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Increasing Access to Groceries at the Century Villages at Cabrillo

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# Increasing Access to Groceries at the Century Villages at Cabrillo

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Client: Century Villages at Cabrillo



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<b>16. Abstract</b> <p>The purpose of my research was to understand the transportation needs for residents living at the Century Villages of Cabrillo (CVC) in terms of increasing transportation access to groceries, and recommend interventions that would improve grocery access for residents. CVC is a 27-acre residential community located in the western part of Long Beach that caters to formerly-unhoused folks and veterans. The surrounding land uses and existing transportation conditions make it potentially challenging for community members without access to a car to get groceries. My research question therefore was 'what are the transportation needs of community members of the Century Villages at Cabrillo to ensure they have access to groceries'. To answer this question, I used a quantitative approach where I surveyed 69 residents throughout the community about how they got to the grocery store, transportation challenges that they faced, and solutions they wanted to see CVC implement. The results revealed several key findings: the majority of CVC respondents traveled greater than two miles to get to the grocery store, and most respondents visited the same grocery stores.. Most respondents primarily took the bus or drove on their last trip to the grocery store regardless of race or ethnicity, with people aged 55 and over, white people and men overwhelmingly taking the bus. On the other hand, people aged 35-54, Black people and women had similar rates of taking the bus and driving. Common transportation challenges when traveling to the grocery store could be broken down into three categories: personal mobility issues, public transit issues, and car-ownership/lack of car-ownership issues. Another finding was that most survey respondents never or rarely experienced food insecurity within the month that they took the survey. Finally, in terms of solutions residents desired, when controlling for the most vulnerable CVC residents with the greatest need for increased grocery access (people who do not own a vehicle and people who face food insecurity), more of these people wanted a free grocery shuttle or grocery delivery service.</p>			
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The Institute of Transportation Studies at UCLA acknowledges the Gabrielino/Tongva peoples as the traditional land caretakers of Tovaangar (the Los Angeles basin and So. Channel Islands). As a land grant institution, we pay our respects to the Honuukvetam (Ancestors), 'Ahihirom (Elders) and 'Eyoohiinkem (our relatives/relations) past, present and emerging.

## Disclaimer

This report was prepared in partial fulfillment of the requirements for the Master in Urban and Regional Planning degree in the Department of Urban Planning at the University of California, Los Angeles. It was prepared at the direction of the Department, the UCLA Institute of Transportation Studies, the UCLA Lewis Center for Regional Policy Studies, and of the Century Villages of Cabrillo as a planning client. The views expressed herein are those of the author are not necessarily those of the Department, the UCLA Luskin School of Public Affairs, UCLA as a whole, or the client.

I would like to honor the memories of the victims of the shooting in the Tops Friendly Markets Store in Buffalo, New York on May 14th, 2022. Aaron Salter Jr., Andre Mackniel, Celestine Chaney, Geraldine Talley, Heyward Patterson, Kat Massey, Margus D. Morrison, Pearl Young, Roberta A. Drury, and Ruth Whitfield were taken from us far too soon. This vile act of white supremacy and anti-Black racism is unfortunately far too common in our society. This was a targeted attack on a predominantly-Black neighborhood in East Buffalo which had been structurally disinvested in due to redlining, and there was previously no supermarket for over 113,000 people (Buffalo News, 2001) until Tops opened in 2003 (Meyersohn, 2022). No one should feel unsafe when going grocery shopping, or for existing in public and private spaces. Thinking about the family and friends of the victims.

# Increasing Access to Groceries at the Century Villages of Cabrillo

By Aziz Fellague Ariouat

Submitted in partial fulfillment of the requirements for the Master's in Urban & Regional Planning  
at the University of California, Los Angeles

UCLA Institute of Transportation Studies  
UCLA Lewis Center for Regional Policy Studies

Client: Century Villages of Cabrillo  
Faculty Advisor: Madeline Brozen

## Table of Contents

<b>Executive Summary</b>	<b>6</b>
<b>Introduction</b>	<b>9</b>
<b>Literature Review</b>	<b>14</b>
Introduction	14
Access to Opportunities	14
Food Deserts and Access to Opportunities	15
Access to Groceries, Food Insecurity, and Veterans	17
Transportation Solutions to Addressing Food Access	17
<b>Research Design</b>	<b>21</b>
Data Collection	21
<b>Findings</b>	<b>24</b>
Findings	24
Demographics	31
Limitations	32
<b>Recommendations</b>	<b>35</b>
Recommendation 1: Pursue a Grocery Delivery Service	35
Recommendation 2: Work to Create a Free Grocery Delivery Shuttle	36
Recommendation 3: Work on Increasing Access within CVC Campus	38
Recommendation 4: Pair Future Services with Quality Outreach	38
Concluding Thoughts	39
<b>References</b>	<b>41</b>
<b>Appendix</b>	<b>45</b>
Appendix A: Survey Template	45
Appendix B: Survey Data	48

## Executive Summary

The purpose of my research was to understand the transportation needs for residents living at the Century Villages of Cabrillo (CVC) in terms of increasing transportation access to groceries, and recommend interventions that would improve grocery access for residents. CVC is a 27-acre residential community located in the western part of Long Beach that caters to formerly-unhoused folks and veterans. CVC is located in a food desert with no grocery stores within half a mile of campus (*USDA*, n.d.). CVC is surrounded by unfavorable and unhealthy land uses and infrastructure, including industrial land uses, a refinery, two freeways, and a freight railroad. Existing public transit by CVC is generally inaccessible, and CVC residents also face personal mobility and technological barriers. The surrounding land uses and existing transportation conditions make it potentially challenging for community members without access to a car to get groceries. My research question therefore was ‘what are the transportation needs of community members of the Century Villages at Cabrillo to ensure they have access to groceries’.

To answer this question, I used a quantitative approach where I surveyed 69 residents throughout the community about how they got to the grocery store, transportation challenges that they faced, and solutions they wanted to see CVC implement. Eligible survey respondents had to be over the age of 18, and living in transitional or permanent housing to participate. Surveys were distributed in both English and Spanish, and respondents had the opportunity to fill out either an online survey or a physical survey.

The results revealed several key findings: the majority of CVC respondents traveled greater than two miles to get to the grocery store, and most respondents visited the same grocery stores: Albertsons (16 respondents), Food 4 Less (12 respondents), Vons (5 respondents), and the 99 Cents Only Stores (5 respondents). Most respondents primarily took the bus (32 respondents) or drove (22 respondents) on their last trip to the grocery store regardless of race or ethnicity, with people aged 55 and over, white people and men overwhelmingly taking the bus. On the other hand, people aged 35-54, Black people and women had similar rates of taking the bus and driving. Common transportation challenges when traveling to the grocery store could be broken down into three categories: personal mobility issues, public transit issues, and car-ownership/lack of car-ownership issues. Another finding was that most survey respondents never or rarely experienced food insecurity within the month that they took the survey (36 respondents). Finally, in terms of solutions residents desired, there was a similar distribution of respondents who wanted to see a free grocery shuttle, discounted or free Uber and Lyft rides, and a grocery delivery service. However, when controlling for the most vulnerable CVC residents with the greatest need for increased grocery access (people who do not own a vehicle and people who face food insecurity), more of these people wanted a free grocery shuttle or grocery delivery service.



Based on my results, I recommend that CVC does the following: (1) providing a grocery delivery service in partnership with public sector and service providers for CVC residents with the greatest need, (2) exploring options to provide a free grocery shuttle program that CVC residents can help co-create through a participatory planning process, (3) improving accessibility within CVC's campus by implementing delivery drop-off zones and bringing groceries from the grocery delivery program to resident's doors, and (4) extensively promoting both the grocery delivery program and the free grocery shuttle program using various methods such as digital, in-person events, and informing case-managers to promote the programs to residents in order to ensure the long-term sustainability of these programs.



# Introduction

This research project examines existing transportation access to groceries and proposed solutions in order to address access deficits at the Century Villages of Cabrillo (CVC). CVC is a 27-acre residential community based in the western part of Long Beach that offers temporary, transitional, and permanent supportive housing for formerly-unhoused individuals and families, with a historical focus on veterans. CVC came into existence in 1997 as the result of the McKinney Act, which transferred land from a former naval base to the nonprofit sector to provide housing for veterans and people at risk of becoming unhoused (Century Villages of Cabrillo, 2016). Over 1,900 people - including nearly 700 veterans - are able to call CVC their home as of 2020 (*Villages at Cabrillo Social Impact Report 2021*, 2021). This community has been expanding since its founding, and will be adding over 500 new apartments to the development over the next 11 years (Sharp, 2020). Therefore, it is vital that CVC addresses any access issues now so that when they welcome new community members, these access deficits have been greatly reduced.

However, there are several existing barriers that community members who live in CVC face when it comes to accessing opportunities. These barriers include land use, as well as personal and technological barriers. CVC is surrounded by unfavorable land uses and their effects that negatively contribute to CVC resident's health and wellbeing, and restricts access to opportunities - particularly access to grocery stores. Industrial land uses are directly south of CVC, while the Marathon Los Angeles refinery is directly to the west of CVC (*Long Beach 2040*, 2020). Additionally, the Terminal Island freeway is directly to the west of CVC, freight rail is west and south of CVC, and the 710 freeway is east of CVC (*Long Beach 2040*, 2020).



**Figure 1:** Aerial view of Century Villages of Cabrillo and its surrounding land uses. CVC is highlighted inside the red box. Map by Google Imagery.

The unhealthy and dangerous land uses are sites of environmental injustices that are linked to the global shipping and logistics industry. These environmental injustices create negative externalities for community members such as increased air pollution, and susceptibility to asthma and cardiovascular disease. CalEnviroScreen 4.0, which measures environmental and population burdens across California census tracts, has the census tract that CVC is located entered into the highest category for pollution burden (90), as well as high rates of diesel particulate matter (86), toxic releases (100), and hazardous waste (99) (*CalEnviroScreen 4.0 Census Tract: 6037572800*, 2021).

The local food environment around CVC is similarly unhealthy. CVC has no nearby grocery stores within half a mile of the campus (*USDA*, n.d.), which forces residents to travel further in order to go grocery shopping. Santa Fe Avenue on the other hand - the closest major north-south street to CVC - has three liquor stores in close proximity to CVC. CVC has some on-site amenities that help residents obtain food, such as the weekly Farm Stand, where residents can pick up fresh produce every Thursday from 12PM-1PM, the dining hall, convenience store, and the pantry. However, none of these amenities can be a permanent replacement for a full-scale grocery store.

The campus is served by four nearby bus lines: Long Beach Transit lines 171 & 175, as well as Torrance Transit Lines 3 and Rapid 3. The Long Beach Transit bus lines used to stop inside CVC's campus but are now stopping right outside the main gates of the campus while the main entrance is being renovated. Meanwhile, the Torrance Transit buses stop on Pacific Coast Highway (the main east-west street by CVC) where the sidewalks are sparse and inaccessible, the distance between crosswalks are long, the shade is limited for those waiting at the bus stop, and the corridor has an abundance of diesel trucks. For both bus lines, CVC residents have to leave the campus to get on a bus, which may be challenging for folks who are older and are mobility-impaired.

The isolated land uses, restricted access to the campus, and poor air quality all combine into a bleak picture of grocery store access, particularly for community members who do not own a car. For instance, if a CVC resident wanted to go to Vons in the East Village neighborhood of Long Beach at 1PM on a weekday (a 2.7 mile trip), the trip would only take 15 minutes with a car. However, with no access to a car, it would take the CVC resident 7 minutes to walk to the Torrance Transit Line 3 bus stop, 20 minutes to ride the bus to Downtown Long Beach Station and 7 minutes to walk from Downtown Long Beach Station to Vons (with the assumption that the bus is on time and that the person is able to walk or roll to the bus stop in the time); a comparable 40 minute trip, at best. Even with these assumptions, the single bus trip is longer than both car trips combined, and additionally the bus rider would have to cross the street at an intersection with speeding cars and trucks, would have to travel on a sidewalk with no shade to a bus stop with no protection from the elements, all while carrying their groceries.

In addition to land use barriers, community members face personal mobility and technological barriers. A resident of CVC may find it difficult to go grocery shopping if they have a physical disability, or may not be able to use a ride-hail company or delivery service to access groceries if they do not have a mobile bank account, smartphone, or internet access.

Previous research demonstrates how physical disability limits trip making. People with disabilities over the age of 65 make 2.1 trips per day compared to people without disabilities over the age of 65 who make 3.5 trips per day. These differences are a little less stark among younger people; people with disabilities between the ages of 18-64 make 2.6 trips per day compared to their non-disabled peers who make 3.6 trips per day (Brumbaugh, 2018). In terms of technological barriers, 7% of national households are unbanked, meaning they do not have a bank account or card (Shaheen & Cohen, 2018). In Los Angeles County, 11% of households who reside in the county do not have access to a smartphone (Brown et al., 2021). Overall, the barriers to grocery access for residents at CVC likely affects other forms of transportation access - such as access to healthcare and access to education - especially since people with disabilities make fewer trips and those without access to a smartphone cannot utilize smartphone-based transportation services.

Improving grocery access for historically-marginalized communities is an important topic. The ability to acquire fresh and healthy foods at an affordable price while having the transportation means to easily access the grocery store, is a privilege that few people in the United States have. In the United States for instance, Black people are 2.49 times more likely and Latinx people are 1.38 times more likely than white people to live in a neighborhood with low access to a supermarket (US Department of the Treasury, 2012). This country has been built on white supremacy, colonialism, and racial capitalism, leading to lower-income communities of color being deliberately underinvested while wealthier and whiter neighborhoods have received high-quality investments and amenities. Redlining, as facilitated by banks and the real estate industry and enabled by different scales of government, has denied lower-income folks - particularly lower-income Black people - the opportunity to build generational wealth through homeownership over the decades while white people had the opportunity to build wealth. For this reason, affordable places to live such as CVC are built in areas that are often far away from opportunities such as jobs, healthcare, and grocery stores.

We must ask the question: *why are there only opportunities to acquire vast swaths of vacant land for affordable housing in places close to extractive and polluting industries? Why is this land not available in wealthier neighborhoods, even if the project is financially feasible?* To be sure, these questions are not meant to critique CVC for acquiring the land in West Long Beach, as they have provided shelter and permanent housing for thousands of people. Instead, I argue that CVC is a place that should be fought for. The community has many unique amenities that residents use and enjoy such as an Urban Forest with fresh fruit that one can pick off the trees, community gardens, and numerous programs for the residents to enjoy. I remember my first time that I visited CVC back in 2018 when I was an undergraduate student studying geography

at California State University, Long Beach. I was taking the Long Beach Transit 171 bus with the intention of transferring to get to Downtown Long Beach, however I fell asleep on the bus and missed my transfer. When I woke up, I found myself in the heart of CVC. I was immediately in awe with how beautiful the place is, as well as how friendly and outgoing the CVC residents were. I later looked up CVC and learned about their purpose and goals and thought to myself that it was exceptional that Long Beach had such a large community that supported veterans and formerly-unhoused folks. Places like CVC should not be the ones that have to move to a different location: transportation access should be improved so that all residents have ample access to opportunities, and the City of Long Beach as well as the City of Los Angeles should work to ensure that sustainable and healthy land uses and infrastructure are developed around CVC.

Therefore, to address the topic of increasing access to groceries, I ask: *what are the transportation needs of community members of the Century Villages at Cabrillo (CVC) to ensure that they have access to groceries?*

I examine existing literature relating to access to opportunities, food deserts, food insecurity and access for veterans, as well as solutions to addressing transportation access deficits to groceries. This research intends to synthesize existing knowledge and expand knowledge around assessing transportation needs for grocery shopping at the service provider level. In addition to adding to existing knowledge, this project extends the knowledge about grocery access to the CVC management - a previously unexplored topic among those outlined in their annual Social Impact Report. For this reason, this project turns to a resident survey that acknowledges the issue of accessing grocery stores and proposes solutions that the residents have indicated that they would like to see.



# Literature Review

## Introduction

This paper will add to the knowledge in the literature regarding transportation access and grocery shopping, particularly linking grocery access to veteran populations. While there has been extensive research documenting access to groceries in general as well as for veterans, this paper will be a unique addition as it acknowledges the contributions of both, while also adding to the literature of examining transportation needs from a service provider level - with the social service provider being the Century Villages of Cabrillo (CVC) in Long Beach, California.

The literature review looks over topics including access to opportunities, food deserts and their relationship to grocery access, access to groceries for veterans, and transportation solutions that address food access. I discuss in this section the difference between access and mobility and how access ties in with the built environment, how access to grocery stores are more limited in lower-income and communities of color, how veterans experience food insecurity, as well as proposed and implemented solutions to address grocery access.

## Access to Opportunities

“Access” as a term can often be mischaracterized or misunderstood, as access and mobility are often mistakenly used interchangeably among transportation planners, policymakers, and everyday folks alike. Mobility is the ability to move people, but does not take into account the destinations (Bhusal et. al., 2021). For instance, it may take 5 minutes to drive in a straight line from an apartment complex to the closest supermarket with no traffic - therefore an indicator of good mobility. However, if the street leading to the supermarket is congested since the neighborhood was built around car-dependent infrastructure and most people drive, this would be considered bad mobility. Access, on the other hand, is defined as the ease of reaching destinations - such as grocery stores - and is determined by the spatial location of destinations, mode of transportation, the ease of destinations, as well as prior planning and policy decisions (Bhusal et al., 2021). Good accessibility is when destinations such as the grocery store becomes a shorter distance for people to travel because of denser improvements and integration of land uses such as residential and commercial, as well as increasing network connectivity across multiple modes of travel (Handy, 2019). Despite the extensive literature on access versus mobility, Metropolitan Planning Organizations (MPOs), as well as planning and transit agencies have difficulty defining what access is. The Southern California Association of Governments (SCAG) states “access to destinations” as a major goal without providing a definition, and narrows accessibility down to travel time without considering destinations (Boisjoly & El-Geneidy, 2017). Access is also not explicitly defined in SCAG’s 2016-2040

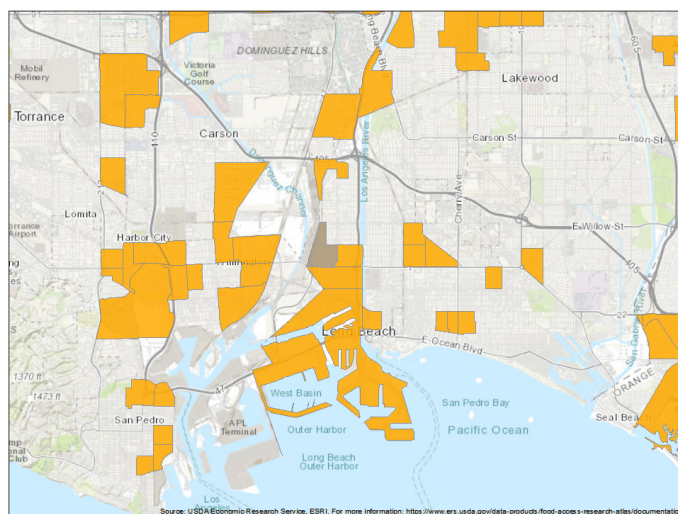


Regional Transportation Plan (SCAG, 2016). Many transportation agencies may consider bus stops and train stations important destinations, however equitable access stresses greater importance on the ease of destinations - the daycares, health clinics, and grocery stores - beyond the stops and stations (Levinson & King, 2020).

The built environment plays an important role in ensuring access to groceries. The ease of getting groceries is dependent on individual characteristics and the urban design of the community, such as households with car ownership having increased access to the grocery store in neighborhoods (Rose & Richards, 2004). Walking is often more dangerous in these neighborhoods, since having access to a vehicle in an car-dependent neighborhood makes driving to the grocery store an intuitive choice (Rose & Richards, 2004). Subsidized housing as a whole across the United States suffers from having poor access to opportunities (Talen & Koschinsky, 2014), whether the housing are vouchers, project-based rental assistance, or public housing. Additionally, Housing & Urban Development (HUD) subsidized units in low-access areas were also less likely to have access to anchor institutions such as universities and hospitals, compared to HUD units in high-access areas (Yin et al., 2020). Public assistance can also factor into what kind of neighborhood a person lives in. In Los Angeles, households that receive a greater amount of public assistance are more likely to live in a carless neighborhood than households receiving less assistance (Cotterill & Franklin, 1995).

## Food Deserts and Access to Groceries

Food deserts and food insecurity are often linked to the lack of access to groceries. “Food deserts” are defined as areas where residents do not have access to affordable and healthy food (Cummins & Macintyre, 1999), and the term was reportedly first used in the early 1990s by a public housing resident in Scotland (Cummins & Macintyre, 2002). Food deserts can be determined with various metrics, such as a food desert being neighborhoods with 10 or fewer stores with no greater than 20 employees (Hendrickson et al., 2006). Defining food deserts by food type and price is another common metric (Cummins & Macintyre, 2002). CVC is located in a food desert according to the United States Department of Agriculture (USDA), which shows the census tract CVC is located in is a low-income and low-access tract where the nearest supermarket or grocery store is more than half a mile away (USDA, n.d.). CVC is a closed campus that currently has one main south entrance where people can enter and leave, which makes it more challenging for residents to get to the grocery store since distances are further than they appear due to the controlled access point - especially for grocery stores that are not immediately south of CVC. However, CVC will have completed a new guard house on the western part of campus by June 2022, with the south entrance being converted to exit-only. (S. Colman, personal communication, May 18, 2022).



**Figure 2:** Map of census tracts that are low-income and low-access, with the nearest grocery store being over 0.5 miles away. Grey census tract is where CVC is located. Map data by the United States Department of Agriculture.

Food access varies in the United States across different communities. The stores in each neighborhood can vary by type, such as supermarkets, discount stores, specialty stores (e.g. Whole Foods), and superstores (e.g. Walmart Supercenter) (Chavis & Jones, 2020). Lower-income neighborhoods across the United States tend to have fewer chain grocery stores, and therefore have a greater rate of non-chain supermarkets and grocery stores (Powell et al., 2007). Chain supermarkets often offer higher quality food at lower prices compared to non-chain supermarkets and smaller grocery stores (Powell et al., 2007). Access to grocery stores followed patterns of white flight in the American city, as supermarkets started to develop more commonly in suburban areas in the 1950s while urban areas were deliberately underinvested (Eisenhauer, 2001). This led to historical trends in lower levels of supermarket access for low-income and BIPOC communities (Eisenhauer, 2001). In zip codes between 1970-1990, supermarkets per zip code declined in high percentage of poverty zip codes (2.9 to 0.67) and low household income zip codes (3.24 to 0.71) at greater rates than low percentage of poverty and high household income zip codes (Thibodeaux, 2016).

There are more examples of access to groceries differing between neighborhoods based on race. The most impoverished Black neighborhoods in Detroit had grocery stores that were approximately on average 1.1 miles further away than the most impoverished white neighborhoods (Zenk et al., 2011). Additionally, studies in Philadelphia have shown that people that live in predominantly Black neighborhoods shop for groceries in predominantly Black block groups (52%), and people that live in predominantly Latinx neighborhoods shop for groceries in predominantly Latinx block groups (56.3%) (Hillier et al., 2011). Even with income controlled,

chain supermarkets in Black urban neighborhoods were only 41% that of white urban neighborhoods (Powell et al., 2007). Transportation can be used as a tool to help people overcome barriers such as distance, however people of color are more likely to not access to an automobile (14%) than white people (6%) (PolicyLink, n.d.).

## Access to Groceries, Food Insecurity, and Veterans

The existing literature has also analyzed how food access affects the veteran community, one of the predominant populations at CVC. Food insecurity, according to the USDA, is when people have limited access to food due to economic conditions (Rabbitt & Smith, 2021). Food security, as defined by the 1996 World Food Summit, represents “a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (Barrett, 2010). Veterans are a vulnerable group when it comes to facing food insecurity. When talking to veterans in Houston, many had limited incomes to pay for food with expenses such as gasoline and car maintenance to prioritize (Kamdar et al., 2020). 27% of veterans from the Iraq and Afghanistan wars stated that they faced food insecurity, and veterans who were food insecure in general were younger, unmarried, or unemployed (Widome et al., 2015). Food insecurity is also more widespread among working-age veterans living in households that are below 185% of the Federal poverty line, as 33.1% of working-age veterans experience food insecurity (Rabbitt & Smith, 2021). Additionally, veterans who reported that they were food insecure also ate less fruit and typically consumed more fast food and soda (Becerra et al., 2017).

## Transportation Solutions to Addressing Food Access

The most ideal solution would be to open grocery stores in neighborhoods that are food deserts and have been historically disinvested in, and ensuring that these grocery stores are accessible. In the short term however, communities across the United States have been working to create transportation solutions to overcome the spatial barriers and improve access to groceries. Grocery shuttles (Cassady & Mohan, 2004), ride-hailing (Stacy et al., 2020), car-sharing (Le Vine et al., 2014; Millard-Ball, 2005), and grocery delivery services (Brandt et al., 2019) have all been proposed as solutions to address grocery access. Grocery shuttles are a mode of transportation that transport a group of people to a grocery store compared to other less efficient solutions, such as ride-hailing and car-sharing. Grocery shuttles can be publicly or privately run by either the supermarket, an institution such as a university, or by a transit agency. These grocery shuttle programs can hypothetically increase grocery access to thousands of more people. When modeled, the projected number of people who could access supermarkets in a West Virginia service area with a proposed grocery shuttle increased from 55,996 to 69,234 people (Wiley, 2016). A grocery shuttle program in California ran every 45 minutes daily for 11 hours, and offered a free ride home for people who spent \$25 in-store (Cassady & Mohan, 2004). The supermarket managers in the study reported that users of the grocery shuttle

program included older residents, families with limited or no access to an automobile, and immigrant families (Cassady & Mohan, 2004). Grocery shuttles are sometimes not an easy service to provide because of expenses. Private grocery shuttles would have to have 5% of the population to use the shuttle to break even and approximately 10% of the population to earn a profit (Cassady & Mohan, 2004). A 15-person grocery shuttle expenses can total \$63,444 in fixed costs, which includes purchasing the vehicle, driver salary, fuel, maintenance, and insurance (Cassady & Mohan, 2004). However, such an investment may be worth it if a significant number of people are able to use the service.

There are other options available to increase access to groceries that are not constrained by grocery store or service operating hours, such as car-sharing and ride-hail. Car-sharing programs have also been used as a method to increase access to groceries. Car-sharing programs aimed towards increasing access to groceries saw users making less frequent trips to the grocery stores and walking less to the grocery store (Le Vine et al., 2014). Appetite for car-sharing programs for grocery shopping is also high, as 49% of carshare users stated that they used car-sharing for grocery shopping (Millard-Ball, 2005). Ride-hail has also been a successful model. Lyft created a pilot program in 2020 across cities in the United States where people living in food deserts could take Lyft up to 8 times a month for a flat fee of \$2.50 to go grocery shopping (Stacy et al., 2020). However, ride-hail services need to be cognizant of making the apps more accessible for people who are unbanked (Shaheen & Cohen, 2018), as well as the needs of older users who may need assistance for accessing the vehicle, as well as space for mobility devices or oxygen tanks (Payyanadan & Lee, 2018). In addition, microtransit - a demand-responsive service that does not operate on a fixed route and is often run by a transit agency or a private operator - can also be used to increase grocery access. The literature on microtransit's role in increasing grocery access is scarce, as the transportation technology is still relatively new. Kansas City was one of the first cities to launch a microtransit service in 2016, with the Kansas City Area Transit Authority (KCATA) partnering with microtransit provider Bridj to provide a microtransit service (Westervelt et. al, 2017). Early programs such as the KCATA and Bridj partnership had issues by not having all of their vehicles being ADA accessible, as well as requiring riders to pay with a credit card through a smartphone (Westervelt et. al, 2017). Microtransit providers have to be cognizant of pricing patterns: lower-income people were more likely to stop using a microtransit service if the prices were too high (Weckström et al., 2018). Los Angeles Metro has run a microtransit service intended to increase grocery access during the COVID-19 pandemic, which I will go into more detail in the "recommendations" section.

Finally, increasing grocery access through grocery delivery apps can help address access to groceries, especially for people who may not want to visit a grocery store. Grocery purchasing services can be an accessible option for people living in food deserts. Grocery delivery services were found to be accessible to over 90% of urbanized census tracts (Brandt et al., 2019). Similar to ride-hail services, grocery delivery services struggle to provide access to people who are underbanked, however grocery delivery services have allowed for SNAP recipients to enter their EBT cards on the app (Figliozzi & Keeling, 2019). Additionally, users of grocery delivery

services with limited access to groceries found that online deliveries helped them access healthy foods and would use such a service again, however such a program would have to be affordable and provide flexible payment options (Dillahunt et al., 2019).



# Research Design

The literature review revealed a gap that this project seeks to fill by increasing transportation access to groceries, especially for underserved communities such as affordable housing residents and the veteran community. Furthermore, there is little previous research comparing different transportation solutions to address access to groceries, such as car-sharing, grocery shuttles, and ride-hailing. My applied research project addressed a specific community issue: addressing the transportation access barriers when going grocery shopping and subsequent interventions. The purpose of my research was not to prescribe a solution that I think works best for the residents at the Century Villages of Cabrillo (CVC), but rather shape recommendations based on the lived experience and access issues that residents face. I analyzed the trips to the grocery store made, access challenges, and resident preferences. From this data, I translated the results into applicable solutions that will improve residents' access to groceries by providing policy recommendations that CVC can implement - which can be found in the "Recommendations" section. The type of data I used is explained in the "Data Collection" sub-section below.

## Data Collection

The primary data for this study was survey data. The goal was to survey 50-100 adult (18+ years) CVC residents living in transitional and permanent housing (excluding short-term housing such as shelter beds), administering the surveys from late January to late February of 2022. The survey instrument is included in Appendix A and covers questions relating to transportation choices, food insecurity, and resident demographics. In total, I collected 69 survey responses during the data collection period. There are 1,406 people living in transitional and permanent housing at CVC, so this sample represents 5% of the community (*Villages at Cabrillo Social Impact Report 2021*, 2021). The surveys were available in paper format and online via SurveyMonkey in English and Spanish. All surveys were completed in English even though there was a Spanish-speaking option. I distributed the survey with a two-prong approach: an online survey that was distributed to community members via CVC staff communications, as well as an in-person survey with case managers and occupational therapy students distributing surveys to residents that they worked with. Additionally, surveys were distributed at the Farm Stand during the last week of survey collection, a weekly farmer's market at CVC where complimentary fresh produce is given out between 12PM-1PM. The Farm Stand was only used as a location for survey collection in the last week of data collection because it was the first week that it reopened due to the COVID-19 Omicron variant. I raffled ten \$50 dollar Target gift cards to incentivize people to take the survey.

In the survey, I asked respondents to select on a map the grocery store that they last visited. If the respondent did not find their grocery store that they visited on the map, they would write the

grocery store with cross-streets that they visited. Respondents that had their groceries delivered to them - either by a friend or relative or by a delivery service - would put NA for the question. The study asked about what mode of transportation that CVC residents last used to travel to the grocery store. The question was framed with the assumption that some respondents would be making multimodal trips to the grocery store (e.g. walking, taking the bus, and taking an e-scooter as one linked trip to the grocery store), so respondents had the option to pick multiple modes of transportation.

The biggest limitation of this data collection is reliability issues because I could not determine whether the data I collected is representative of CVC residents. Another potential issue was potentially having an over-representative sample of people from the Farm Stand and residents who seek assistance from occupational therapists. I was concerned because the Farm Stand has regular visitors who use this service, and not all CVC communities use the Farm Stand, since the Farm Stand only occurs one day a week between 12PM-1PM. However, the Farm Stand was closed for three out of the four data collection weeks because of the COVID-19 Omicron variant. Because the residents that work with occupational therapists tend to be older and male (J. Seo, personal communication, May 19, 2022), this may have skewed results resulting in younger respondents and women being less represented in the survey results.





# Findings

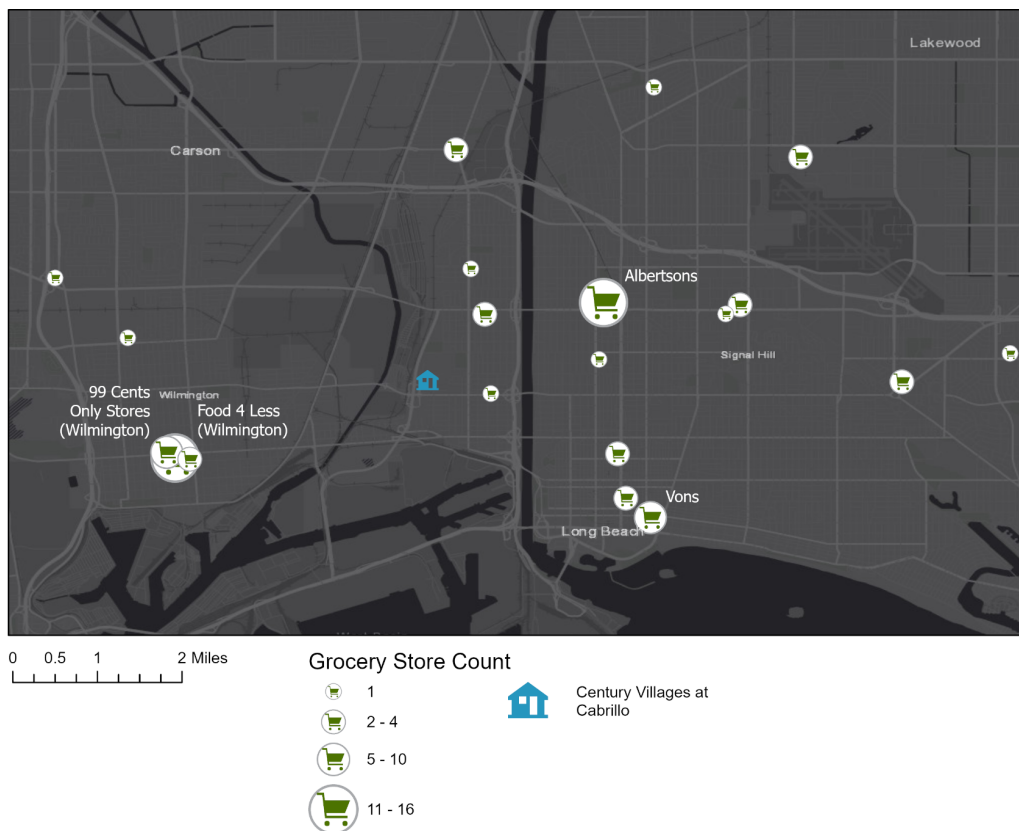
## Findings

I received 65 grocery store responses across five cities: Long Beach, Los Angeles (Wilmington neighborhood), Signal Hill, Carson, and Lakewood (see Figure 3). This was interesting to see because many survey respondents traveled outside of Long Beach to go grocery shopping. The most commonly visited supermarket was the Long Beach Albertsons with 16 responses. The most significant cluster of grocery stores in terms of number of stores visited as well as the total number of respondents can be found in the Wilmington neighborhood of Los Angeles (west of CVC) as respondents visited the Food 4 Less, 99 Cents Only Store, and the El Super. Supermarkets were the most frequented grocery store type among the top respondents, with 21 respondents visiting Albertsons and Vons, followed by discount stores where 17 respondents visited Food 4 Less and the 99 Cents Only Stores. The table below shows the top grocery stores visited by CVC respondents:

**Table 1.** *Top grocery stores last visited by CVC residents.*

Ranking	Grocery Store	City	Grocery Store Type	Number of Respondents
1	Albertsons	Long Beach	Supermarket	16
2	Food 4 Less	Los Angeles (Wilmington)	Discount Store	12
3	Vons	Long Beach	Supermarket	5
3	99 Cents Only Stores	Los Angeles (Wilmington)	Discount Store	5

### Grocery Stores Visited by CVC Residents (2022)

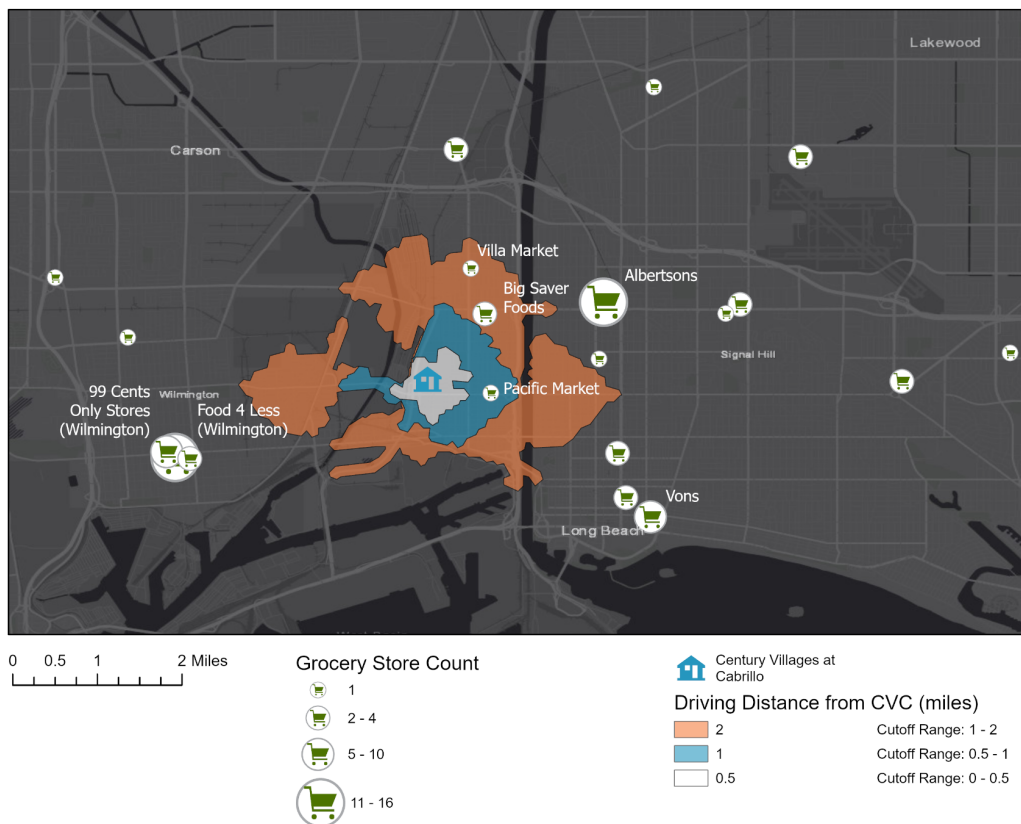


**Figure 3:** Last grocery store visited by CVC residents when surveyed. The larger the icon, the more respondents who selected the supermarket. Map by Aziz Fellague Ariouat.

There was a good deal of variation in the different supermarkets the respondents visited. Less shocking was how few grocery stores were located in close proximity to CVC. There were no grocery stores that were accessible within a 0.5 mile drive of CVC (USDA, n.d.), only one grocery store was within a 1 mile drive from CVC (Pacific Market), and two grocery stores (Big Saver Foods and Villa Market) were within a 2 mile drive from CVC. The most visited grocery stores (Albertsons, Food 4 Less, 99 Cents Only Stores, and Vons) were all outside of the 2 mile driveshed. Thus, the majority of CVC residents surveyed have to travel more than 2 miles to get to the grocery store, irrespective of their mode of transportation (see Figure 4). This is significant because it indicates that there were no major grocery stores within walking distance of CVC. The main grocery stores that people visited (Albertsons, Food 4 Less, Vons, and 99 Cents Only Stores) were all more than 2 miles from CVC. This finding makes sense as distance plays less of a factor as to where people go grocery shopping among low-income people, as people would prefer to shop at supermarkets further away than a local store - regardless of food security and assistance programs (Ver Ploeg & Verkovsky, 2016). The number of people who selected Albertsons and Vons as supermarkets that they last visited supports this study. Among all

households nationally, the average distance to the nearest supermarket was 2.1 miles, yet most people traveled 3.8 miles to get to the supermarket - regardless of what mode of transportation they used (Ver Ploeg & Verkovsky, 2016). Furthermore, it cannot be determined from the data if the survey respondents selected to shop at grocery stores because they were easy to get to or if the grocery store was their preferred store, as there are numerous reasons as to why a person would choose which grocery store to visit.

### Grocery Stores Visited by CVC Residents (2022)



**Figure 4:** Grocery store responses and network distances from CVC. Map by Aziz Fellague Ariouat.

I asked people how they got to the grocery store during their most recent trip. The most common modes are listed in tables 2, 3, and 4 below - with cross-tabulations for age, gender, and ethnicity. The four most common modes that respondents selected for their last trip to the grocery store were the bus (32), driving (22), a friend giving them a ride (13), and having their groceries delivered to them (11). The bus was the most common mode of transportation used among respondents when analyzed by race and ethnicity, age, and gender. However, respondents aged 35-54 slightly preferred driving over taking the bus to the grocery store and Black respondents had an equal preference for taking the bus and driving. Respondents over

the age of 55 and white respondents overwhelmingly selected taking the bus to the grocery store compared to the next preference (driving). Female respondents had similar preferences for taking the bus and driving to the grocery store, while Latinx respondents had similar preferences for taking the bus, driving, and getting a ride.

**Table 2. Mode of transportation to grocery by age.**

	<b>Bus</b>	<b>Drive</b>	<b>Friend gives ride</b>	<b>I have my groceries delivered to me</b>	<b>Total</b>
<b>18-34</b>	1	0	1	2	4
<b>35-54</b>	7	9	2	3	21
<b>55 and over</b>	24	12	10	5	51
<b>Total</b>	32	21	13	10	76

**Table 3. Mode of transportation to grocery by race/ethnicity<sup>1</sup>.**

	<b>Bus</b>	<b>Drive</b>	<b>Friend gives ride</b>	<b>I have my groceries delivered to me</b>	<b>Total</b>
<b>Asian</b>	1	1	1	0	3
<b>Black or African American</b>	11	11	6	5	33
<b>Indigenous American</b>	3	1	1	2	7
<b>Latino/Latinx</b>	5	4	4	2	15
<b>White</b>	14	6	6	5	31
<b>Total</b>	34	23	18	14	89

<sup>1</sup> Note: respondents could choose more than one category for race/ethnicity

**Table 4. Mode of transportation to grocery by gender.**

	<b>Bus</b>	<b>Drive</b>	<b>Friend gives ride</b>	<b>I have my groceries delivered to me</b>	<b>Total</b>
<b>Female</b>	10	8	4	4	26
<b>Male</b>	20	13	8	6	47
<b>Total</b>	30	21	12	10	73

Following asking about how people got to the store, survey respondents responded about their transportation challenges they faced when going grocery shopping. Responses were varied, however most responses fell into one of three categories: personal mobility issues, public transit issues, as well as car-ownership and lack of car-ownership issues. Personal mobility responses included: *“I have mobility issues so I use Instacart”*; *“where [CVC] is located is in the middle of nowhere. There is a bus stop that makes it easier. I have a bad back”*; and *“I’m not as strong as when I was younger, plus there is a lot of walking”*. Respondents also discussed public transit challenges, including: *“It is difficult to use my motorized wheelchair on the bus”*; *“the times that buses travel is a challenge. If it’s too late at night I have to worry about the long walk home or taking a taxi, rideshares are too expensive<sup>2</sup>”*; and *“long walk and with the construction it’s harder to get to the bus stop. The bus no longer comes into CVC, so I have to go out into the street, and I feel unsafe”*. With regards to driving and car-ownership obstacles, people said: *“I have a car but no gas money, and I have to buy in bulk because of limited income and gas expenses”*; *“I have to get a ride or get grocery delivery because no store is easy to get to CVC when I have 5 kids ranging from the ages of 1-10 and I have no car”*; and *“sometimes my car doesn’t work”*. Some responses fell into two categories, such as personal mobility and issues with transit - the inflexibility of the transportation mode made it harder for some respondents to use the mode, especially if the respondent was older or was not able-bodied.

Another question that I asked respondents was whether their household was worried about not having enough food in the past 4 weeks. Results can be found in Tables 5, 6, and 7 below. The majority of overall respondents (36) were never or rarely worried about not having enough food, while 18 respondents were sometimes worried about not having enough food, and 14 respondents were often or always worried about not having enough food<sup>3</sup>.

<sup>2</sup> Note: ride-hail and rideshare are used interchangeably throughout the report.

<sup>3</sup> Note: not all respondents who answered this question listed their age, race/ethnicity, or gender.

**Table 5. Food insecurity by age.**

	<b>Never or rarely</b>	<b>Sometimes</b>	<b>Often or always</b>	<b>Total</b>
<b>18-34</b>	2	1	0	3
<b>35-54</b>	11	4	2	17
<b>55 and over</b>	23	12	10	45
<b>Total</b>	36	17	12	65

**Table 6. Food insecurity by race and ethnicity<sup>4</sup>.**

	<b>Never or rarely</b>	<b>Sometimes</b>	<b>Often or always</b>	<b>Total</b>
<b>Asian</b>	2	0	1	3
<b>Black or African American</b>	17	7	6	30
<b>Indigenous American</b>	1	1	1	3
<b>Latino/Latinx</b>	4	4	2	10
<b>White</b>	17	6	6	30
<b>Total</b>	41	18	16	76

<sup>4</sup> Note: respondents could choose more than one category for race/ethnicity

**Table 7. Food insecurity by gender.**

	<b>Never or rarely</b>	<b>Sometimes</b>	<b>Often or always</b>	<b>Total</b>
<b>Female</b>	13	5	3	21
<b>Male</b>	23	10	9	42
<b>Total</b>	36	15	12	63

Finally, the survey asked respondents about different transportation options that CVC could potentially offer that would improve their access to groceries. Out of the 66 recorded responses, 28 respondents stated that they would be interested in a grocery delivery service, 26 respondents wanted a free grocery shopping shuttle, and 24 respondents were interested in subsidized Uber or Lyft rides to the grocery store<sup>5</sup>. I then looked at demographics with the greatest needs for alternatives - respondents who did not own a car, and respondents who have sometimes or often experienced food insecurity in the past month. When controlling for both vehicle ownership and food insecurity, the difference between the most selected option and the discounted or free Uber and Lyft rides grew (see table 8).

**Table 8. Transportation solution preference by people who do not own a vehicle or are sometimes to always food insecure.**

	<b>Free grocery shuttle</b>	<b>Discounted / free Uber or Lyft rides</b>	<b>Grocery delivery service</b>
<b>Does not own a vehicle</b>	21	15	17
<b>Food insecurity: sometimes - always</b>	15	9	16

Out of the 40 respondents who did not own a vehicle, 21 favored the free grocery shuttle, 17 favored the grocery delivery service, and 15 favored the free or discounted Uber or Lyft rides, showing that most people supported a free grocery shuttle. For the 32 respondents who sometimes, often, or always worried about not having enough food in a given month, 15 respondents want a free grocery shuttle, 16 respondents want a grocery delivery service, and 9 respondents want free or discounted Uber or Lyft rides to and from the grocery store, revealing that people who are facing food insecurity favor a grocery delivery service and a free grocery shuttle at similar rates.

<sup>5</sup> Note: while the digital survey allowed for only one preference to be selected, some survey respondents filling out the physical survey selected more than one option despite the survey asking for only one preference. Therefore, there are more survey responses for this question than respondents.



Based on the survey, people who experience transportation hardships are those who do not have access to cars and are food insecure. Overall, the results from the solutions show that there is a near-even spread in preferences for which transportation solution CVC should implement. However, it must be acknowledged that some CVC residents have a greater need than other residents based on their circumstances. Most respondents favored a grocery delivery service slightly more than the free grocery shuttle when controlling for food insecurity, as well as residents favoring a free grocery shuttle slightly more compared to having a grocery delivery service when controlling for lack of car ownership. I was surprised that no one out of all who responded favored a car-sharing program to increase their access to grocery stores. This could be due to two reasons: firstly, 23 respondents had a car in working order and likely would not be interested in a car-sharing program. While there are more people that have a driver's license in working order (34), the 11 person difference between driver's license and car ownership did not see anyone with a driver's license but not a car show interest for a car-sharing program. Since a large proportion of respondents did not have a driver's license, it may not be worthwhile to pursue programs like car-sharing because people would face upstream barriers to their use.

## Demographics

CVC survey respondents were on average older adults: 46 respondents (70%) were over the age of 55, while 17 were between the ages of 35 and 54 (26%) (66 total respondents). In terms of race/ethnicity (63 total respondents), 30 survey respondents listed that they were Black or African American (48%), while 23 identified as white (37%), and 10 identified as Latino or Latinx (16%). Additionally, 42 respondents listed their gender identity as male (67%) compared to 21 listing their gender identity as female (33%) - with no respondents identifying as being nonbinary. Most respondents also lived alone. Looking at 2020 CVC demographic data of permanent supportive housing residents (data for transitional housing residents is not available), data for Black, Asian, and Indigenous residents is similar to the survey data (45%, 2%, and 5%) - however Latino/Latinx and white respondents was higher in CVC's 2020 data compared to the survey responses (32% and 45% respectively) (S. Colman, personal communication, November 29, 2021). Women were slightly less represented in my survey compared to CVC's 2020 data (38%) (S. Colman, personal communication, November 29, 2021).

**Table 9.** CVC Demographic Data collected via survey (2022).

<b>Age</b>	18-34	3
	35-54	17
	55 and older	46
<b>Gender</b>	Female	21
	Male	42
<b>Ethnicity</b>	Asian	3
	Black or African American	30
	Latino/Latinx	10
	Indigenous American	4
	White	23
	Other	2
<b>How many people are in your household (including yourself?)</b>	1	46
	2-4	15
	5 or more	5
<b>Of those, how many are under the age of 18?</b>	0	48
	1-2	9
	3 or more	4

## Limitations

Overall, the survey results demonstrated that community members find it difficult to access groceries from CVC. The reasons for this range from personal mobility issues to more macro-level transportation issues such as infrequent and inaccessible bus service, the high costs of car ownership, and the isolation of the campus described as “located in the middle of nowhere” by a survey respondent. Indeed, CVC faces industrial land uses directly to the south, as well as the Terminal Island, Union Pacific freight railroad, and the refinery directly to the west (*Long Beach 2040*, 2020). The isolation that CVC residents face in terms of accessing groceries is probably not just limited to grocery access. Due to hostile land uses and existing

transportation conditions, CVC residents likely face barriers to medical facilities, education, work, childcare, and recreation. While this report focuses on increasing grocery access, these are other barriers to accessing opportunities that still need to be addressed beyond the scope of this research.



# Recommendations

Based on the results of the survey, I have four recommendations for the Century Villages at Cabrillo (CVC) to pursue to help address transportation access issues to groceries. The recommendations address two distinct needs: interventions that will directly address grocery access needs, and interventions to ensure that the greatest number of CVC residents are able to use these services. These recommendations will both provide greater access to groceries while acknowledging that residents have diverse preferences about their grocery needs. These recommendations are intended to address transportation cost burdens, save on travel time, and provide greater accessibility - in both personal mobility, as well as traveling around the region. Interventions that can address grocery needs include (1) CVC partnering with a governmental organization or social service provider to create a grocery delivery service, (2) providing a free grocery shuttle that CVC residents can help co-create through a participatory planning process, (3) CVC improves access as a whole within the campus, and (4) CVC does an extensive educational campaign to alert residents about these new services. I expand on each below.

## Recommendation 1: Pursue a Grocery Delivery Service

CVC residents face transportation challenges that could be overcome by having things brought to them versus needing to go to destinations off-campus. An affordable and accessible grocery delivery service that would bring groceries to residents instead of residents relying on traveling to the grocery store could greatly benefit residents. Private grocery delivery apps such as Instacart offer SNAP on their services, however struggle to adequately serve people who are underbanked (Figliozzi & Keeling, 2019), so CVC must take this into account when creating a program that serves its residents.

One example of a grocery delivery service is a pandemic-spurred model from Los Angeles Metro. Los Angeles Metro recently partnered with Via (a ride-hail company), First 5 LA (a countywide nonprofit organization), Para los Niños (a Los Angeles-based nonprofit, and Antelope Valley Partners for Health (a Lancaster-based nonprofit) for the Food & Essential Goods Delivery Pilot. The purpose of this partnership was to ensure that community members had groceries provided to them at the onset of the COVID-19 pandemic. Via drivers would pick up food and supplies at distribution hubs, and deliver them to community members (*Metro Conversations: Partnering to Address Food Insecurity*, 2021). This program came about because LA Metro and their nonprofit partners identified a transportation gap between community members' homes and grocery stores at the onset of the pandemic. In 2020 and 2021, the program made 750 deliveries per week, and drivers made 10-40 deliveries per route (S. Miller, personal communication, 2022). The program was also cost-effective: delivering food directly to participants cost only \$12.50 (S. Miller, personal communication, April 28, 2022). This cost less than having a mobility-on-demand program (such as ride-hail), as well as costing less

to run than Metro's lowest-performing bus lines, and provides greater time savings for community members as the pilot program is a door-to-door service that does not require the recipient to travel (*Metro Conversations: Partnering to Address Food Insecurity*, 2021). Unfortunately, the Food & Essential Goods Delivery Pilot ended on April 29th, 2022 in Region 4 (the First 5 LA service area for Long Beach and Wilmington) (S. Miller, personal communication, April 28, 2022). The program ended because the current contract did not have enough funds to continue the contract (S. Miller, personal communication, May 19, 2022). However, CVC should contact LA Metro and First 5 LA to see if they can restart the program for CVC residents on a smaller scale. LA Metro's grocery program could come back if LA Metro is program administrator, however CVC would have to work with LA Metro and First 5 LA to find more funders (S. Miller, personal communication, May 19, 2022). If LA Metro and First 5 LA are unable to restart the program, Long Beach Transit could be an alternative partner to deliver food to CVC residents. The grocery delivery could also be targeted towards the most vulnerable residents at CVC, such as residents over the age of 55, veterans, and residents who do not have access to a car. The grocery delivery program as facilitated by a transit agency and service provider could be a top-down approach, and it is possible that the residents could not receive any say in how the program is administered. Therefore, CVC should work with partners to ensure that CVC residents have input on what they would like to see in the program. This includes delivery dates, types of food and meals, and delivery drop-off preferences.

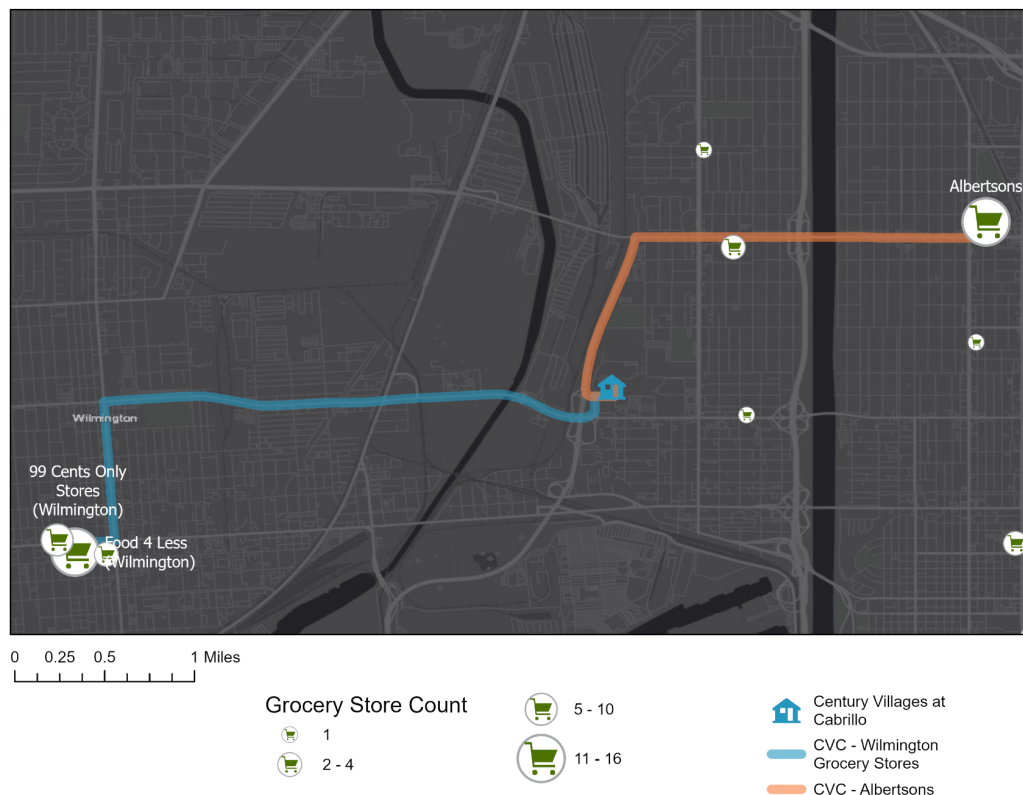
## Recommendation 2: Work to Create a Free Grocery Shuttle Service

My second recommendation is that CVC should explore how to implement a free grocery shuttle service to a supermarket. The most common supermarkets that people visited who selected the free grocery shuttle service was the Albertsons northeast of CVC close to Willow St. Metro A Line (Blue) station (16 selections), while another common cluster was respondents who visited the Food 4 Less (12 selections) and the 99 Cents Only Stores (5 selections) in the Wilmington neighborhood of Los Angeles, southwest of CVC.

Grocery shuttles have been successfully implemented across the United States as a mode that connects communities to grocery stores. The University of California, San Diego (UCSD) Grocery Shuttle is a comparable model for CVC. The UCSD Grocery Shuttle is a free service that runs between 10AM-6PM from university housing to nearby grocery stores ("Grocery Shuttle," n.d.). The UCSD Grocery Shuttle received 87% positive feedback from students when the service was introduced in 2019, and the service has averaged 600-700 daily passengers pre-pandemic (Lin, 2019). Another successful grocery shuttle model is the Heart of Iowa Regional Transit Agency (HIRTA), a public transit agency based in Central Iowa. HIRTA has a door-to-door grocery shuttle service that was implemented in August 2021 that operates for 1-1.5 hours a day on weekdays, serving three grocery stores in the area (D. Schnathorst, personal communication, May 3, 2022). Map 6 below shows the most optimal route that a

grocery shuttle would take from CVC to both the Albertsons as well as the Food 4 Less and 99 Cents Only Stores in Wilmington using ArcGIS Pro’s Network Analysis tool. To be sure, the map is solely a recommendation on what the optimal routes to the most visited grocery stores are, and is not a recommendation that favors one route over the other. The desired grocery shuttle route and schedule for the grocery shuttle should be determined through a participatory planning process with CVC residents. CVC should therefore contact residents for their input before a grocery shuttle program is implemented.

### Optimal Grocery Shuttle Routes from CVC



**Figure 5:** *Optimal route for a grocery shuttle to take CVC residents from CVC to the most visited grocery stores. Map by Aziz Fellague Ariouat.*

How CVC could pay for a shuttle is a potential challenge to its implementation. Unfortunately, the literature is sparse on how to fund a grocery shuttle program, especially for grocery shuttles run by the public sector or social service providers. Cassady and Mohan’s analysis states that a 15-person grocery shuttle operated by a supermarket costs \$63,444 over 3 years for vehicle procurement, labor, fuel, maintenance, and insurance (Cassady & Mohan, 2004). However, this cost is in 2004 dollars. Using the average inflation rate between 2004 and 2022 (2.39%), it

would cost approximately \$97,100 in 2022 dollars to operate a privately-owned grocery shuttle<sup>6</sup>. However, this is the approximate cost of a private grocery shuttle operated by a supermarket. CVC would have to conduct further research on the financial feasibility of a grocery shuttle program.

### **Recommendation 3: Work on Increasing Access within CVC Campus**

CVC should work to increase access within the campus. This is vital to implement, especially since many residents expressed that physical mobility was a challenge in terms of accessing groceries. CVC should implement specific drop-off zones outside resident homes - where possible. CVC should identify parking spaces by residential buildings that can be used as drop-off zones during the designated hours of grocery delivery. This would ensure that grocery delivery occurs seamlessly without residents having to walk a long distance to pick up their groceries. Alternatively, in the case that parking is limited, there could be an option where CVC staff members would be available at a location on campus to pick up groceries and deliver the groceries straight to the resident's door.

CVC is planning to reinstate Long Beach Transit service inside of CVC once the guard house renovation has been completed in June 2022 (S. Colman, personal communication, May 18, 2022). This is an important step forward in terms of increasing accessibility for CVC residents, since some residents expressed that getting to the bus stop in its current location is a challenge. CVC should encourage residents to use the grocery shopping shuttle and the grocery delivery service over using the bus for grocery trips, given the issues with transit that residents expressed. However, public transit works great for other types of trips such as getting to work, so reinstating the bus stop inside of CVC's campus signifies a great step forward for accessibility.

### **Recommendation 4: Pair Future Services with Quality Outreach**

Finally, if CVC is able to initiate a grocery delivery or grocery shuttle program, they would need to ensure people used the services in order for them to be effective. This recommendation is vital, as these programs need to be used by enough people for their long-term sustainability. Outreach including emails, text blasts, flyers in residential buildings and around campus, promotion at town hall events, and at existing facilities and programs such as the Farm Stand, convenience store, dining hall, and pantry should be prioritized. CVC should inform case managers about the programs and their benefits, and encourage case managers to recommend

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<sup>6</sup> Grocery shuttle cost in 2022 dollars was calculated using <https://www.in2013dollars.com/us/inflation/2004?amount=63444>



that their residents use the grocery delivery and grocery shuttle services. Additionally, CVC should hold workshops promoting these programs and educating residents about how they can access these programs. All materials should be in English and Spanish to ensure that everyone is able to access the programs. There may be a lack of connection to the Spanish-speaking community, given that none of the returned surveys were in Spanish. CVC should work on reaching out to monolithic Spanish speakers in the community to ensure language access, as well as identifying other significant languages spoken within the community and working towards providing materials in those languages.

## Concluding Thoughts

Access to opportunities are unequally distributed across different scales, including at the neighborhood, city, and regional levels. This is no different for CVC as histories of redlining and environmental racism have made it harder for community members to access services, including grocery shopping. However, this research has attempted to rectify some of these systemic inequities by putting residents at the center of exploring how to increase access to opportunities. Through conducting a transportation needs assessment of the current conditions for CVC residents, and incorporating residents' needs into interventions that CVC can implement, there's great opportunity to improve people's lives. Assessing the community's needs resulted in 69 community members (CVC residents over the age of 18 living in transitional and permanent housing) responding to the survey sharing their grocery trip experience and challenges that they faced accessing groceries, as well as the solutions that the residents wanted to see. The survey responses and existing conditions resulted in the creation of my recommendations, which includes: (1) providing a grocery delivery service for residents with the greatest need, (2) providing a free grocery shuttle program which residents can help co-create with a participatory planning process, (3) improving accessibility within CVC's campus, and (4) extensively promoting both grocery access programs across different mediums will ensure that CVC will have made great strides to addressing access to groceries.

Further research needs to be conducted in order to realize the vision of CVC's residents. CVC would have to conduct a feasibility study on how to fund both a grocery delivery and a free grocery shuttle program, as well as identifying which partners could make these programs possible. Additionally, CVC would need to collaborate with residents to ensure that these programs are shaped to fit the residents' preference through a participatory planning process. This includes allowing residents to give input on which of the most-visited grocery stores they would like to see the grocery shuttle go to as well as days and times of the shuttle's operation, as well as helping decide on the delivery days and grocery preferences for the grocery delivery program.



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# Appendix

## Appendix A: Survey Template

### Part 1: Survey Questions

1. Which grocery store do you visit most? (name and street located) \*Put N/A if you get your groceries delivered if you get groceries at pantry, dining hall
2. What mode of transportation did you use on your most recent trip to the grocery store? (tick all that apply)
  - a. Biking
  - b. Bus
  - c. E-Scooter
  - d. Driving
  - e. Friend gives ride
  - f. I have my groceries delivered to me
  - g. In-home support service (IHSS)
  - h. Rideshare (e.g. Uber, Lyft)
  - i. Train
  - j. Walking
  - k. Other
3. What challenges do you face when going grocery shopping? (open ended)
4. In the past 4 weeks, did your household worry that you did not have enough food?
5. What CVC on-site resources do you use (tick all that apply)
  - a. Farm Stand
  - b. Convenience store
  - c. Dining Hall
  - d. Community Gardens
  - e. Pantry
  - f. Cityheart Delivery
  - g. Other
6. If CVC was to offer a transportation-oriented service to help you get groceries, which of the following options is most appealing to you?
  - a. Free grocery shopping shuttle bus
  - b. Car-sharing
  - c. Discounted/free Uber or Lyft rides to the grocery store
  - d. Grocery delivery service
  - e. Other
7. Which of the following do you have?

	<b>Have, in working order</b>	<b>Have, but expired</b>	<b>Do not have</b>
<b>Car</b>			
<b>Car Insurance</b>			
<b>Drivers License</b>			
<b>CalFresh</b>			
<b>Medi-Cal</b>			

## Part 2: Demographics

8. Name (for identification purposes only)
9. Email / Phone Number (for identification purposes only)
10. Name of program/Community that you live
11. Age
  - a. 18-24
  - b. 25-34
  - c. 35-44
  - d. 45-54
  - e. 55-64
  - f. 65 and over
12. Ethnicity (tick all that apply)
  - a. Asian
  - b. Black or African American
  - c. Latino or Latinx
  - d. Indigenous American
  - e. Pacific Islander
  - f. Southwest Asian or North African (SWANA)
  - g. White
  - h. Other
13. Gender
  - a. Male
  - b. Female
  - c. Nonbinary
  - d. Other
14. How many people are in your household (including yourself)?
15. Of those, how many people are under 18?



## Appendix B: Survey Data

### Quantitative Survey Responses

<b>Grocery Store:</b>	<b>Count:</b>
99 Cents Only Stores (Long Beach)	2
99 Cents Only Stores (Wilmington)	5
Albertsons	16
ALDI	1
Big Saver Foods	4
El Super (Long Beach)	2
El Super (Wilmington)	3
Food 4 Less (Signal Hill)	1
Food 4 Less (Wilmington)	12
Northgate Market	1
Número Uno	1
Pacific Market	1
Ralphs	2
Superior	3
Target	1
Trader Joe's	1
Villa Market	1
Vons	5
Walmart	3
<b>Total Grocery Stores:</b>	<b>65</b>

Survey Questions	# of Responses	# of Respondents
<b>What mode of transportation did you use on your most recent trip to the grocery store? (click all that apply)</b>		
Biking	3	
Bus	32	
E-Scooter	1	
Driving	22	
Friend gives ride	13	
I have my groceries delivered to me	11	
In-home support service (IHSS)	3	
Rideshare (e.g. Uber, Lyft)	6	
Train	3	
Walking	3	
Other	3	
Total	100	69
<b>In the past 4 weeks, did your household worry that you did not have enough food?</b>		
Rarely	36	
Sometimes	18	
Often	14	
Total	68	
<b>What CVC on-site resources do you use?</b>		
Farm Stand	18	
Convenience Store	38	
Dining Hall	12	
Community Gardens	5	
Pantry	16	
CityheArt Delivery	12	
Other	15	
Total	116	
<b>If CVC was to offer a transportation-oriented service to help you get groceries, which of the following options is most appealing to you?</b>		
Free grocery shopping shuttle bus	26	
Car-sharing	0	
Discounted/free Uber or Lyft Rides	24	
Grocery Delivery Service	28	
Other	2	
Total	80	

<b>Which of the following do you have?</b>		
Car, Have in Working Order	23	
Car, Have but Expired	0	
Car, Do Not Have	40	
Car Insurance, Have in Working Order	25	
Car Insurance, Have but Expired	2	
Car Insurance, Do Not Have	37	
Drivers License, Have in Working Order	34	
Drivers License, Have but Expired	5	
Drivers License, Do Not Have	26	
Calfresh, Have in Working Order	38	
Calfresh, Have but Expired	1	
Calfresh, Do Not Have	25	
Medi-Cal, Have in Working Order	42	
Medi-Cal, Have but Expired	2	
Medi-Cal, Do Not Have	20	
<b>Total</b>	<b>320</b>	<b>65</b>
<b>Age</b>		
18-34	3	
35-54	17	
55 and Over	46	
<b>Total</b>	<b>66</b>	<b>66</b>
<b>Ethnicity (tick all that apply)</b>		
Asian	3	
Black or African American	30	
Latino or Latinx	10	
Indigenous American	4	
Pacific Islander	1	
Southwest Asian or North African (SWANA)	1	
White	23	
Other	2	
<b>Total</b>	<b>74</b>	<b>63</b>
<b>Gender</b>		
Male	42	
Female	21	
Nonbinary	0	
Other	0	
<b>Total</b>	<b>63</b>	<b>63</b>
<b>How many people are in your household (including yourself)?</b>		
1	46	

2-5	15	
5 of More	5	
Total	66	66
<b>Of those, how many people are under 18?</b>		
0	48	
1-2	9	
3 or more	4	
Total	61	64 <sup>7</sup>

### Qualitative Survey Responses

What, if any, transportation challenges do you face when going grocery shopping?

Groceries get heavy
Can't get my smog check done because my car is broken
Mobility issues so I use Instacart
Partially, where we're located is in the middle of nowhere. There is a bus stop that makes it easier. I have a bad back.
I have a hernia, so it takes me a little time.
I have a need for a walker sometimes and so I have to get to a cart as soon as possible in order to shop and I use it like a walker.
It's just that it takes two buses and not being as strong as when I was younger, plus a lot of walking.
Cost of transportation.
Electric chair.
Getting access back home.
Carrying the groceries.
Acquiring rides.

<sup>7</sup> Note: three respondents listed an invalid response.

Hard to make it to the bus. Long walk and with the construction it's harder to get to the bus stop. It no longer comes into CVC, have to go out to the street and I feel unsafe.
Bus schedule, especially on the weekend.
Wheelchair.
I'm on the heavy side so I get a little tired but other than that, no.
Sometimes my car doesn't work.
Riding the bus with a lot of bags is very difficult.
Have car but no gas money, and I have to buy in bulk because of limited income gas expenses.
Bus.
Times that the buses travel. If it's too late at night I have to worry about the long walk home or taking a taxi. Rideshares may be too expensive.
I have no car. So I either catch public transportation or catch an Uber.
I use a walker and can be displaced by wheelchair or even by some high school students on some buses.
Have to get a ride or get delivered because no store is easy to get to from CVC when I have 5 kids ranging from 1-10 and no car.
It is difficult to use my motorized scooter on the bus.
If my GPS acts up, then I may get lost.
Not having a vehicle, having to make multiple trips.
Having to depend on someone to take me.
Gas.
Taking groceries on the bus.
She has her own vehicle.
Heavy.
Transportation forced me to use delivery services most of the time.

Gas and I need a tune up and oil change.
When I take the bus, I have to take the bags and carry them with me.
Catching the bus is hard.
Catching the bus with a cane. Hard to bring groceries back.
No vehicle.
Carrying bags on the bus
Sometimes I get bumped by wheelchairs or a bus full of able-bodied students. I use a walker and depend on the bus for a majority of my trips.
Walking.
Carrying my groceries on the handlebars through the traffic of car, or riding with all the weight on the sidewalk with people.