2J Initiative Priority Report

Demographic Overview of Wheat Ridge, CO

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Abstract

This report examines the demographic landscape of Wheat Ridge, Colorado, in the context of the city's 2J sales tax initiative, a ballot measure aimed at investing in safer streets and improving connectivity through bike lanes and sidewalks. The initiative focuses on infrastructure projects such as sidewalks, bike lanes, and street improvements on primary corridors, including 32nd Ave., 38th Ave., and 44th Ave., as well as filling sidewalk gaps and conducting repairs along major pedestrian paths and routes to schools. To effectively allocate limited funds for sidewalk and bike lane improvements, understanding the existing conditions is imperative. This study aims to address this need by analyzing key demographic indicators such as population density, homeowner type, average household income, and vehicle availability. Leveraging data from the 2020 US Census and the American Community Survey, the research employs geographic information system (GIS) mapping techniques to illustrate demographic patterns at the census block group level. By focusing on areas with high non-vehicular travel reliance and identifying regions with greater population density and low average household income, the research aims to provide actionable insights for prioritizing infrastructure improvements. The key message of this study underscores the importance of integrating demographic considerations into transportation planning initiatives to create safer and more inclusive urban environments. Our findings reveal spatial disparities in the demography of Wheat Ridge, emphasizing the need for targeted interventions to address inequities. By illustrating the demographic layout of Wheat Ridge, this research offers actionable insights for identifying priority areas in need of targeted interventions.

Introduction

In November 2023, Wheat Ridge residents overwhelmingly supported Proposition 2J, a ballot measure aimed at funding pedestrian, bicycling, and stormwater infrastructure projects through a continued sales and use tax of one-half cent. The community's endorsement of the measure reflects its commitment to enhancing street safety,

promoting active transportation modes, and mitigating flood risks, aligning with the city's sustainability objectives (City of Wheat Ridge, 2018). This project will focus on analyzing the demographic characteristics of the city to aid the prioritization of funding for pedestrian and bicycling infrastructure outlined in the initiative. In particular, we targeted priority corridors identified by the City of Wheat Ridge's community engagement projects and specified in the ballot measure, including 32nd Ave, 38th Ave, and 44th Ave (City of Wheat Ridge, 2023).

Before we could begin acquiring data from the US Census Bureau, it was first necessary to understand how demographics relate to infrastructure generally and what research has been done on this topic. If the goal is to provide further insight to help inform the city council's decision-making, we wanted to ensure the data we were acquiring was useful to that decision-making. The results of this research can be read about in the Background section of this report.

None of the authors of this report had previously visited Wheat Ridge, and two of us originate from other parts of the country. To this end, we felt it was important to understand Wheat Ridge's unique identity and the historical context of its development. While there is not much in the way of published literature specific to the history of Wheat Ridge, we got a general sense of the city's history, especially as it relates to its demographics, from a few local sources, including the City of Wheat Ridge itself.

Wheat Ridge has a history as an early western expansion pioneer town. It was established in 1859 as a rest stop for miners seeking their fortune in the mountains during the gold rush. The name "Wheat Ridge" comes from the community of farms that began to spring up in the area as failed miners returned from the mountains and set up shop as successful farmers (About Wheat Ridge, n.d.). In a manuscript from the 1930s, a long-time resident of Wheat Ridge describes a thriving town between the mountains and Denver that had become for more than just its wheat crop. The fertile soil of Wheat Ridge turned out to be ideal for all kinds of small berries and even for fruit orchards and other produce, such as Carnations (At one point, Wheat Ridge had the largest production of Carnations in the world) (About Wheat Ridge, n.d.; Johnson, 1937). At the

Turn of the 20th century, Wheat Ridge had become an essential part of the Denver Metro area economy, with most of its agricultural products going to market in Denver. There was even an early streetcar line that ran from Downtown Denver to Wheat Ridge down the 38th Avenue corridor (Johnson, 1937).

Today, Wheat Ridge still has a close relationship with the city of Denver. The Easternmost boundary of the city borders with Denver county, and RTD connects the cities by Bus. Much has changed in a near-century, though. In 1950, 13 years after F.T. Johnson wrote his manuscript about the early days of Wheat Ridge, the U.S. Census reported a population of 1,357 residents in the city of Wheat Ridge (Peel et al., 1952). In the most recent Decennial Census taken in 2020, The city of Wheat Ridge had grown to a population of 32,398 people (*Census QuickFacts*, 2024). Fundamentally, 30,000 new residents in a place over any period of time will bring change. However, the city of Wheat Ridge has done a good job with the balancing act of ensuring its new residents are supported while still being true to its roots. Wheat Ridge was featured in a 2015 Bloomberg article (one in which councilor Weaver's farm features in the first image), which highlighted the city as a place that had gone "all-in on farming," with regulations and programs that make it easier to keep certain live-stock on smaller plots of land, and programs that help folks to get started with a small urban farm (Miller, 2015).

The City of Wheat Ridge is balancing its agricultural roots with the realities of urbanization. The city has a new stream of financing provided by the 2J initiative, and now, the city needs to decide the best way to allocate these funds to improve its connective infrastructure. There have been previous reports that provided the city with a purely engineering perspective on how funds should be allocated. Our colleagues at CU Denver, Erika and Hannah, will be providing you with their own report, which provides data points entirely based on what the city of Wheat Ridge's current connective infrastructure looks like and rates it on objective scales using quality and safety metrics that they detail in their report. This report aims to give you another set of data points to consider as you go about your decision-making. What types of people live in Wheat

Ridge presently, where do they live, and how would they be impacted by updates and improvements to their infrastructure?

Background

In Wheat Ridge, like many US cities, there is significant variation in sidewalk and cycling infrastructure between neighborhoods. Quality bike lanes and sidewalks have been shown to have significant positive impacts on the quality of life for those with access to them (Marx & Patricolo, 2019). There are several ways that access to these types of infrastructure has been shown to improve quality of life. Access to sidewalks and good bike lanes has positive health effects through the promotion of healthy physical activity for nearby residents (Thornton et al., 2016). Another benefit is the ability for more people to interact with the economy of Wheat Ridge. It is often assumed that everyone owns a vehicle, but some socioeconomic groups are more reliant on non-vehicle travel than others. An individual without a car depends on the walkability of their neighborhood to accomplish essential tasks like grocery shopping, traveling to work, getting to school, receiving healthcare, and participating in leisure activities (Berg et al., 2020).

While some people may prefer to use their personal vehicle as their primary form of transportation, research has found that there is actually a wide variety of factors that underpin an individual's decision-making when it comes to making a trip by car or by another mode (Alfonzo, 2005). Fundamentally, for a person to choose to walk or bike, these modes of transportation must be feasible by several metrics: travel time, availability of supporting infrastructure (sidewalks, bike lanes), safe street crossings, and individual-scale factors (Alfonzo, 2005). As an example of this, other research has shown that providing physical separation between cyclists and cars through protected or off-street bike lanes promotes the uptake of cycling as a mode of transportation (Mahfouz et al., 2023). Only when walking or biking become feasible alternatives to driving do factors such as comfort and pleasurability (i.e., shade trees, Street lights, and

green space in the built environment) become part of an individual's consideration when deciding how to make a trip (Alfonzo, 2005).

The previous two paragraphs are intended to illustrate that as the City Council of Wheat Ridge goes about identifying where to update or maintain infrastructure, accessibility from a demographic viewpoint should be considered alongside the civil engineering and current infrastructure quality perspectives (provided by our colleagues, Hannah Larsen and Erika Jermé). “Who will be using this infrastructure?” is a question that should be asked by stakeholders as they make decisions on where in Wheat Ridge to invest finite capital. Ideally, there should be an effort to create opportunities for the greatest number and types of people to have easy access to infrastructural resources that could improve the quality of their lives (Marx & Patricolo, 2019).

Looking specifically at Wheatridge, we found evidence to support using four demographic data points as reasonable indicators for areas where people would stand to benefit most from the improved bike, pedestrian, and street infrastructure. This research informed the data our team set out to acquire and analyze from the US Census. These demographics are:

- Low-Income Households
- Population Density
- Quantity of Rented Households Vs. Owned Households
- Private Vehicle ownership

Our team’s initial inquiry into which demographics would be relevant for this report stemmed from a simple question: “Who has access to a vehicle?” At a fundamental level, it seems that those without car access would benefit most from cycling and walking infrastructure. While our team was able to locate census datasets that quantify to a degree the number of personal vehicles in Wheat Ridge (a view of this data can be seen in Figure 3), we found that this data was not granular enough to show anything other than general patterns of vehicle availability. So, we started looking for analog

demographic types that could be used as indicators of populations with low access to personal vehicles or another need for alternative infrastructure.

Low-income households fit this criteria, as lower incomes are associated with lower rates of car ownership and a greater reliance on cycling and walking infrastructure to go about daily tasks (Berg et al., 2020). Population density, while not definitively an indicator of low car ownership, has been shown to encourage more localized use of space, thus not requiring a car (Tana et al., 2016). Finally, Rented households vs. owned households were chosen as a proxy for income level because homeowners have a higher average household income per year than renters (Thompson, 2023).

Research Questions

This report seeks to answer the following questions in support of the 2J initiative project:

1. What is the demographic layout of Wheat Ridge?
    - 1.1. What are the most important demographics to consider?
    - 1.2. How are these demographics visualized on a map?
    - 1.3. Are there notable patterns in demographic dispersion across city districts?
2. How do these demographic patterns interact with infrastructure in Wheat Ridge?
    - 2.1. Where are patterns in relation to the prioritized Wheat Ridge Infrastructure?
    - 2.2. What is the connectivity of these trends to schools?
    - 2.3. How are the trends related to priority corridors?

Methods

Research Questions Summary

What is the demographic layout of Wheat Ridge?

This question will be addressed using public data from the 2020 US Census to illustrate the demography of Wheat Ridge with a focus on four relevant topics, including:

- **Population Density**
- **Renter vs Owner Occupancy of Households**
- **Income by Household**
- **Access to personal vehicle**

The demographic maps were created using data at the census block group level because they are granular enough to illustrate patterns while being discrete enough to protect personal information. The 2020 census was chosen due to its availability for each demographic topic at the census block level or census block group level while also being recent (within the last five years). Since the 2020 census is also a decennial census, it contains more information than an annual census, such as transportation information. Infrastructure data utilized in the basemap has been obtained from Jefferson County's Online Data Portal, Directly from the City of Wheat Ridge, and from the Denver Regional Council of Governments (DRCOG). Basemap data was evaluated from each of these sources and selected based on relevance, quality, and level of data support.

How do these demographic factors interact with the the infrastructure of Wheat Ridge?

To illustrate how Wheat Ridge's demography interacts with its infrastructure, we determined that it was first necessary to identify the high-priority corridors on each demographic map. This was accomplished by emphasizing 32nd Ave, 38th Ave, and 44th Ave on the final maps with labels. The demography was then displayed using a

choropleth technique, where the darker colors indicate a higher amount or percentage of the indicated feature. A separate map was created for each of the three demographic topics.

The resulting maps were created with the intention of identifying key demographic concerns like high population density, low income, and low vehicle availability along the high-priority corridors. They can also be utilized to compare with the infrastructure maps, which were developed in a separate project by Hannah Larson and Erika Jermé. The infrastructure maps depict sidewalk and bike lanes by rating along the aforementioned paths. A comparative approach allows for the identification of correlations between demographic variables and the accessibility of infrastructure, highlighting areas with disparities in transportation equity. By integrating demographic data with infrastructure mapping and community engagement, a holistic understanding of how Wheat Ridge's population interacts with its transportation systems can be achieved, guiding informed decision-making for future infrastructure development.

Data Acquisition

The following section details the census data that our team acquired from the US Census with the desired demographic attributes. All demographic data acquired reflects Wheat Ridge as it was in 2020. We chose to only use data from 2020 as this was the last Decennial Census, and we wanted to keep our comparisons consistent across all maps and charts. The Decennial Census is the most comprehensive survey the US Census Bureau conducts and only takes place every ten years, with the next survey to occur in 2030. As 2020 was the first year of the COVID-19 pandemic, some demographics, such as income, may be different than they would have been in a “normal” year.

Data Tables

Population Density	
Table Name	Race
Data Source	US Census - Decennial Census
Census Year	2020
Geography Level	Census Block
Table Code	P12

Source URL:
https://data.census.gov/table/DECENNIALPL2020.P1?g=060XX00US0805992641$1000000&y=2020&tp=true

This table contains information regarding what race individuals in each census block identify as, including SR (Single Race) and MR (Multi-race), as well as the total population of each Census Block. This data was only utilized to map population density, not race distribution. Population density serves as a critical metric for understanding the demographic landscape of a city, providing insights into spatial distribution and urban dynamics. By examining population density patterns, policymakers and urban planners can identify areas of concentrated population growth, demographic composition, and socioeconomic disparities (Liang et al., 2018). For instance, high population density areas often indicate urban centers with diverse demographics, increased demand for infrastructure, and potential transportation challenges. Conversely, low population density regions may signify suburban or rural areas with different demographic profiles and infrastructure needs. Therefore, analyzing population density facilitates targeted interventions and resource allocation strategies tailored to meet the diverse needs of urban populations.

Owner Occupied Households	
Table Name	Tenure by Household Size
Data Source	US Census - Decennial Census
Census Year	2020
Geography Level	Census Block
Table Code	H12

Source URL:
https://data.census.gov/table/DECENNIALDHC2020.H12?q=Household%20Size%20and%20Type&g=060XX00US0805992641$1000000&y=2020&tp=true

An important component of demographics is income level and housing density. The percentage of households whose occupants own the home can be a good indicator of both of these metrics without depicting median household income. Homeownership implies that household income is high enough to purchase a home instead of renting, and it can also imply low population density due to single-family residences. This dataset was chosen based on its ability to indirectly illustrate both wealth and population density.

Renter Occupied Households	
Table Name	Tenure by Household Size
Data Source	US Census - Decennial Census
Census Year	2020
Geography Level	Census Block
Table Code	H12

Source URL:
https://data.census.gov/table/DECENNIALDHC2020.H12?q=Household%20Size%20and%20Type&g=060XX00US0805992641$1000000&y=2020&tp=true

When Looking into creating new infrastructure, planners should prioritize potential demand in addition to current demand (Mahfouz et al., 2023). higher density areas (ie multifamily housing) will be a source of higher demand presently and in the future. Additionally, this information can provide insights into the income level of people living in different areas, an important factor when considering that ease of travel is an important quality-of-life indicator (Marx & Patricolo, 2019).

Household Income

Table Name	Household Income in the Past 12 Months (in 2020 Inflation-Adjusted Dollars): ACS 5-year Estimates
Data Source	American Community Survey
Census Year	2020
Geography Level	Census Block Group
Table Code	B19001

Source URL: https://data.census.gov/table/ACSDT5Y2020.B19001?t=Income%20(Households,%20Families,%20Individuals):Income%20and%20Poverty&g=050XX00US08059$1500000&tp=true

This table contains the number of households per Census block group broken out by income bracket. It is pulled from the US Census American Community Survey and not the Decennial Census. Counts are 5-year average estimates as of 2020. Household Income can be used with the owner's data to show socio-economic status, which can help identify places that would benefit from improved pedestrian and bike infrastructure.

Vehicle Availability	
Table Name	Tenure by Vehicles Available: ACS 5-Year Estimates
Data Source	American Community Survey
Census Year	2020
Geography Level	Census Block Group
Table Code	B25044

Source URL:
https://data.census.gov/table/ACSDT5Y2020.B25044?q=vehicles%20available&g=1400000US08059009806$1500000,08059009852$1500000,08059010308$1500000,08059010402$1500000,08059010403$1500000,08059010405$1500000,08059010406$1500000,08059010502$1500000,08059010503$1500000,08059010603$1500000,08059010604$1500000,08059010701$1500000,08059010702$1500000&tp=true

Certain socio-economic groups are more reliant on non-vehicle travel than others. An individual without a car depends on the walkability of their area to accomplish essential tasks like grocery shopping, traveling to work, getting to school, and receiving healthcare (Berg et al., 2020). Identifying areas where car ownership is less pervasive can provide a good criterion for prioritizing infrastructure development.

Data Cleaning and Organization

Field aliases were added based on Census Bureau documentation once the pertinent tables were downloaded from the census website. All fields containing extraneous information were deleted. The FIPS code was then extracted from the Geo_id column. Following this, the FIPS code was used to join census table data with boundary feature classes of the appropriate census geography level (block, block group, tract) in ArcGIS Pro. Census data tables, census boundaries, and the joined feature classes were all stored in separate geodatabases for ease of data management.

Data Visualization

Once the data was collected, cleaned, and organized, a basemap of streets and open spaces was created. The joined demographic feature classes are all displayed at the census block group level. We chose to display data at the block group level for consistency and to protect citizen anonymity. Each type of demographic information was then symbolized using a different graduated color scale. The Wheat Ridge city boundary and district boundaries were also added for reference. This was especially important because Census block groups do not perfectly align with Wheat Ridge city limits.

In addition to the maps, two graphs were created to indicate demographics by district, the first indicating homeowners vs. renters and the second showing the percentage of low-income households. This was accomplished by joining the census information to the district boundaries and creating bar graphs based on the resulting tables in ArcGIS Pro.

Results & Analysis

The maps and charts created for Wheat Ridge indicate a wide variance in the spatial distribution of people within the city. Population density, which normalizes population by calculating the number of people per acre, is depicted in Figure 1 below. The map indicates that population density is greatest in District One along 38th Ave, one of the 2J priority corridors. Parts of districts 2, 3, and 4 also have areas of high density, which all fall along either 38th Ave or 44th Ave. It would be beneficial to compare these areas to the infrastructure rating maps to identify missing or low-quality sidewalks and bike lanes in areas of high density. If more individuals are present in an area, it is more likely that pedestrian infrastructure will be utilized both for necessity and/or pleasure.

Household type by district is also depicted in Figure 1. In the lower-left corner of Figure 1, a bar chart shows the count of homeowner-occupied households versus renter-occupied households. It shows that of the four districts, district 3 is the only district that has more homeowners than renters. Districts 1 and 2 are very close to equal

for homeowner type, and District 4 has slightly more renters than homeowners. The type of residents can be a good indicator of how often pedestrian infrastructure is utilized because renters may be less likely to own or have access to a personal vehicle.

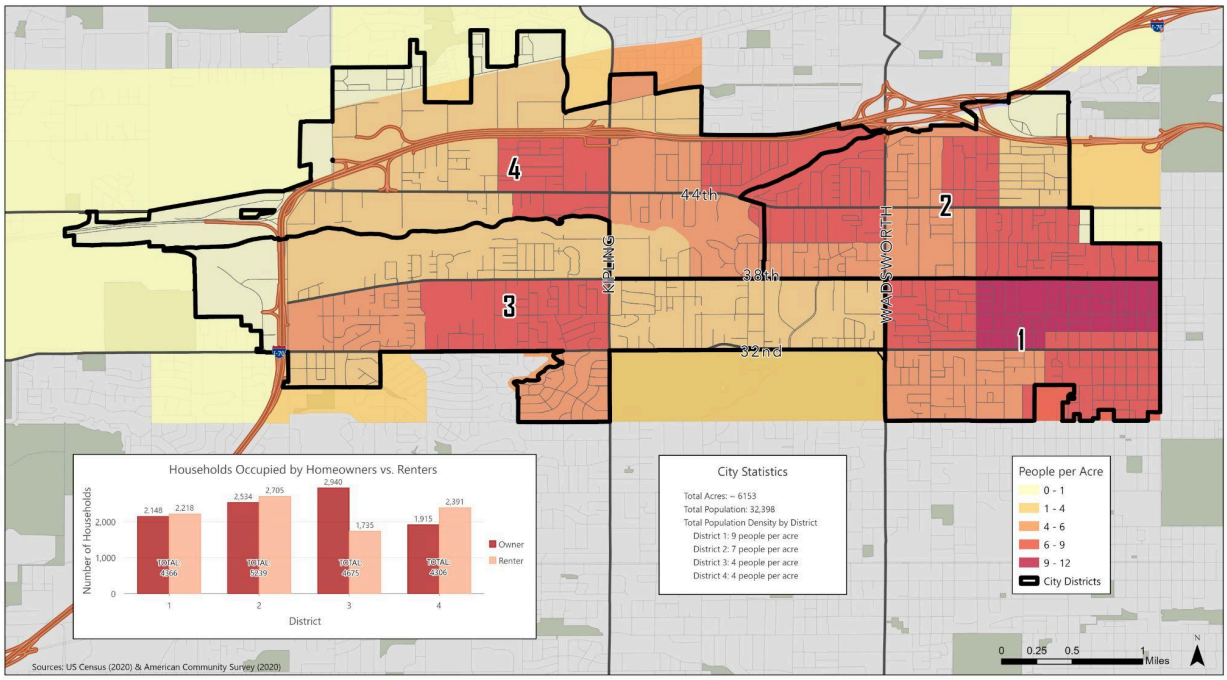

Figure 1. *A map of population density of Wheat Ridge, Colorado, by Census block groups. The bar chart indicates homeowners vs. renters by district.*

Households that reported less than $25,000 income in 2020 were chosen to indicate areas of low income in Figure 2. This number was intentionally selected based on the federal guidelines in 2020, which specify that the poverty level of a household of 4 people or more should be anything less than $26,200 (US Department of Health and Human Services, 2024). This particular household size was chosen because the average family size in the U.S. was about 2.5 people (US Census Bureau, 2020), and we wanted to be inclusive of larger households. Larger households with low incomes are more likely to rely on public transportation and pedestrian infrastructure (Klein et al., 2023).

The areas with the highest percentage of low-income households are in Districts 1 and 2, along 38th Ave. There are also several low-income areas along 32nd Ave and 44th Ave.

The bar chart further highlights these trends by indicating that about 25% of households in District 1 reported less than $25,000 in income in 2020. It should be noted that this information may be skewed because of the year and the effect that Covid had on people's livelihoods.

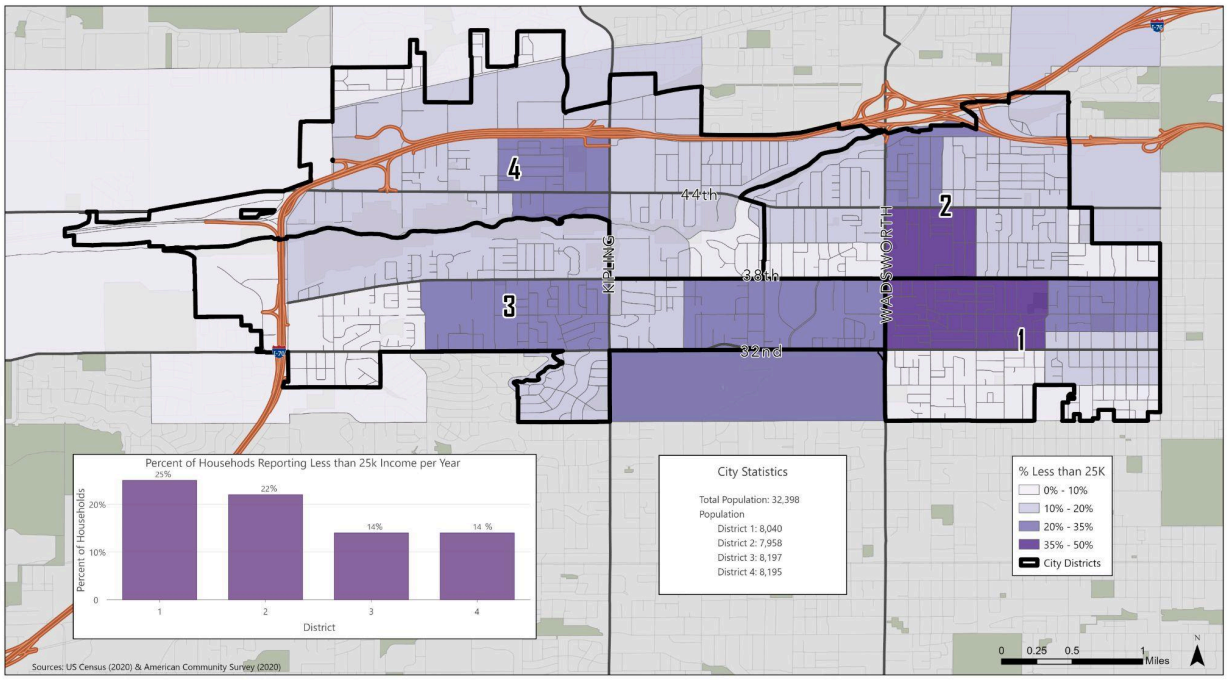

Figure 2. *A map of low-income households in Wheat Ridge, Colorado, by block group. The bar chart indicates the percentage of households that reported less than $25,000 in income in 2020 by district.*

The last map, shown in Figure 3, depicts the number of vehicles available per person in the city. Unlike the previous maps, the darker shades indicate a lower likelihood of the people in the area relying upon public transportation, sidewalks, and bike lanes because they have higher access to personal vehicles. For example, in District 1, along 32nd Ave, there are about seven cars for ten people, whereas the dark blue area along 38th Ave indicates that there is more than one car per person in this area. Of note is that block groups with a lower number of cars per person appear to line up neatly with areas of low income (Figure 2) and higher population density (Figure 1) in Districts 1, 2, and 3.

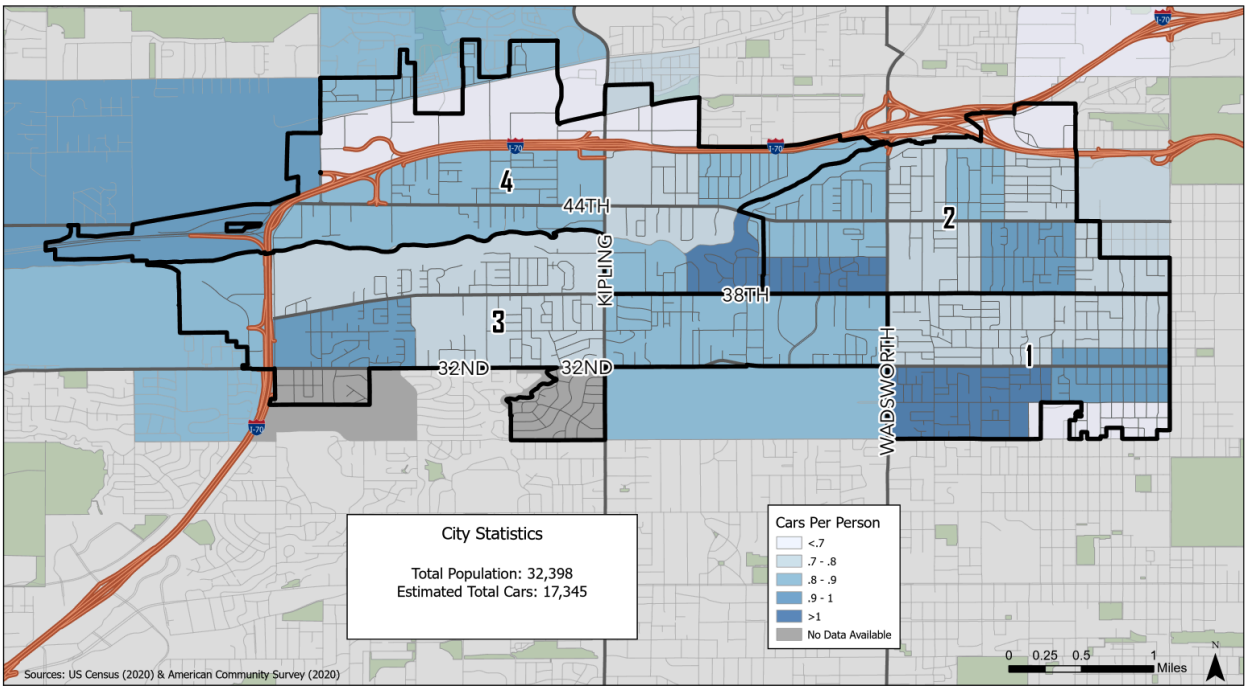

Figure 3. *This map illustrates the average number of cars per person by block group in Wheat Ridge, Colorado.*

Conclusion

This report offers insights into the demographic landscape of Wheat Ridge, Colorado, and its implications for infrastructure planning under the 2J sales tax initiative. The analysis highlights significant spatial disparities in population density, homeowner versus renter distribution, income levels, and vehicle access across different areas and districts of the city. By integrating demographic considerations into transportation planning, the study provides actionable insights for prioritizing infrastructure improvements to promote safer and more inclusive built environments. The findings underscore the importance of ensuring that infrastructure investments effectively serve the diverse needs of Wheat Ridge residents.

The results yield several significant conclusions. Firstly, the concentration of population density along priority corridors like 38th Ave highlights the need for enhanced pedestrian infrastructure in these areas to accommodate potential high levels of foot traffic. Second, the distribution of homeowner versus renter households across districts

suggests variations in pedestrian infrastructure utilization, emphasizing the importance of tailored interventions to meet the needs of different communities. Additionally, the prevalence of low-income households along certain corridors underscores the imperative of infrastructure improvements to address the variance in accessible infrastructure across the city. Overall, these conclusions provide actionable insights for policymakers and urban planners to prioritize infrastructure investments that promote transportation equity in Wheat Ridge.

There are several avenues for future research and extension from this study. Further investigation could explore the socio-economic impacts of infrastructure improvements on community well-being and quality of life. Additionally, ongoing community engagement and participatory approaches could enhance the inclusivity and effectiveness of infrastructure planning processes. Reflecting on our experience with this community-based project, we encountered several key moments that underscored the importance of interdisciplinary collaboration and stakeholder engagement in addressing complex urban challenges. The broader community impacts of such projects extend beyond infrastructure enhancements to foster social cohesion, economic vitality, and environmental sustainability. This project has been transformative, deepening our understanding of the interconnectedness between demographic factors and urban infrastructure and inspiring a commitment to advancing equity and inclusivity in community development efforts.

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