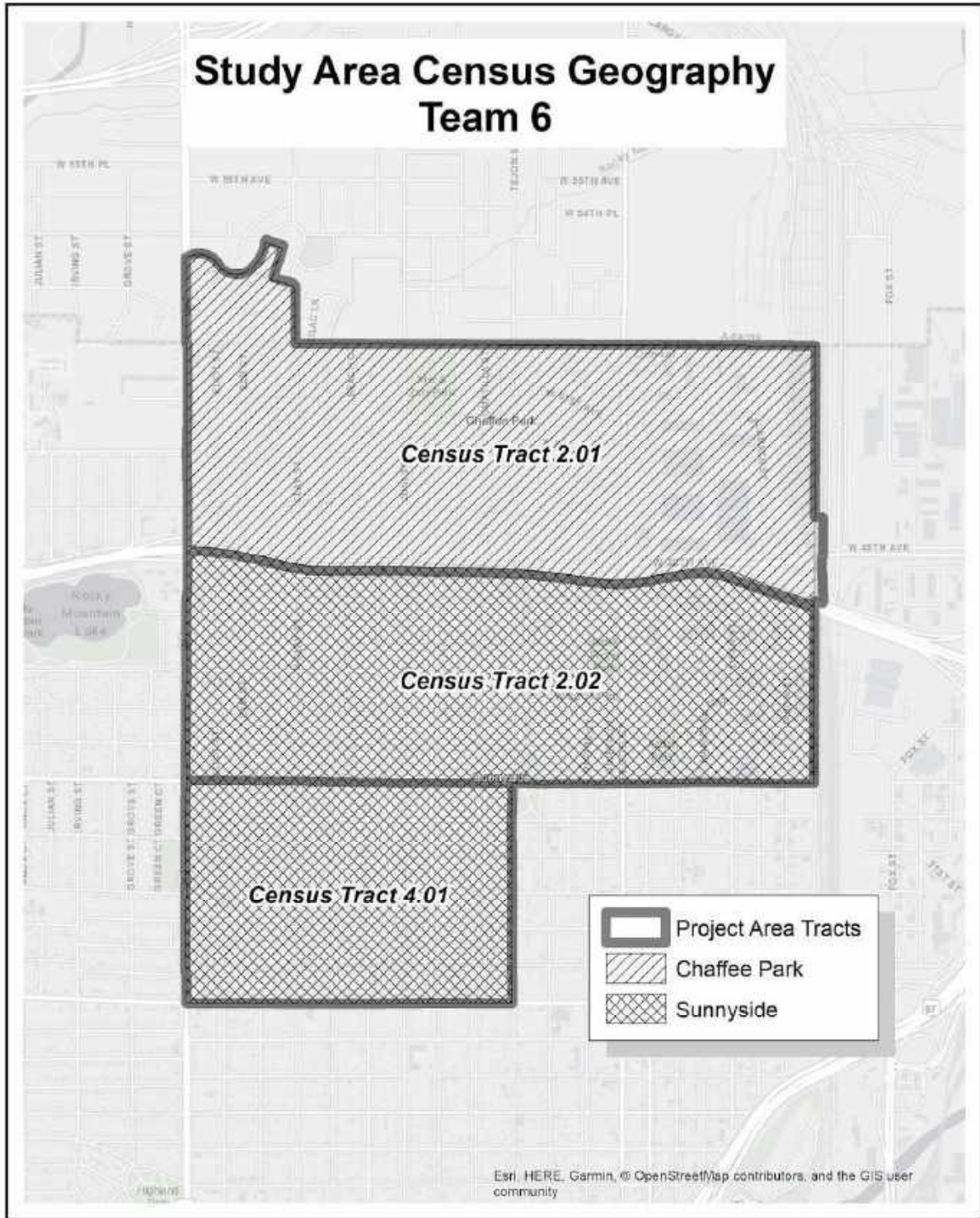
According to the Mayor's Mobility Action Plan, "Denver Moves: Transit is Denver's first citywide transit plan creating a local transit vision and guiding framework that calls for improving the quality of transit options in our city – making transit more reliable, more frequent, and more convenient for daily use".

**Project Overview**

The City and County of Denver has initiated a city wide bus stops amenity inventory. 12 teams from CAP's Master of Urban and Regional Planning program will inventory a total of 85 bus stops spanning 9 miles of Route #31 Federal Crosstown. Route #31 runs a total of 15 miles on Federal Boulevard from Evans to West 112th. Route #31 intersects or runs near more than 30 RTD service routes. Major connections include Front Range Community College, 106th and Melody Transfer Station, Clear Creek and Federal Station G Line, Westminster Station B Line, Decatur and Federal Station W Line, and the Federal and Evans Hub. Denver Moves: Transit identifies this as a high capacity transit corridor with service running every 15 minutes.

**Team 6 Methodologies**

Team 6 is assigned to the Chaffee Park and Sunnyside neighborhoods, spanning 1.5 miles from W. 38th Ave. to W. 52nd Ave. on Federal Blvd. This includes stop IDs 13718; 13721; 13723; 13725; 13727; 13730; and 13733. Demographic information corresponding to the census block of each stop was calculated using the American Community Survey to provide the Demographic Profile section of this report. Study area maps were created using ESRI Geographic Information Systems ArcMap software in the Visualization section of this report. The team will conduct an additional site visit and intercept interviews to complete the Bus Stop Amenity Inventory.



Sources: Census.gov, City and County of Denver, Community Planning and Development, RTD Open GIS, ESRI, & OpenStreetMap

Exhibit 1 - Census Geographies Map of Study Area

## **Demographics**

### **Age**

The age of the study population and Denver County follows demographic trends that represent a healthy society. The most notable observation is the large population of people of working age, from 20 - 64 years. This population group, which can be seen below in Table 1, makes up 71% of the study area and 67% in Denver county.

### *Exhibit 2*

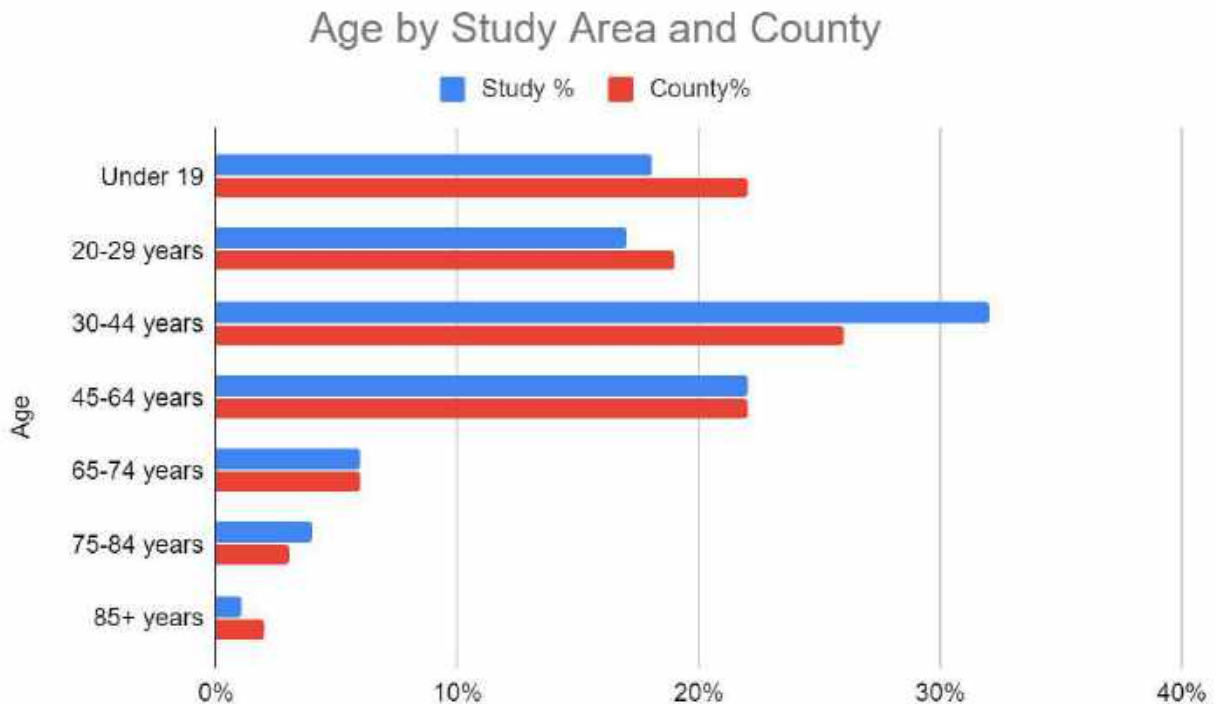
#### **Age Distribution**

<b>Age</b>	<b>Study #</b>	<b>Study %</b>	<b>County #</b>	<b>County%</b>
Under 19	1,262	18%	152,330	22%
20-29 years	1,200	17%	134,103	19%
30-44 years	2,294	32%	180,721	26%
45-64 years	1,546	22%	149,060	22%
65-74 years	442	6%	44,686	6%
75-84 years	285	4%	20,738	3%
85+ years	97	1%	10,535	2%
<b>Total</b>	<b>7,126</b>	<b>100%</b>	<b>692,173</b>	<b>100%</b>

Source: US Census ACS 2017 5 Year Estimates

According to the US Decennial Census, the average age of marriage is 28 for women and 30 for men. It can be inferred that a portion of the men and women in this group are married and may have children. If the analysis is to focus on people of working age using the bus to commute to work and around the area locally, it should consider where people are going to work. Is it in the neighborhood? In the city proper? By identifying land use within the neighborhood it may answer the question of whether or not this route is used for commuters or for activities within the neighborhood.

Exhibit 3



Source: American Communities Survey (ACS) 2017, 5-year estimates

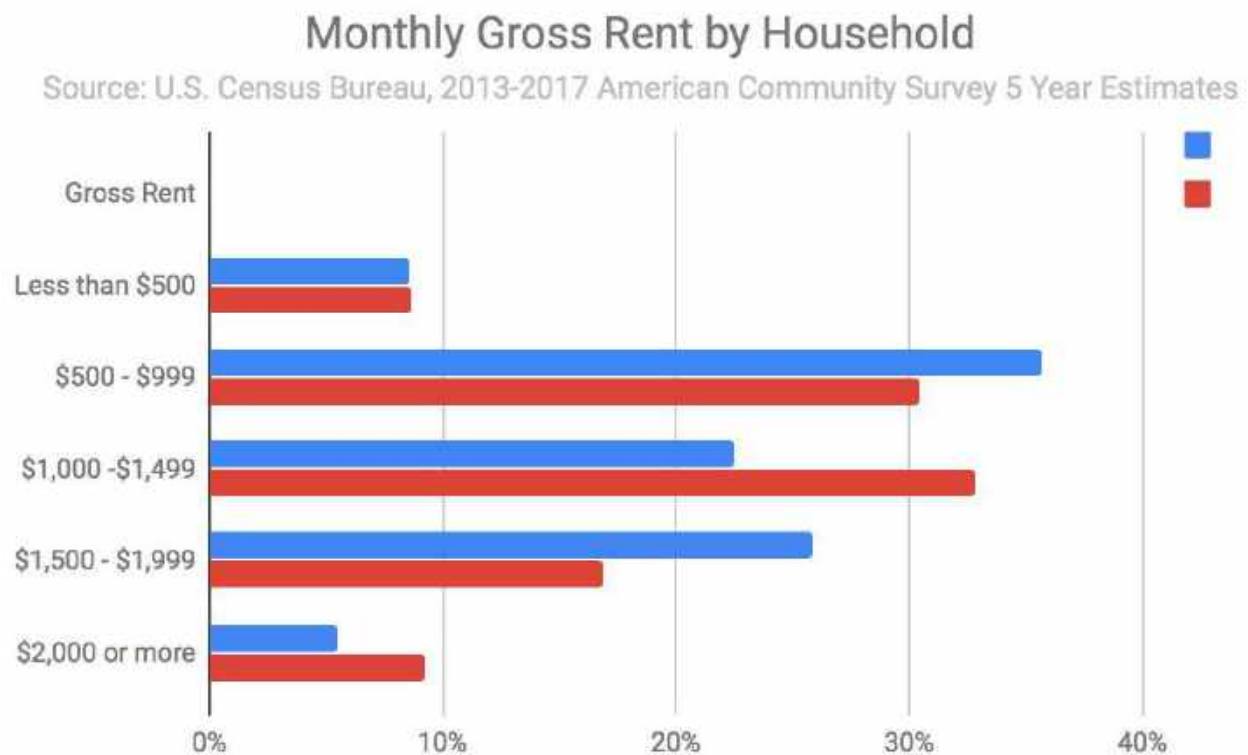
In exhibit 2, the largest group of the three included in the working age classification are the 30-44 years of age population from the study area (32%) and Denver County (26%). This could be reflective of migration patterns that are seen in the city, county and state. There is also a significant population of “Under 19” groups in both the study area (19%) and Denver County (22%). Taking into consideration that certain schools may not offer the typical “yellow bus” transit offer for students and require RTD for transit to and from school, the area could hold a considerable amount of younger riders (see Educational Attainment section for greater detail). Conversely, only 11% of the population in the study area and Denver are 65 and older. This leads to the idea that there may be a smaller community of riders during the day who use the bus for local trips along Federal. This further strengthens the previous assertion that the majority of riders are of working age and may use the bus routes to get to and from work.

### **Cost of Living Analysis: (Household Income and Household Rent Demographics)**

Household income and monthly rent demographics are roughly similar between Denver County and the Chaffee Park and Sunnyside study areas. Approximately 40% of households have an annual income of less than \$50,000, while roughly 28% report an annual income of 100,000 or more. There is a five point difference between middle income households reported. Forty-three percent of study area households have an income of \$50,000 and \$100,000 compared to 38% in Denver county, making the number of

middle income households notably higher for this study area than the county at large. In this study area, 54% of households are paying \$1000 or more per month, compared to 59% in Denver county. The break down of rents over \$1,000 varies significantly. Roughly 33% of Denver Households pay between \$1,000 and \$1, 499, compared to 23% of the study area. Conversely, there is more than a 10 point difference in 25.8% of study area households paying \$1,500 to \$1,999 per month, vs. 16.9% in Denver County.

#### Exhibit 4



Monthly Gross Rent by Household for Study Census blocks (blue), and County (red).

Understanding household incomes and costs of living, like rent, are essential to transit planning. Current data helps project who might live and work in this area as commercial and residential development evolves. This in turn provides a framework for understanding future transit services and capacity along the Federal corridor. Comparing information about household incomes and rents to additional data, like demographics by age, is also important. The prominence of K-12 schools in the area suggests that children and families may be using the bus. Similarly, the neighborhood also houses a senior living facility where public transit may serve the elderly. How do income and costs of living affect transit use or contribute to quality of life for these individuals and families?

*Exhibit 6***Monthly Gross Rent by Household**

Gross Rent	Study #	Study %	County #	County %
No Cash Rent	23	2%	2,707	2%
Less than \$500	100	9%	12,427	9%
\$500 - \$999	419	36%	43,692	30%
\$1,000 - \$1,499	264	22%	47,115	33%
\$1,500 - \$1,999	303	26%	24,246	17%
\$2,000 or more	65	6%	13,201	9%
<b>Totals</b>	<b>1,174</b>	<b>100%</b>	<b>143,388</b>	<b>100%</b>

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5 Year Estimates

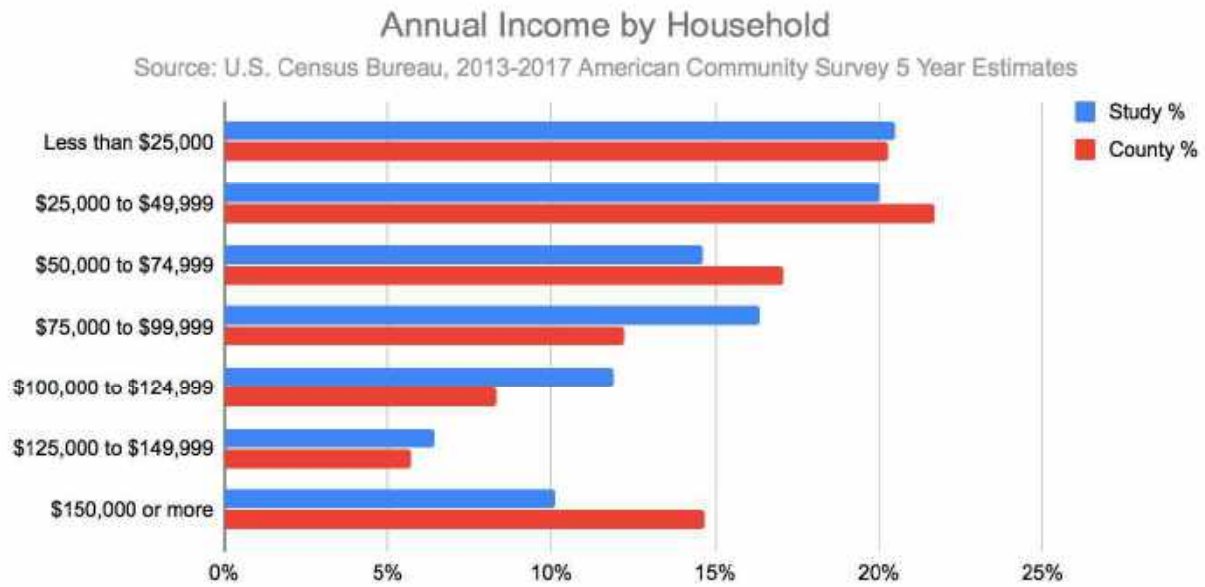
*Exhibit 7***Annual Income by Household**

Annual Income	Study #	Study %	County #	County %
Less than \$25,000	613	20%	58,278	20%
\$25,000 to \$49,999	599	20%	62,344	22%
\$50,000 to \$74,999	438	15%	49,101	17%
\$75,000 to \$99,999	490	16%	35,093	12%
\$100,000 to \$124,999	356	12%	23,845	8%
\$125,000 to \$149,999	193	6%	16,445	6%
\$150,000 or more	303	10%	42,156	15%
<b>Total</b>	<b>2,992</b>	<b>100%</b>	<b>287,262</b>	<b>100%</b>

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5 Year Estimates



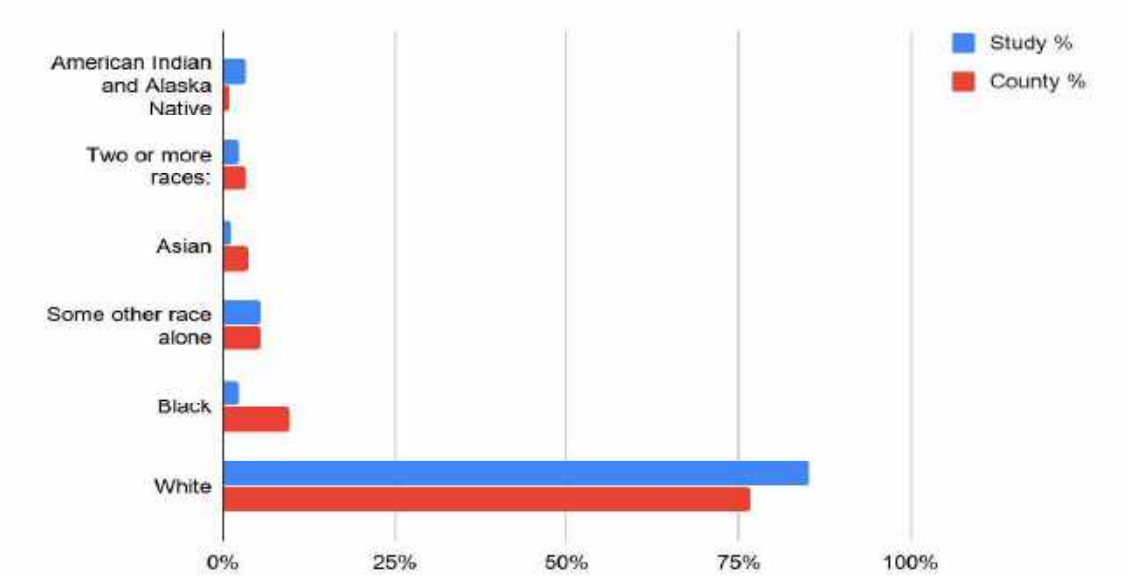
Exhibit 8



Source: U.S. Census Bureau, 2013-2017 American Community Survey 5 Year Estimates

## Race Analysis

Exhibit 9



Source: U.S. Census Bureau, 2013-2017 American Community Survey 5 Year Estimates

The Chaffee Park/ Sunnyside study area has racial demographics that mirror the City and County of Denver fairly closely, with some particular highlights. In our study area there is a higher % of total for Native American respondents (3.34%), than for Denver respondents (0.96%)m seen in exhibit 5 above.

*Exhibit 10*

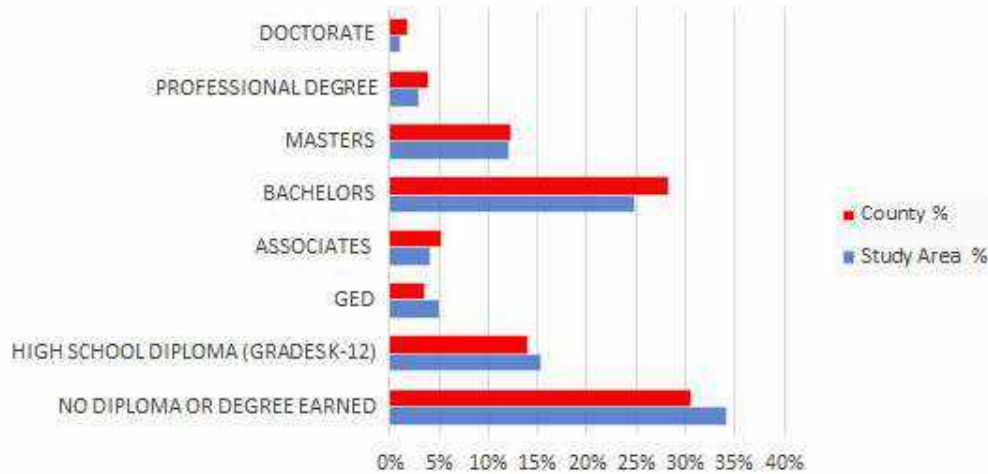
<b>Race</b>	<b>Study #</b>	<b>Study %</b>	<b>County #</b>	<b>County %</b>
Native Hawaiian and Other	14	0%	993	0%
American Indian and Alaska Native	377	3%	6,537	1%
Two or more races:	260	2%	23,341	3%
Asian alone	135	1%	24,433	4%
Some other race alone	635	6%	37,216	5%
Black or African American	242	2%	64,466	10%
White alone	9,640	85%	521,481	77%
<b>Total</b>	<b>11,303</b>	<b>100%</b>	<b>678,467</b>	<b>100%</b>

*Source: U.S. Census Bureau, 2013-2017 American Community Survey 5 Year Estimates*

This constitutes a 2.38% percent point increase in our study Area. The study area also demonstrates a higher percentage of total for white respondents, (85.29%) when compared to Denver totals (76.86%). The percentage of total for black respondents (2.14%) in the study area, is far lower than the County percentage of total (9.50%). This is a percentage point decrease of -7.6%, a sizable departure from the county characteristics. The data also communicates spatial elements within our study area, in regards to racial demography. Through the use of geospatial analysis it seems that there is a gradient of concentration for White Respondents that gravitates towards the southern portion of Chaffee Park, becoming more concentrated closer to Downtown within the study area boundary. The Chaffee Park and Sunnyside Neighborhoods have experienced rapid and dynamic demographic shifts over the past decade, and will continue to grow and adapt as Denver does.

Exhibit 11

**Education Attainment by Population 25 Years and Over**



Source: U.S. Census Bureau, 2013-2017 American Community Survey 5 Year Estimates

**Education**

One of the leading indicators to success in school is attendance. Therefore, it is imperative that students can get to school via a traditional school bus or by RTD. Denver Public Schools have a system that allows students and their families to fill out an application which would allow the student to attend their school of choice within the Denver Public School system. The student may be automatically admitted to their local school or they may list their top choices of schools based on those preferences as well as the admission allowances at each school. The belief is that this allows each student access to the same quality of education as other students. Although the opportunity in this type of system is apparent it may also invite criticisms. Some schools may gain a favorable reputation in athletics, academics, or arts and students will desire to go to these schools rather than their local school. This may create a situation where a school has students leaving at a higher rate than being admitted which may lead to reduced funding. This system may require some students to use RTD to get to their chosen school if a normal school bus route does not reach them.

It is imperative that the system is running as efficiently as possible and the amenities are appealing so residents and students are willing to use RTD if that is their transportation option. When compared the rest of Denver County Chaffee Park and Sunnyside have a slightly higher rate of individuals having no high school diploma or college degree at 34% compared to Denver at 31%. Some consideration should be given that there is only High School near these neighborhoods, that is Denver North High School. It just so happens that North High School is a part of the DPS RTD Pass program which provides free bus

bases to students that attend the school (Transportation). A student would have to get on an RTD bus heading south on Federal Boulevard to get to North High School, that also means that a student would have to walk across Federal in order to reach a desired stop in the morning. There are very few crosswalks that are protected for pedestrians crossing Federal within this corridor. While a considerable number of bus stops in this corridor have benches, a very limited amount have shelters. This may attribute to some students not wanting to catch the bus to school since there are very limited amenities at the bus stops. In general, Sunnyside and Chaffee Park follow the same trends as Denver County when measured for educational attainment for people that are 25 and older. The only other difference is that 25% of people in Sunnyside and Chaffee Park have a bachelor's degree compared to Denver Counties 28%. This could be a result of a higher percentage of students in the specific neighborhoods not obtaining a high school diploma. There is a program for high school students to use the RTD so they can get to school, it should be optimized so there is one less challenge some students have to face in order to get an education<sup>1</sup>.

### Education Attainment by Population 25 years and over

#### Exhibit 12

Education Attainment	Study #	Study %	County #	County %
No diploma or degree earned	1,886	34%	147,747	31%
High School diploma (Grades K-12)	850	15%	67,664	14%
GED	285	5%	17,284	4%
Associates	230	4%	25,807	5%
Bachelors	1,374	25%	137,052	28%
Masters	670	12%	59,213	12%
Professional degree	165	3%	19,312	4%
Doctorate	60	1%	9,049	2%
<b>Total</b>	<b>5,520</b>	<b>100%</b>	<b>483,128</b>	<b>100%</b>

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5 Year Estimates

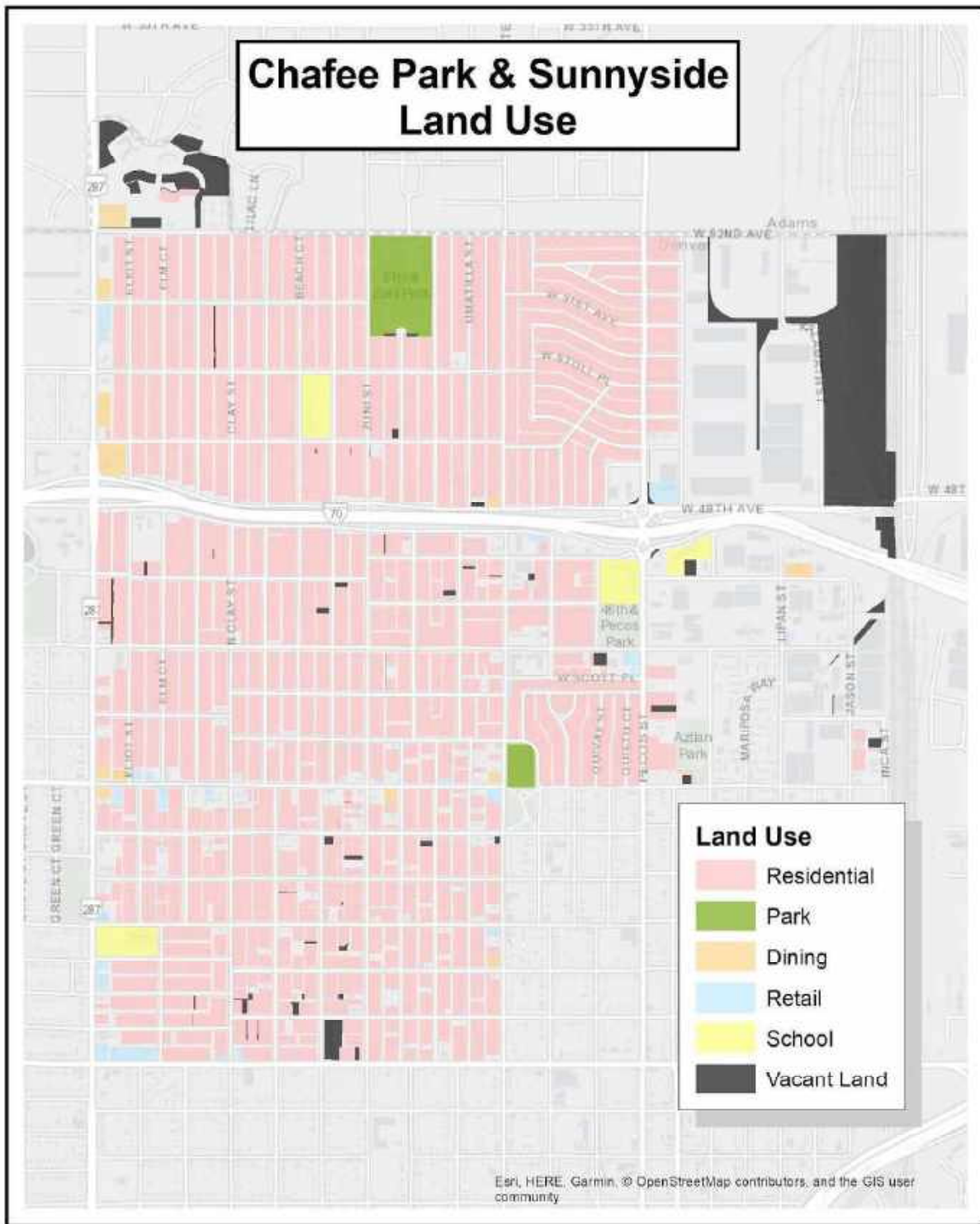
### Chaffee Park/ Sunnyside - Land Use, Transportation, & Urban Fabric

The Sunnyside and Chaffee Park neighborhoods are located along the northern corridor of Federal Boulevard, bound by 38th Avenue to the South, the train tracks to East, Federal Boulevard to the West

<sup>1</sup>

and 52nd Avenue to the North, which is also where the City and County of Denver ends its border in this area. Since these communities are located on the outskirts of Denver a majority of the buildings are residential with a few pockets of commercial buildings along Federal Boulevard, 38th Avenue and 44th Avenue and some industrial warehouses near the train tracks just North of Interstate 70. A majority of the houses in this area are a single or two stories above ground, however very few exceed two stories above ground. The single-family detached house with plenty of space between homes are common features of the mid-century homes that dominate this area. There are very few developments in this area that could be considered a multi-family unit home. In general, Chaffee Park and Sunnyside homes are setback from the road far enough, so they are able to have a front yard, a sidewalk and then some extra space for landscaping along the street, averaging about ten feet total. On the other hand, many of the commercial businesses and churches have been built up to the sidewalk, which does not allow for any room for landscaping.

Exhibit 13 - Land Use Map



Sources: Census.gov, City and County of Denver, Community Planning and Development, ESRI, & OpenStreetMap



## Conclusion

The American Community Survey presented a study area that is located in a densely populated area characterized by single- and multi-family homes for residential use. The bus stops may therefore be used for commuters travelling through the neighborhood to schools. This coincides with the prominence of K-12 schools in the area that suggest families with children who ride the bus as a form of transportation to school may make up the majority of riders. This has implications for the type of amenities they require and at which intervals within the study area those amenities arise. It is unclear if all of the riders are from the surrounding neighborhoods or are connecting to different bus lines on 38th or 52nd street. The ACS did not have data for car ownership in the surrounding neighborhoods that could be used without a large margin of error that would provide unreliable results.

### **Urban Fabric Site Visit**

An initial 2 hour site visit was conducted on Saturday September 21st from 8:30 to 10:10 AM. Entering the Chaffee Park Neighborhood from Vasquez and 48th, there is an industrial/warehouse strip and small retail lot containing liquor, carpet, and beauty supply outlets. Strive-Prep Sunnyside is a public charter school located at the edge of the neighborhood at 47th and Pecos and is one of the first community institutions visible from this trajectory. The urban fabric is largely a mix of primarily single-story, single-family homes and low-rise, 2-4 story apartment homes like Shoshone Residences and Chaffee Park Senior Residence, where there reads a commercial development advertisement reading “character, culture, commitment” directly across the street at 46th and Tejon.

Arriving at 51st and Zuni Park around 8:30 AM, there were already people enjoying the green spaces, playground equipment, and “fitness zone” with skyline views of downtown Denver to the Southeast. Leaving the park via 52nd, turn west toward Federal, and you will pass a recently completed 10 building apartment complex *“for urban-minded renters of all ages”* from Aria Denver. According to the development’s website, *“Aria Denver offers modern, sustainable apartments in a community located eight minutes from downtown. Aria Denver supports a healthy and simplified lifestyle, provides easy access to continued education from Regis University, and embraces urban gardens. Aria Denver is a unique community that allows you to drive less, walk more and Cultivate Life.”*

At the Northern boundary of the Sunnyside neighborhood sits the first study area bus stop on 52nd and Federal. Adjacent to the stop are banners for Regis University alongside two small taco shops and other fast food outlets. This transit stop lacks much in the way of aesthetic quality and pedestrian encouragement, other than a small splash of fading color on the transit bench against a blank Dollar General wall. The space between these stops is zoned for residential and “Mainstreet” commercial use in high intensity transit corridors. There were a range of recent improvements to small business like a



tattoo shop, as well as commercial construction on an existing lot with a vacant building. These businesses were interspersed with a church, homes, and elementary school, for example.

The greatest impression from this site visit is the awareness of how quickly the urban fabric is evolving with projects to accommodate commercial and residential development. Included below are photos demonstrating the urban fabric of the neighborhood.



*Sunnyside Prep School, 51st and Zuni Park "Fitness Zone", Chaffee Park Senior Residences with a sign for commercial development across the street, Aria's 10 unit apartment complex. Photo Credits: Adison Petti*



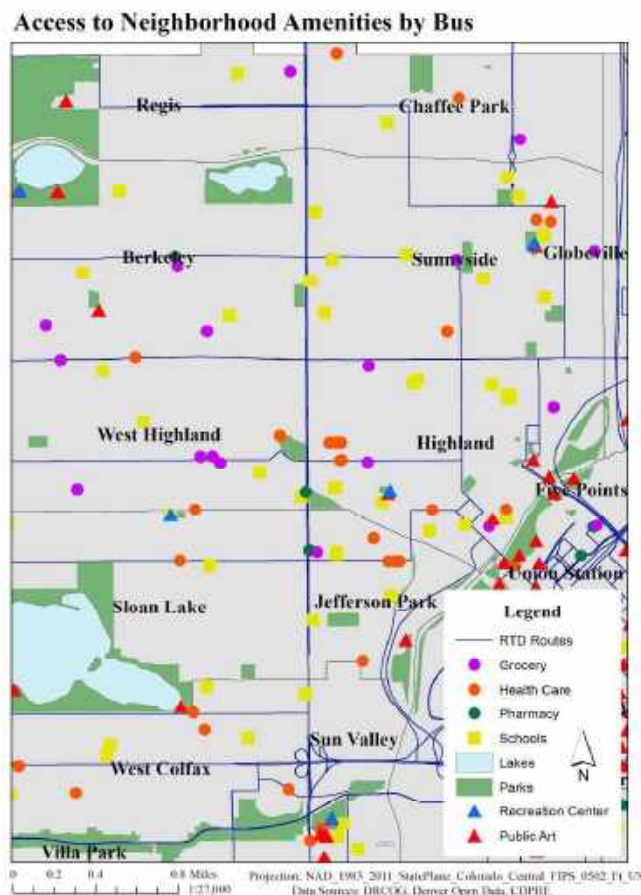
*Bus stop at 52nd and Federal, Bus stop at 38th and Federal, Mainstreet business and construction, spanish business signs on the border of Sunnyside and Highland neighborhoods at 38th. St Catherine of Vienna Roman Catholic Church and Victory Outreach Center on Federal. Photo Credits: Adison Petti*

## Chapter 2

### Site Assessments

Prior to the windshield survey, the team collected information on places that might drive or impact public transit use. Research focused on places neighborhood residents might reach utilizing public transit within the neighborhood and nearby or outside of the neighborhood along RTD Route 31. Considerations included schools, churches, grocery stores, pharmacies, banking, health and human services, parks, and other activities. The windshield survey also considered potential methodology problems and safety hazards for this study. It was completed from 4:30-5:45 PM on Friday October 18, 2019. It encompassed the full perimeter of Chaffee Park and Sunnyside beginning at 38th and Federal Blvd and traversing several interior streets in both neighborhoods. Traffic was moderate, as expected for a Friday afternoon, and there was no inclement weather to report.

*Exhibit 1*



## Study Area and Windshield Survey

During the windshield survey, the team discussed the Elevate Denver Bond Program-- a 10 year, \$937 million bond program for city improvements, including parks, transportation and mobility projects in neighborhoods like Chaffee Park and Sunnyside. The team also discussed the Navigate North Denver Tool, which provides information about various construction activities and impacts for North Denver drivers, cyclists, and bus riders (exhibit below).

*Exhibit 2*



Video footage was recorded throughout the windshield survey. Shifts in the urban fabric were noted at multiple scales. On a smaller scale, the team documented new marijuana dispensaries, a natural grocery store being built on 38th, and a former corner market transformed into Mason Architecture and Design in a shotgun brick building off Zuni and 41st. Huckleberry Roasters was noted for its role in local development. Common Grounds Coffeehouse was noted as a popular spot for social gatherings and discussion groups. The character of retail/commercial outlets changed notably around 52nd and Federal where businesses were older and cater to lower spending points at places like Dollar General. A larger notable shift in urban fabric and pedestrian connectivity was observed at the intersection of Federal and I-70. Further analysis of pedestrian, bike, and transit connectivity is needed in this corridor and include an analysis of factors like income, employment, owner/tenancy, and transportation use demographics on both the North and South sides of I-70. This data may inform future

planning for bus stop amenities along multi-modal routes.

The team noted a handful of K-12 schools and worship facilities in both neighborhoods. There was a wide mix of old, new, single and multi family housing units that raise interesting questions about future density in these neighborhoods. There are also interesting questions around design continuity with modern, 2-3 story mixed-material developments alongside classic single family brick houses in Sunnyside or smaller houses with lap siding in Chaffee Park, for example. There were two blocks of Denver Public Housing rowhouse units near 44th and Mariposa / Navajo. The team noted a pleasant shared-yards-character, along with the proximity of low income housing to industrial land uses. Aria Denver has a very different style of multi-block development. Their 17.5 acres in Chaffee park currently features new apartments on 52nd and Decatur, along with Sky Loft Condominiums-- branded for "sustainable luxury"-- being built on 52nd and Federal. Their website describes "a new, north of Highland neighborhood intentionally designed to cultivate life by providing a well-designed community that reduces your carbon footprint, provides urban agriculture and supports continued education within one block of Regis University."

Aria's partnership with Regis University is significant for transportation oriented development. Regis Community Council organized a walk along Federal Blvd. with Denver Mayor Michael Hancock in 2018. According to StreetsBlog Denver "It was another attempt by neighborhood advocates to drive home the importance of fixing Federal because people's lives and well-being depend on it. The point was to give decision-makers a taste of something they don't experience often enough: the indignity of walking on a street built solely to move cars at high speeds [...] "I don't feel safe because of the time they give me to cross the street," said Vigil, as she waited for the 31 bus near 52nd and Federal.'My leg just gave out on me so I gotta have knee surgery, and walking across is scary.'"

Aria's blueprint for urban agriculture also raises some big picture questions about the impact of local food systems on city transportation planning and policies. Denver Urban Gardens has a long history in this neighborhood and Leprino Foods is located on West 38th Avenue. Which methodologies might accurately measure or project residential and commercial traffic uses ranging from bus infrastructure, to single family vehicles, to larger distribution trucks traveling to and from grocery stores, homes, packaged food producers, and fresh/local farms?

The windshield survey also provided an opportunity for the team to visit La Raza park-- historic site of Chicana liberation and resistance in North Denver. Like the Aria campus, the exploration of La Raza park and additional research on the cultural history of these neighborhoods raised unexpected questions for planning and transportation work. Denver Westward recently reported that "fans of Chicano culture are reviving the traditions of lowriding and cruising with a massive cruise down Federal Boulevard [...] Denver City Council unanimously passed a "Cruise Down Fedz" proclamation, declaring August 25 as the first "La Raza and Barnum Park: A Cruise Down Fedz Day" in 2019. Referring to cruising

on Federal during Cinco De Mayo, one Denver resident compared it to Taste of Colorado or Denver Pride. 'People take the bus or park and walk. It's a different experience wherever you start.' she said. How do transportation planners account for events-- ranging from farmers markets to festivals-- that generate crowds or create neighborhood buzz and vibrancy? How might transportation planners collaborate with neighborhood representatives to increase mobility, decrease traffic, and/or distribute and improve localized visibility for blockly focal / interest points along Federal Blvd? Are the interests of diverse communities equitably represented in transit? Sig Langegger explores these and other spatial planning topics including municipal regulation, gentrification and public spaces in North Denver that might prove useful for future neighborhood or transportation analysis in this area.

### Exhibit 3



## Bus Stop Assessment and Safety Execution Plan

The Sunnyside and Chaffee Park team will split in two pairs to conduct bus stop assessments and intercept interviews. Ratemystop assessments will be completed for stop IDs 13718, 13721, 13723, 13725, 13727, 13730, and 13733 near the end of October. 1 member from each team will make visual observations and handwritten notes while the other records *ratemystop* data and takes site photos. Team members will alternate between conducting and recording intercept interviews. Team members will be especially safety conscious when crossing I-70 between bus stops on Federal, and near condo construction at 52nd and Federal. There are marked crosswalks, designated sidewalks and lit pedestrian signs to follow for safety along this route. Team members will wear closed toed shoes and appropriately warm clothing. Team members will also utilize crosswalks and follow all traffic signs. Individual team members will arrange their own transportation to the assigned meeting points, and will stay together in pairs from there. Google Maps estimates the total walking time from Federal and 38th to Federal and 52nd is 31 minutes. For this reason it will be faster and easier for the team to walk between stops rather than park and drive for each stop. Each team member will come prepared with their individual MURP name tags, fully charged cell phones, and writing supplies. The team has exchanged phone numbers in case of inclement weather or other emergencies. No social conditions raise additional safety concerns.

The team is unaware of any methodological problems for the bus stop assessments. Assessment questions include: Team name, stop ID#, surface type, amenities, if public art is present what type, proximity to the nearest marked crosswalk, physical condition of stop, cleanliness of stop, ADA accessibility, pedestrian connectivity, safety, overall rating, and additional observations. The team will note any new questions or information about the transit / pedestrian environments in the field.

## Intercept Interview Execution and Safety Plan

The team considered additional safety and execution plans for intercept interviews. Team members will not approach minors or anyone who appears to be under the age of 18 for this project. When approaching potential participants, team members should also be mindful of how their own identities such as gender, race, age, or ability might impact real or perceived perceptions of privilege and power in neighborhood survey work. Team members will maintain a friendly, polite, and non-confrontational demeanor to mitigate potential for negative or unfriendly interactions with passersby or survey participants. In the event of a confrontation, team members will disengage to de-escalate. A simple phrase like "I'm sorry to have bothered you, have a great day," will often suffice.

Team Members will utilize a simple script to introduce themselves and this survey.

- Say hello, be personable, and connect. The goal is to understand transportation stories.
- Good Morning! My name is \_\_\_\_\_. This is \_\_\_\_\_. We're students at UC Denver working to improve public transportation on Federal. Would you like to take a short, anonymous survey?
- If NO: Thank each person and wish them a good day even if they don't stop to talk to you.

- If YES: “Great, The survey is confidential and only takes a few minutes so thanks for stopping to chat with us. I’m excited to learn about your transportation story today!”
- If YES but prefers another language: Surveys are printed in Spanish and Vietnamese.
- If YES but mentions a disability barrier: “ Thank you! I want to make sure you’re included and am happy to help. How can I assist or make the survey more comfortable?”
- To Get Started: The first question is “Why are you riding the bus today?”
- Remember to answer any questions and thank participants after each survey.

Teams Members will also familiarize themselves with the following language from CCD, Walk Denver, and Ken Schroepel, AICP to answer any additional questions that participants might have.

WalkDenver is a grassroots advocacy organization dedicated to reclaiming Denver’s streets for people. WalkDenver is interested in learning more about the current transit use of Denver residents, what discourages residents from using transit and what would encourage residents to use transit more often. We are particularly interested in the characteristics of bus stops that encourage or discourage transit use. The survey data will assist WalkDenver and the City and County of Denver in developing recommendations for policies and strategies that lead to a more transit friendly city and increase transit use. Participants have the right not to answer questions, to see their recorded response, and to access the results of this study by contacting Walk Denver or Ken Schroepel, AICP.

## **Bus Stop Amenities Survey**

### *Bus Stop 13718, Federal and 38th Ave*

The bus stop is located at a major intersection which may result in some safety concerns in regards to traffic. Otherwise this stop provides a shelter, lighting, two benches, a trash can and is in good physical condition with no structural damages. The 7-11 convenience store located next to the stop provides a sense of safety since it is always open if someone needed help in an emergency.

### *Bus Stop 13721, Federal & 41st Ave*

This average bus stop is located next to two daytime business, a few apartments and Columbian Elementary School. There is a bench and a trash can provided. Being close to an elementary school, a shelter may benefit this stop.

### *Bus Stop 13723, Federal & 44th Ave*

This bus stop is located on a concrete sidewalk with a parking lot for a Popeye’s restaurant located behind the stop. There is one trash can and a sign listing the bus that passes through the area. Additional lighting and shelter may enhance this stop.



*Bus Stop 13725, Federal & 46th Ave*

This stop provides travellers with a bench to wait for the bus as well as a sign that lists which buses pass through the route. Behind the stop is residential housing and it is next to a small patch of grass. The bus stop lacks lighting and a trash can and is not close enough to a crosswalk to allow for “easy” access.

*Bus Stop 13727, Federal & 47th Ave*

This stop provides a bench to wait for the bus as well as a sign that lists which buses pass through the route. Behind the stop is a patch of grass that acts as a side yard and a setback for the bus stop. The bus stop lacks lighting and a trash can and any public art.

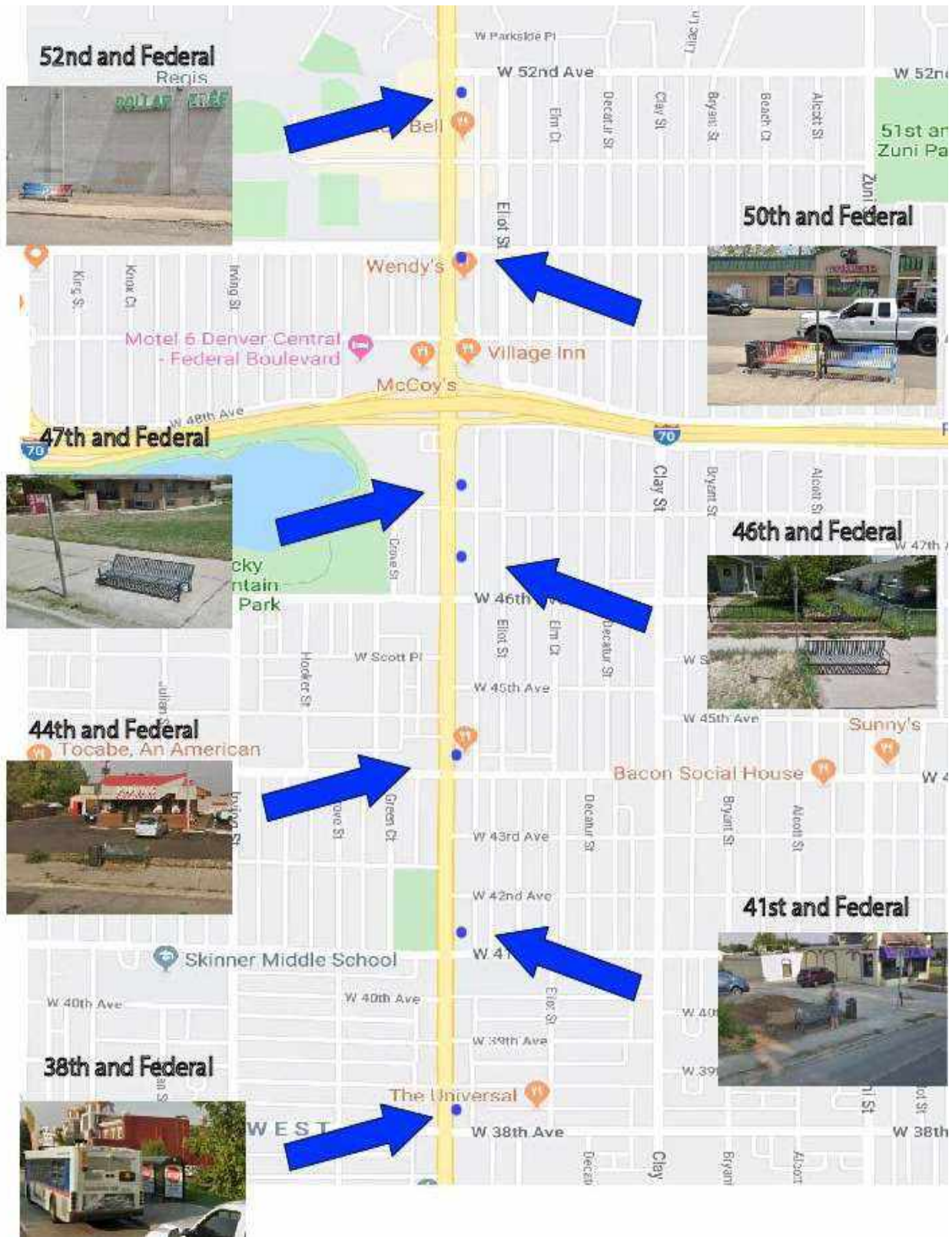
*Bus Stop 13730, Federal & 50th Ave*

This stop provides travellers with two benches that are decorated with public art as well as signage that indicates which buses pass through the route. There is one trash can and no other amenities. It is located in front of a gas station which provides shelter and additional trash cans which travelers may use but it lacks lighting and shelter.

*Bus Stop 13733, Federal & 52nd Ave*

This stop is located in front of a Dollar Tree retail store whose frontage is located in the adjacent parking lot. This makes the stop lined by a concrete structure on one side and an arterial street on the other. The stop is decorated by public art and has a sign that indicates which buses pass through the route. The stop lacks trash cans and lighting leading to a spot that lacks a feeling of safety. This stop has been adopted by Aria Denver.

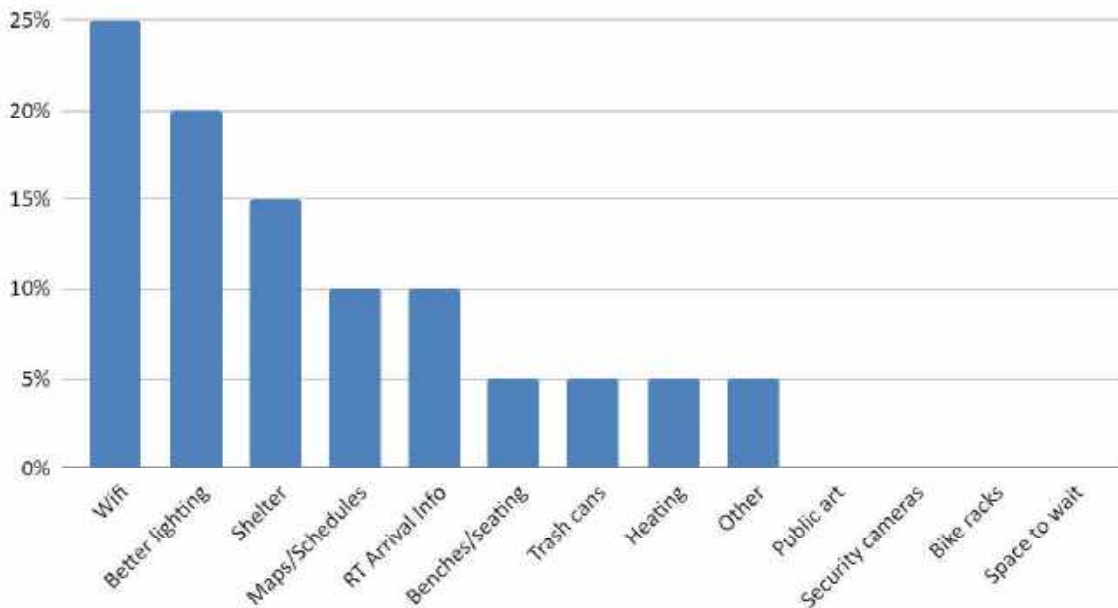
Exhibit 4



## Intercept Interviews

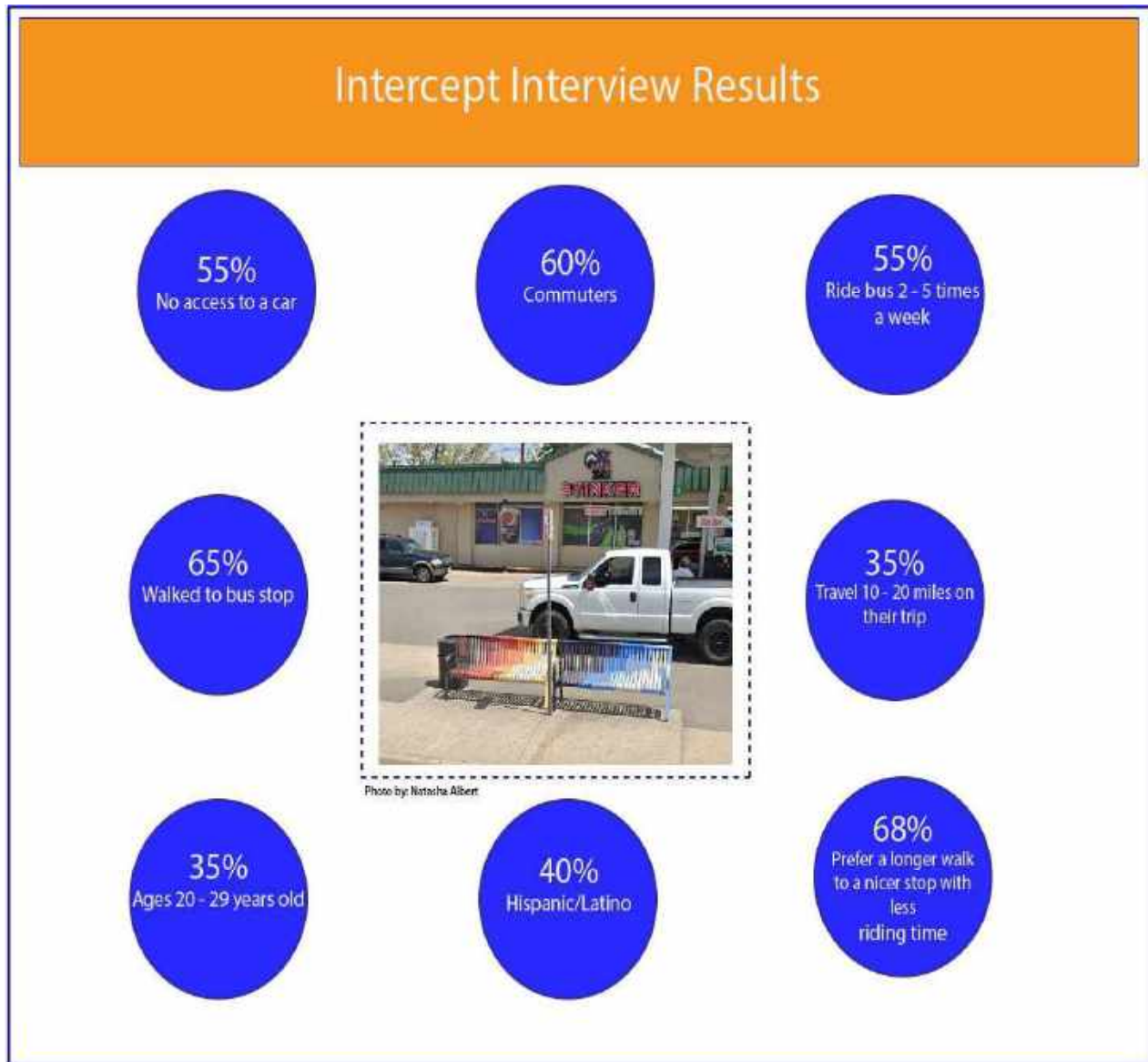
Exhibit 5

### Bus Stop Amenities Request - Sunnyside and Chaffee Park



The interviews revealed that a majority of participants would like to have available wifi. This coincides with the data of the majority of riders are commuters who could benefit from using mobile devices connected to the internet while waiting for their bus. Adding wifi hotspots to the bus stops creates an opportunity to add add schedules and live arrival information via an RTD or Denver mobile app rather than installing physical signs at various stops. This could add an additional way to get in touch with riders by asking if the bus arrived at the estimated time or a space to submit comments about each stop. Lighting was also a common amenity request that indicates that there are people using the stops at all times of day and proper lighting is needed for their wait. It may provide quell any safety concerns from early morning or late night riders as well. With that, riders did not feel it was necessary to add security cameras, they would feel safe with adequate lighting.

Exhibit 6



The results of the intercept interviews show several clear patterns. First, the majority of the participants are commuters that ride the bus two to five times a week. The riders who take the bus from the seven bus stops that are a part of the study are using it mainly for work and take more than one bus to reach their final destination. From those who were interviewed, 55% had no access to a car and 65% walked to the stop, suggesting that this may be their main form of transportation to and from work. This route is along a major corridor and isn't necessarily used for daily errands and moving about the neighborhood for other daily activities. The majority of riders interviewed identified as Hispanic or Latino between the ages of 20 and 29 years old. This coincides with the American Community Survey that suggest the neighborhood has a large working population that uses public transportation for work. However, the

large Hispanic/Latino population surveyed shows contrasts with the larger white population that is the majority of the area according to the ACS 2017 estimates. This shows that a Hispanics/Latinos are the majority of bus riders in the study area but make up a smaller percent of the population.

### **Bus Stop Assessment and Intercept Interview**

There are a few methodological challenges and constraints for intercept interview. First, is the limited scope of the project itself. 20 interviews per team will not produce a representational cross section or analysis. Team members will make every reasonable effort to connect with diverse riders during our limited time in the field. We are especially interested in whether rider's perception and experience of public transportation differ significantly across age, race, class, (dis)ability, and/or other statuses. Second, are common challenges for conducting street outreach and/or interviews. Respondents may feel rushed or even decline to participate if their bus will arrive shortly, for example. Third, is the teams limited language skills. Both teams will have surveys printed in English, Spanish, and Vietnamese. Tom and Natasha speak conversational Spanish but Kyle and Adison do not.

Another challenge that became apparent while conducting interviews was that of geography and timing. The northbound side of Federal would not have many opportunities to approach people in the morning since they would probably not be heading towards Arvada for work. They would more than likely already live outside of Denver if they needed to travel more north than the Sunnyside and Chaffee Park neighborhoods. There is a higher chance that people would be traveling south bound from Arvada into Denver during the morning commute. That ultimately means that people will likely be riding past the bus stops in the study area in order to get more north, or they will be getting off at these stops. This presented the challenge of intercepting people just after they got off of the bus. This could make the possible interview more challenging because some people have an interchange or they are just tired and want to get home, this would ultimately lead to a limited availability of riders waiting at the bus stops that could be potentially interviewed.

An additional critique is of the survey questions themselves. The language from the surveys mimics language that is common within the planning field and required further explanation when used in the interviews. For example, the word "amenities" is not commonly used when referring to a bus stop and required further explanation. All efforts to remove "planning" language should be removed from questions. The "would you rather" question (number 9) also required the majority of participants either read the questions themselves or have the question broken down into multiple parts. It would be easier to have the question as a multiple choice than to offer confusing options (considering most people were in a rush). Finally, the lack of interview technique training for the students conducting the interviews may affect the validity of the data.

## Chapter 3

### Gaps and Recommendations

The team drew from our own experience on Federal , insights learned from other teams' final presentations, and conversation with fellow planners at the Webb building to reflect on gaps and recommendations for this report. Existing infrastructure gaps refer to the condition of bus stops and sidewalks, generally, with special consideration given to safety and accessibility topics. Missing infrastructure gaps include connectivity challenges between neighborhoods, schools, jobs, and services. Some safety considerations may also extend to the "missing" infrastructure category where significant labor, materials, or cost are required for structural improvements such as new or extended sidewalks, curb cut outs, and/or dedicated bus and bike lanes. Finally, transit and pedestrian experience gaps focused on increasing choice ridership, promoting dignity for all riders, and improving the relationship between neighbors in the community, including those pertaining to accessibility, homelessness, safety or health.

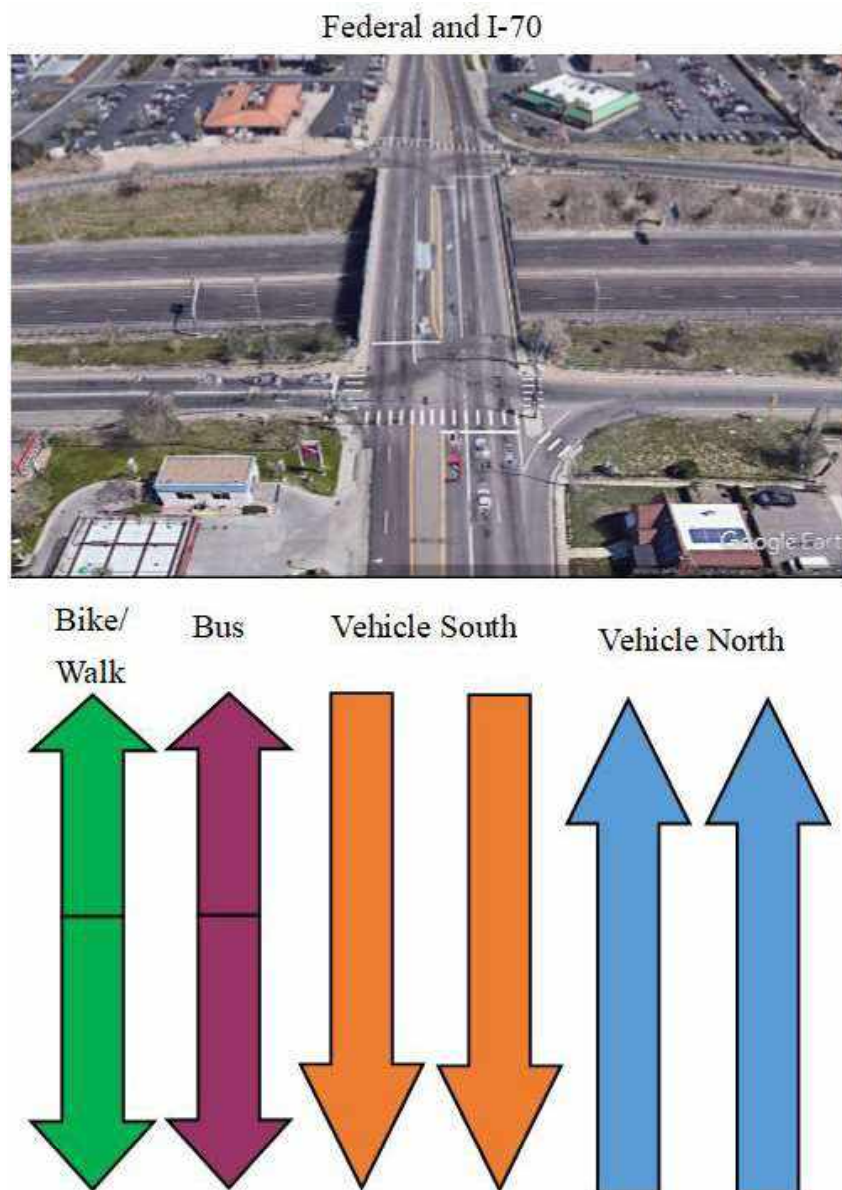
#### ***Large-Scale or Missing Infrastructure Gaps and Recommendations***

The Sunnyside and Chaffee Park team noted fewer large infrastructure gaps than other teams. One notable gap emerges at Federal and I-70 where sidewalk safety and access are inadequate. There is no sidewalk on the East side of the bridge, for example. The intersection currently has 2 regular lanes and 1 turn lane in each direction, totaling 6 lanes (exhibit below). It is difficult to imagine a cost effective solution to widen the bridge for improved bike and pedestrian use. Can a 1 mile length of the existing surface width be consolidated to 4 lane widths for vehicles and 2 lane widths to extend the sidewalk, add a bike lane, and /or dedicate 1 lane to the bus. Is it possible to condense bus travel in both direction to 1 lane width by building in a stop-time and direction-change mechanism, similar to the strategy used on the 16th street mall when both directions of travel must share the same lane due to construction or other lane closures? This would consolidate all bus, bike, and pedestrian infrastructure on the opposite side of federal in this section. If it were technically possible, how would this proposal affect commercial and residential access nearby? What objections might neighbors have? What would the vehicle interchange back to current / traditional street design look like at the edges/ends of the 1 mile stretch? What would the bicycle and pedestrian interchange look like to cross the street again?

***The current team lacks the technical time and skill to answer these questions in the scope of this project but recommends that an initial study consider constraints and opportunities in 3 parts.***

1. Technical Bridge Study to determine current design constraints and future capacity.
2. Neighborhood Study to determine existing infrastructure conditions and constraints. Case studies should consider distinct challenges and opportunities for residential vs commercial stakeholders from I-70 to 52nd (North) and 1-70 to 46th (South) to start.
3. Multi-Modal Study centered on first and last mile use for scooters, bikes, and pedestrians.

Exhibit 1



**Stop-Scale or Existing Infrastructure Gaps and Recommendations**

The most common theme for stop-scale gaps was poor ADA accessibility. In the team’s assessment, the only stop that appeared to be ADA compliant was at 38th and Federal. To be ADA compliant, waiting pads must be 20 feet long and 8 feet in width from the edge of the street, and sidewalks must be at least 5 feet in width to accommodate those with mobility challenges. To the city’s credit, most stops did have wheelchair-accessible ramps at nearby intersections to improve sidewalk access. However, many of the sidewalks themselves were in poor repair and could not be accessed by either manual or electric wheelchairs, and/or were less than 5 feet wide. A specific example, the stop at 46th and Federal had a large pothole that would create a considerable challenge for those confined to a wheelchair or have trouble with balance and use a cane for assistance. These conditions may diminish access for people with diverse mobility needs.

Exhibit 2





Additional stop-scale gaps include missing trash receptacles, inadequate lighting, and potential shortage of stop shelters. Informal amenities placement, such plastic bags or 15 gallon trash cans chained to benches and signs were noted by several teams. This gap places an undue burden on transit users, or even nearby home and business owners, to clean and maintain the stops when proper facilities and services are not funded. Without providing adequate disposal facilities, trash leads to poor sanitation, increased degradation of the stop and a decreased feeling of dignity in riders since it shows they are not valued. All but one stop (38th & Federal), in the Study Area lacked shelters, leading to uneven protection from the elements for riders not using the 38th and Federal stop. This becomes more obvious as the fall months continue to provide substantial precipitation leading to exposure to the elements for many of the daily commuters within the Study Area. Also in the summer months when there is not enough shade for people to wait under, increasing their risk of being overheated. Without adequate lighting, many of the stops in our study area, located in large industrial and largely pedestrian scarce environments, leads to safety concerns, and accessibility concerns. This was a real problem at 46th and Federal where a high volume of trash was not only unsightly and flowed from the bus stop to the edge of someone's property but might have blocked bus access for riders with a mobility device. As noted above, some sidewalks are too narrow to encourage safety or walkability near 52nd and Federal where transit riders and pedestrians are exposed to traffic with little buffer.

***The team recommends a 3-tiered interval approach to categorize bus stop types and amenities:***

**Safe Stops:** All transit stops should be clean, accessible, accessible and safe. This requires an ADA compliant waiting pad, seating bench, trash can, and adequate lighting at each stop.

- **ADA Compliance** "New, altered, or relocated bus stops must have a firm, stable surface and must provide a clear length of 96 inches (2,440 mm), measured perpendicular to the curb or vehicle roadway edge, and a clear width of 60 inches (1,525 mm), measured parallel to the vehicle roadway. Bus stops must also connect via an accessible route to streets, sidewalks, or pedestrian paths. The slope of the bus boarding and alighting area in the direction parallel to the roadway must be the same as that of the roadway to the maximum extent practicable. Perpendicular to the roadway, the slope must not exceed 1:48, that is, not more than 1 inch of rise over a horizontal distance of 48 inches." (Federal)

**Shelter Stops:** Some stops should be sheltered to provide protection from the elements, as well as space to provide additional information to passengers or passersby. This may include RTD route schedules or quarterly print campaigns that encourage community engagement or ridership. Quarterly print campaigns may include topics like arts and culture, bystander intervention, local food access, census and voter registration outreach, or neighborhood planning news to encourage connectivity between the stops and greater community. It is also encouraged to plant local trees near the stops to increase the amount of shade in the warmer summer months to help prevent overheating and provide a more

comfortable and visually appealing experience while a rider waits.

**Smart Stops:** Smart stops would provide an additional layer of amenities for neighborhood safety and services. This could include solar powered heating and charging stations, emergency call boxes, and/or adjacent bike and scooter share stations. In addition to serving RTD riders (who may also be pedestrians, cyclists, or drivers) Smart Stops could play an important role in disaster or emergency management in high traffic corridors, or along popular biking and walking routes. If a driver were forced off the road in a storm, someone felt unsafe walking alone at night, or a cyclist wrecked in the street, city-managed Smart Stops may improve connectivity to neighbors or formal health and safety networks to help.

Additional research is needed on the potential integration and function of solar powered services at these stops, especially. Long range plans could include the possibility of powering nearby traffic lights or public wifi from bus stop generated solar, for example. Additional research is also needed to maintain ethical standards for equity and inclusion in other bus stop designs and policies. The team rejects defensive design strategies to prevent public use by people experiencing homelessness, for example, which might reveal unexpected gaps in other city services or amenities along popular transit routes. A collaborative approach to shared challenges can help improve the quality of living for everyone.

Exhibit 2 (below) shows a Smart Stop design with lights, solar power, a mural, and bike share station at 52nd. An interval approach may help standardize and streamline decisions for the locations of each stop type presented by this 3-tiered strategy. While Shelters may be needed at 5-10 stop intervals, Smart Stops may be useful at 15-20 stop intervals depending on volume and use.

*Exhibit 2: A 3-Tiered Interval Approach for Bus Stop Types and Amenities*



### ***Additional Rider and Pedestrian Experience Gaps and Recommendations***

In addition to improved stop amenities, several other considerations surrounding ridership emerged during presentations and conversations at the Webb building. The first centered on an improved experience of universal rider dignity. The second centered on increasing choice ridership. Fellow teams had great suggestions like a transit oriented Federal Boulevard brand campaign or pop up projects like a tiny library at RTD stops. Team 6 contributes the following 2 recommendations:

1. ***A Mobility Challenges Study*** to assess the impact of physical impairments and/or low socioeconomic indicators on rider use and experiences, including access to health and other social services in this study area. Inclusive design should also be considered within the broader context of the city's Smart technology goals. Dis(ability) studies have much to contribute by way of adaptive technologies, in particular. RTD may be interested in the following GIS shape files from Colorado Department of Public Health and Environment to inform this study.
  - a. CDPHE\_Health\_Facilities
  - b. Disability\_Census\_Tracts
  - c. Hearing\_Difficulty\_Census\_Tract
  - d. Vision\_Difficulty\_Census\_Tracts
  - e. Physical\_Activity\_in\_Adults\_\_CDPHE
  
2. ***A Creative Community Engagement Project*** to leverage the arts. Thinking big, team 6 proposes a public engagement campaign to leverage the arts alongside the city's mobile imaging technology to improve ridership and multi-modal experiences on the Federal corridor. The first step is to generate a community mural project at selected RTD stops along Federal Boulevard. The second step is to generate a physical and digital story surrounding these murals using an RTD public art app or frequent network map. Public art works may also be showcased via the city's mobile imaging technology to create a virtual RTD art tour. The Federal Corridor is ideally suited for this kind of project since it has such a large ridership. Neighborhoods like Chaffee Park and Sunnyside may also benefit from this creative boost, giving riders and residents a reason to ride further down Federal during First Friday Art /Culture walks which are more prominent in the nearby Berkley neighborhood and Tennyson district, for example. This transit oriented project would contribute to a sense of pride, create cultural awareness and help improve connectivity between neighborhoods.
  
3. ***Colorado Coalition for the Homeless Partnership(CCH)*** : The team recommends a collaboration between Denver, RTD, and CCH to pilot a single mobile resources bus and route by 2021 for 6 months. An RTD bus can be re-fitted to deliver mobile case management, meals, showers,

laundry, or health services using design models already available throughout the US. The team anticipates that CAP students at CU Denver would welcome an opportunity to participate in this type of social impact project locally and would like to invite Urban Peak.

## CONCLUSION

The Walk Denver and RTD commitment to equity, inclusion, and diversity has been clear through this project. In “Human Transit” Jared Walker encourages communities to take the long view, planning 20 years into our futures collectively. The primary goal must be to increase overall ridership, bikeability, and walkability and to reduce individual car traffic significantly over the next 10 years, beginning with 2020 goals. Understanding Walker’s “7 Phases of a Trip” can help (Walker, 34). The seven phases are understanding, accessing (at the origin and destination point), waiting, paying, riding, and connectivity. Improving these phases requires tangible city and regional resources, particularly in a metro area where people are crossing county lines to live, work, and make ends meet in the State Capitol. “An effective service allocation policy will count both residential density and the density of activities that people need to travel to. In fact, the concentration of jobs seems to affect transit ridership even more profoundly than the concentration of residents” in Walker’s view (124). These are important considerations for cities committed to living-wages and affordable housing for everyone. Walker also asks important questions about Ridership vs Coverage goals (Chapter 10). A coverage goal is to serve all parts of a community. This is a direct service provided by RTD to cities and the state. A ridership goal is to maximize ridership with a fixed service budget. This is a shared challenge that Denver is facing currently. “A ridership oriented network would focus all service where density-- and hence, ridership potential-- is highest (Walker, 130). Federal Boulevard fits that bill, as do broader RTD, Walk Denver, and Move Denver goals. If zero-sum budgets remain the great transit barrier, perhaps it is time to start diverting funding away from cars or other development more aggressively in the interest of healthier, safer, and more connected communities. In this regard, the potential of transit knows no bounds. “As we’ve explored the geometry of transit and the choices it presents, we’ve seen that the quality and cost-effectiveness of transit is determined by the layouts of the communities it serves” (181). The team is grateful and confident that Walk Denver and RTD will lean in accordingly.

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