

Demand and Need for Shared Mobility Options in Kings County, California

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A Research Report from the Pacific Southwest Region University Transportation Center

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About the Pacific Southwest Region University Transportation Center

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The Pacific Southwest Region UTC conducts an integrated, multidisciplinary program of research, education, and technology transfer aimed at *improving the mobility of people and goods throughout the region*. Our program is organized around four themes: 1) technology to address transportation problems and improve mobility; 2) improving mobility for vulnerable populations; 3) Improving resilience and protecting the environment; and 4) managing mobility in high growth areas.

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Abstract

Residents of rural Kings County, California, face severe transportation barriers due to long travel distances, low household incomes, and limited public transit options. This study evaluates the need and demand for shared mobility, specifically local nonprofit electric carsharing services, in the municipalities of Hanford and Avenal. We conducted a U.S. Census demographic analysis, qualitative community engagement (focus groups, interviews, and tabling events), and a destination-access and driving-cost comparison. Census data reveal elevated rates of poverty, unemployment, and vehicle insufficiency in Hanford and Avenal. Community engagement highlights that existing fixed-route transit fails to support multi-destination family trips, shift work, or time-sensitive healthcare and educational access. Comparative cost analysis demonstrates that round-trip electric carsharing provides substantial cost savings over personal gasoline vehicles for longer intercity trips, multi-stop errands, and passenger drop-offs. Based on these findings, we estimate sufficient regional demand to support one to two shared vehicles in Avenal and up to five in Hanford, providing a flexible, low-cost solution to enhance mobility for underserved households.

Demand and Need for Shared Mobility Options in Kings County, California

Executive Summary

Kings County, California is a rural, agricultural and industrial hub located within California's San Joaquin Valley. Residents of the County face significant transportation barriers due to long travel distances to work and other destinations, as well as limited availability of transit services. These barriers are exacerbated for lower-income residents who may have limited access to reliable personal vehicles. We conducted three types of analyses to understand the viability of shared mobility in this region. First, we reviewed the U.S. Census data for Kings County to understand demographic trends and household travel patterns. Next, we held community engagement activities to identify the most crucial transportation issues faced by county residents. The results of the two analyses suggested that these communities most needed shared mobility modes that could bridge long-distance and transit travel gaps within and outside the County. Ridehailing was not feasible because of its high cost and limited availability in the County. Two non-profit electric carsharing services provide similar services (including fares) in surrounding communities, Míocar and EV-Werx. As a result, we analyzed Google Maps data to understand the costs and feasibility of traveling from the city centers in Hanford and Avenal to a sample of destinations by walking, taking transit, driving a personal vehicle, or driving one of the local electric carsharing services.

Analysis of Census Data

We gathered publicly available census data from the U.S. Census Bureau American Community Survey (5-year, 2024 Estimates) to understand the population of the specific cities of Hanford and Avenal, the two areas of focus for this study. This included reviewing population demographics, personal vehicle availability, and commuting patterns.

Based on the census data analysis, both Hanford and Avenal display elevated levels of unemployment, vehicle insufficiency, poverty levels, and low access to transit as a viable mode. Avenal is a more remote location with likely longer commutes and more overall travel times compared to Hanford. As a result, there appears to be a particularly high need for mobility among its low-income population, though it may have fewer households than the more populated city of Hanford.

Community Engagement

Engagement activities included focus groups, interviews, and brief discussions with community members at a tabling event. Residents emphasized that local services and resources are

extremely limited. Many communities lack access to larger grocery stores, healthcare providers, educational institutions, employment opportunities, and recreational activities. Access to these destinations would reduce social exclusion, improve health, and increase economic opportunities for residents in underserved communities. With fixed-route transit restricted to just four daily round trips, the available public transit options do not accommodate multi-destination family travel or time-sensitive appointments. These results suggest a need for alternative, low-cost mobility options in the area, specifically services that allow residents to travel to and from Hanford and other larger cities.

Destination Access Analysis

We used Google Maps to examine the geographies of Hanford and Avenal, identify a sample of common destinations, and analyze the travel distances and times for transit, walking, and driving for each destination using a central location in each city as the origin point.

We then compared the cost of driving a personal vehicle to the cost of using electric carsharing, which is \$4 per hour or \$35 per day. We used this analysis to evaluate the financial feasibility of a low-income driver replacing their personal vehicle driving costs with shared electric vehicle travel, and to assess whether drivers would generally experience higher or lower travel costs for both full-day commuting and shorter round trips.

The travel destination analysis indicates that Avenal residents who need to travel long distances for work would incur lower costs using electric carsharing than driving their own vehicles, and this type of shared mobility service would allow them to travel to popular destinations such as Hanford without the barrier of a limited transit schedule. Hanford residents could use electric carsharing as a low-cost option in and around town, with larger cost savings for intercity errands and appointments. For both cities, electric carsharing would also provide a low-cost option for drivers who are able to drop off and pick up family members at work.

Conclusion

The activities conducted in this study identified high levels of unmet transportation needs across Kings County and in the focus areas of Hanford and Avenal. Census data for each area indicated populations with elevated levels of financial struggle and vehicle insufficiency, suggesting that several thousand residents of Hanford and several hundred residents of Avenal may lack the transportation access needed to reliably travel to work or to time-sensitive appointments. There appears to be strong demand for alternatives to fixed-route transit in the region for intercity travel and more flexible travel times.

Introduction

Kings County, California is a rural, agricultural and industrial hub located within California's San Joaquin Valley. Residents of the County face significant transportation barriers due to long travel distances to work and other destinations, as well as limited availability of transit services. These barriers are exacerbated for lower-income residents who may have limited access to reliable personal vehicles; roughly one third of Kings County households earn less than \$50,000 annually (1). While the geographic and economic landscape of the County is diverse and contains both major trading centers such as its county seat, Hanford, as well as smaller incorporated and rural cities such as Avenal and Lemoore, public and private transportation options are limited.

This study evaluates the need and demand for shared mobility services such as electric carsharing in Kings County, with a focus on the municipal environments of Hanford and Avenal, which have distinct characteristics that affect the viability and scale of potential solutions.

Methods

In this study, we evaluated the need and demand to support shared mobility services in Kings County. We conducted three types of analyses to understand the context, challenges, and potential opportunities for this region. First, we reviewed the U.S. Census data for Kings County to understand demographic trends and household travel patterns. Next, we held community engagement activities to identify the most crucial transportation issues faced by county residents. Finally, we analyzed data from Google Maps to understand the costs and feasibility of traveling from the city centers in Hanford and Avenal to a sample of destinations by walking, taking transit, driving a personal vehicle, or driving an electric carsharing vehicle.

Analysis of Census Data

We gathered publicly available census data from the U.S. Census Bureau American Community Survey (5-year, 2024 Estimates) to understand the population of the specific cities of Hanford and Avenal, the two areas of focus for this study. This included reviewing population demographics, personal vehicle availability, and commuting patterns. As part of this analysis, we examined correlations among key variables such as employment, poverty, and household vehicle sufficiency. We note that one limitation of the census data analysis for Avenal is that approximately one-third of the resident population is comprised of inmates of the Avenal State Prison. Although these individuals are counted as city residents by the United States Census and represented in the datasets, we acknowledge that the census data for this group may skew per capita demographic, employment, and income statistics when evaluating travel need and demand.

Community Engagement

Community Engagement activities were conducted by a trusted community member who has been a long-time resident of Kings County (the County) and has extensive experience working with community-based organizations that serve marginalized communities in the western portion of the County. The engagement activities were conducted in the winter and spring of 2026 with individuals who serve or live in these areas. Engagement activities included focus groups, interviews, and brief discussions with community members at a tabling event. The engagement leader conducted focus groups with the following community members:

- A parent network in Avenal and Kettleman City, recruited by the engagement leader;
- A group of 35 students from a Coalinga Community College class, recruited by their professor; and
- A group of 11 members of a church women's group, recruited by their pastor.

In-person interviews were conducted with a staff member at a social service organization in Hanford. In addition, we held brief in-person conversations with approximately 100 people at a tabling event during a community-based conference in Avenal, which included residents from Avenal, Kettleman City, Coalinga, Huron, Cantua Creek, Biola, Mendota, Shafter, Buttonwillow, and Tranquility.

Destination Access

We used Google Maps to examine the geographies of Hanford and Avenal and identify a sample of common destinations related to work, school, errands, medical trips, and recreation travel. We then analyzed the travel distances and times for transit, walking, and driving for each of these destinations, using a central location in each city as the origin point. For Hanford, we used the U.S. Postal Service building at 517 N Irwin Street as the origin point, and for Avenal, we used a shopping center near Skyline Blvd and S Central Avenue. While these specific origin points may not be the actual location of a potential shared mobility service, the goal was to understand travel distances and the feasibility of using a variety of modes to travel between popular destinations.

For transit, we used the most efficient suggested transit route from Google Maps to estimate the total travel distance between the origin and destination, including any necessary walking. We also identified the number of transfers required for each transit trip and considered the route schedules to understand whether transit would be practical for early, late, or midday travel.

For walking, we used basic Google Maps walking directions to record the distance and estimated walking time. We recorded walking distances and times for all destinations, including destinations with long travel times that may not be feasible for most individuals.

For driving, we first recorded the travel times and distances using Google Maps driving directions for each sampled destination. We then estimated the distance and travel times from Hanford and Avenal to nearby cities where residents may work. For Hanford, this included traveling to Lemoore, Visalia, Corcoran, Laton, and Fresno. For Avenal, this included traveling to Kettleman City, Coalinga, Lemoore, Corcoran, and Fresno.

We then conducted an analysis to compare the cost of driving a personal vehicle to the cost of electric carsharing. To estimate this, we assumed that vehicles are approximately 11 years old and travel 24.4 miles per gallon (mpg). We consider this to be a conservative estimate, as the mpg estimate is based on light-duty vehicles with a low wheelbase, and the average age range for vehicles in low-income households is estimated to be 10.9 to 11.5+ years old by the U.S. Department of Energy & Bureau of Transportation Statistics and the Federal Highway Administration, respectively (3, 4). To estimate the price of driving a carsharing vehicle, we use the current rental price of \$4 per hour or a daily rate of \$35. The services automatically switch from an hourly cost to a daily cost when an hourly rental exceeds \$35, and then to a daily cost of \$35 per day. We calculated the cost of an electric carsharing reservation to the sampled destinations based on drive and stay times, as follows:

- For analyzing travel to nearby cities for work, we calculated the cost of driving an electric carsharing service 1) for one round trip and leaving it at the destination during work hours, which converts to a \$35 daily reservation, and 2) to the destination, dropping off a passenger, returning to the origin, and then completing a second round trip to pick up the passenger (2 round trips without waiting time).
- For specific common destinations, we calculated the cost of making one round trip without staying at the destination, and estimated the break-even point, or how long an electric carsharing member could stay at the destination before the cost reached the cost of driving a personal vehicle.

We used this analysis to evaluate the financial feasibility of a low-income driver replacing their personal vehicle driving costs with shared electric vehicle travel, and to assess whether drivers would generally experience higher or lower travel costs for both full-day commuting and shorter round trips.

Results

This section presents the results of the census data analysis, community engagement activities, and destination access analysis we conducted in exploring the feasibility of and need for a shared mobility option in the Kings County cities of Hanford and Avenal.

Analysis of Census Data

In this section, we analyze U.S. Census data (5-Year, 2024 Estimates) to understand the size of the Hanford and Avenal populations that may need or want to use a shared mobility service, as measured by households without sufficient vehicles to meet travel needs. In addition, we examine correlations among employment, poverty, and access to personal vehicles.

Unemployment data show that both Hanford and Avenal have higher unemployment rates than the California average of approximately 5%, with Hanford at 9% and Avenal at 13%. This measure focuses on individuals who are actively looking for work and does not include those not in the workforce, such as retirees, full-time high school/college students, and stay-at-home parents. In total for the entire populations of these cities, 56% of Hanford residents and 39% of Avenal residents aged 16 or older are currently employed. In contrast, 61% of the population of California age 16 and over are employed.

Table 1. Employment Status of Population in the Labor Force

	Hanford		Avenal	
	Total	Percent	Total	Percent
Total Population in Labor Force	26027		4712	
Employed	23563	91%	4115	87%
Unemployed	2464	9%	597	13%

Higher unemployment rates are correlated to higher poverty levels, and nearly a third of Hanford residents and more than half of Avenal residents are living at or under 200% of the Federal Poverty Level. Hanford's poverty levels are elevated compared to statewide averages of approximately 25%, and Avenal's poverty rate is more than double the California average. Additionally, 40% of children in Avenal live in a household that receives public assistance such as Supplemental Security Income (SSI), cash public assistance income, or food stamps (9).

Table 2. Poverty Status of Families

	Hanford		Avenal	
	Total	Percent	Total	Percent
Total Families	14064		2567	
Living On or Less than 200% Federal Poverty Level	4209	30%	1383	54%
With Children Living Below the Federal Poverty Level	1296	9%	321	13%

To further consider the relationship between employment and poverty levels, we examined the percent of families below the poverty level by whether they have a working adult in their household. As shown in Figure 1, approximately one-quarter of Avenal households and one-third of Hanford households in poverty have no working adults in their home. More than three-quarters of these households in both cities (85% of Hanford and 76% of Avenal) have less than a dual-income household, suggesting that households with fewer than two workers are less likely to rise above this poverty level.

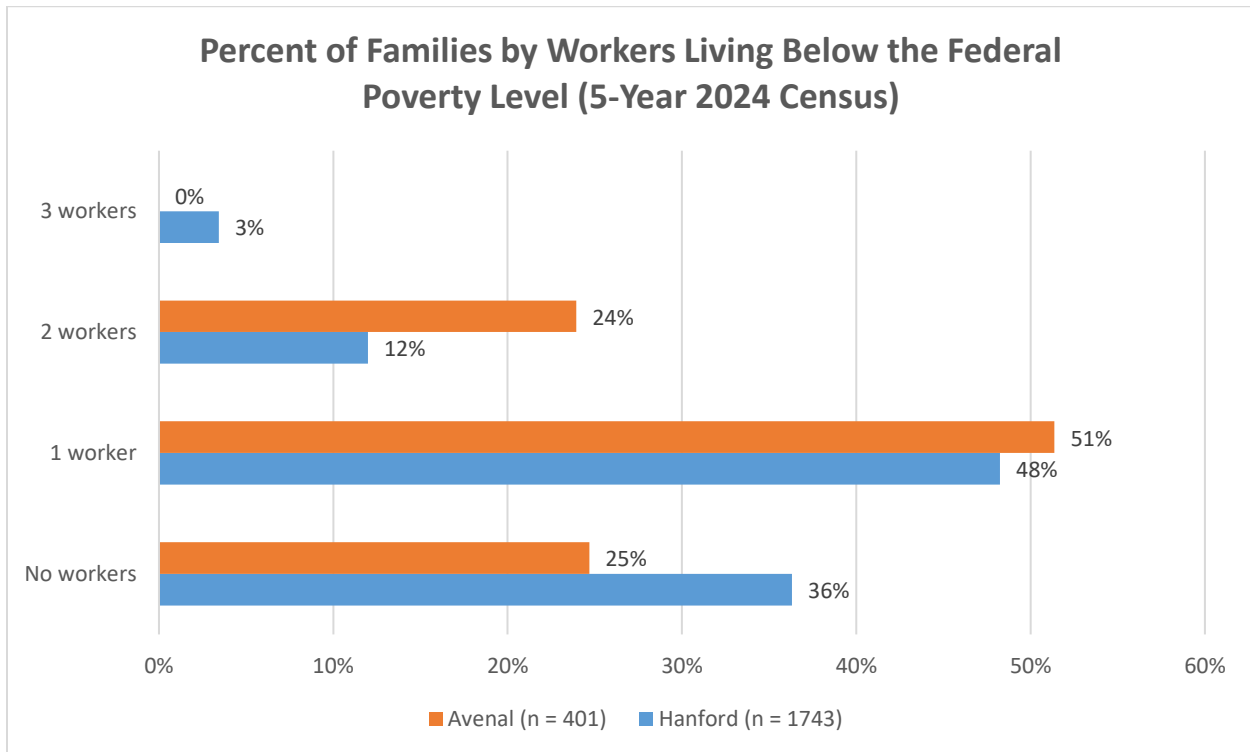


Figure 1. Workers in Families Below Federal Poverty Level

For employed individuals, private vehicles are the predominant commute mode in Hanford and Avenal. However, Avenal has a much higher rate of carpooling than the California average of approximately 10%, with nearly one-quarter of workers in Avenal reporting that they share rides to work. Avenal carpoolers also commute in larger groups than are typical statewide; the presence of 4-to-6-person carpooling suggests that these workers may rely on informal crew travel or informal vanpooling, potentially concentrated among workers with lower vehicle

access. Work-from-home rates are lower in both areas compared to state averages of about 15%, aligning with the agricultural and industrial workforce opportunities in Kings County. Notably, less than 1% of Hanford and Avenal workers commute via transit, further emphasizing the limitations of public transportation in these areas and highlighting resident reliance on cars, trucks, and vans.

Table 3. Worker Commute Modes

	Hanford		Avenal	
	Total	Percent	Total	Percent
Drive Alone**	18542	75.7%	2802	71.0%
Carpool**				
2-person	2075	8.5%	394	10.0%
3-person	983	4.0%	195	4.9%
4-person	127	0.5%	239	6.1%
5-or-6 person	289	1.2%	106	2.7%
7-or-more person	26	0.1%	0	0.0%
Public Transit	94	0.4%	0	0.0%
Walk	421	1.7%	63	1.6%
Work from Home	1772	7.2%	59	1.5%
**Taxi, Ridehailing, motorcycle, other	161	0.7%	88	2.2%

Higher unemployment, paired with low work-from-home rates, reinforces that job access is tightly linked to vehicle availability and spatial mobility and that individuals without sufficient access to a personal vehicle may face strong barriers to accessing essential destinations. While both Hanford and Avenal show similar rates of zero-vehicle households to California averages, both areas have an elevated percentage of households that are likely vehicle insufficient (1 vehicle shared among 3 or more household members). We estimate that more than 3,000 households in Hanford and more than 400 households in Avenal are vehicle insufficient. These households may rely on shared or borrowed cars or carpooling, which can result in delayed and unreliable access to destinations.

Table 4. Vehicle Availability for Residents

	Hanford		Avenal	
	Total	Percent	Total	Percent
Total	22746		2802	
No vehicles available	1516	7%	177	6%
1 vehicle (for 3-or-4 household members)	1525	7%	233	8%

Based on the census data analysis, both Hanford and Avenal display elevated levels of unemployment, vehicle insufficiency, poverty levels, and low access to transit as a viable mode. With Avenal being a more remote location with likely longer commute and overall travel times,

the data suggest a particularly high need for mobility among its low-income population, though it may have less demand in terms of total households than the more populated city of Hanford.

Community Engagement

This section describes the results of engagement activities conducted with residents of Kings County. These activities included meetings with parents, women, and senior caregivers; an interview with social services, and brief in-person discussions at a tabling event. The goal of these open-ended, exploratory engagement activities was to identify the most pressing problems caused by the lack of travel options for underserved residents in Kings County.

Access to Health Care Services

Conversations with community members suggest that in general, residents in Western Kings County must travel to Hanford for basic medical services, including Adventist Hospital (basic emergency and urgent care services), dental services, and optometrists. Residents must travel to Visalia and Fresno for specialized medical treatment, for example, cancer treatment and childhood asthma. In most western rural areas of the County, a nurse practitioner provides basic medical services, but aside from that, there are no other medical services.

For those without access to a car, it is very difficult to access healthcare in Hanford, Visalia, and Fresno. Travel by bus to Hanford and cities in western rural areas (Avenal, Stratford, and Lemoore) is time-consuming and limited. There are only four round-trip fixed-route buses per day, two of which are express routes, which can make it very difficult to schedule appointments and return home if the doctor is running late or additional tests are needed. Large families are also common in the County, and mothers frequently need to take all their children to medical appointments. The engagement leader suggested that it can be hard to wait hours for another bus without cash to take children to get food or to engage them in other ways when bus wait times are long.

A common concern raised by community members at the tabling event was the difficulty of attending medical appointments outside their local communities. Many reported traveling long distances to larger cities for specialty care, routine medical visits, or treatments. Some mentioned that getting a ride from others can be expensive, costing \$100 or more. Others noted that transportation assistance is often limited to those who qualify for Medi-Cal or specific medical programs, leaving many without reliable options.

The senior meetings focused on the challenges faced by senior caregivers without dependable access to personal vehicles. They reported that this limits their ability to drive seniors to appointments, services, or shopping. Many noted that this can result in missed or delayed specialty medical appointments (often in Fresno or Visalia). This concern was also raised in the women's group. Others stated that a lack of transportation can limit social, religious, and other support networks, resulting in loneliness and depression. Access to Social Security and Medicare can be limited because the nearest office is in Hanford.

The women's group raised some additional issues related to medical care. One noted that it is difficult to reach Saturday medical and dental appointments in Hanford, Visalia, and Fresno due to very limited transit service. Saturday appointments are important because many residents find it difficult to attend during the work week. One meeting participant reported that she can't take her son with autism to specialty therapy, and there is a long wait list to get a therapist to come to their community. If better transportation were available, she could get more help for her son.

Access to Educational Opportunities

The results of engagement activities showed that access to the community colleges in Lemoore and Visalia, and to the nearest four-year college in Fresno, was a major barrier to attending college. Many students do not have a personal vehicle, must use infrequent bus service, or depend on family members' availability to drive them to school.

Those who attend college report that many students drop out or significantly delay graduation because access to transportation limits the number of classes they can attend in a semester and reduces their attendance. In addition, it also restricts participation in tutoring sessions, study groups, and after-school activities. Use of libraries is also limited.

Participants in parent network and women's group meetings reported significant frustration with their ability to attend after-school activities at other schools outside their community, especially high school sports, due to long travel distances to other league communities and limited vehicle availability. Supporting students in after-school activities is important. Educational literature suggests that student participation in after-school programs contributes to college attendance and higher employment rates (10).

Access to Employment Opportunities

The engagement leader reported that there are limited job opportunities in the western rural areas of the County. For example, in Avenal, local employment is limited to city and county services with small staff requirements, the prison located just outside town, and local shops. Hanford is the closest big city and offers significantly more job opportunities than other areas of the County. Residents prefer jobs in Hanford because it costs less to get there by car (i.e., gas and wear-and-tear). Again, transit is limited between western rural areas and Hanford. The County social service staff member reported that it was difficult to send clients to job interviews in cities with greater opportunities.

In addition, the Certified Nursing Assistant (CNA) program provides classroom and clinical training, culminating in certification within 6 to 16 weeks. This program is often recommended for high school students. The program accepts people aged 16 and over. After earning the certificate, graduates can apply for jobs in hospitals, skilled nursing, home health, and hospice. This work can lead to nursing degrees and jobs. However, transportation barriers often make it difficult to access the program and secure paid positions.

Access to Retail Centers and Recreational Activities

In general, participants in the engagement activities expressed concern about the affordability of grocery-store food in their community. Participants noted they wanted to buy groceries in bulk (for the larger families common in the area) at lower prices. However, travel barriers made it difficult to travel to big-box grocery stores.

Participants also noted that access to retail centers was limited. A participant in the women's group said that her daughter wanted to shop for a prom dress, but she could not travel to stores that sold them. She felt sad and embarrassed because she could not go to stores outside of town like other kids.

Participants in the women's group reported that a lack of transportation, even renting a car, made it almost impossible to go on family outings, such as to the zoo, mall, and movies in Fresno. Moreover, participants noted that local parks in these rural communities are underused due to their poor quality.

Community Engagement Conclusion

Residents from the more rural communities in western Kings County emphasized that local services and resources are extremely limited. Many communities lack access to larger grocery stores, healthcare providers, educational institutions, employment opportunities, and recreational activities. Access to these destinations would reduce social exclusion, improve health, and increase economic opportunities for residents in underserved communities. With fixed-route transit restricted to just four daily round trips, the available public transit options do not accommodate multi-destination family travel or time-sensitive appointments. These results suggest a need for alternative, low-cost mobility options in the area, specifically services that allow residents to travel to and from Hanford and other larger cities.

Shared Mobility Services

The results of the analyses described above suggest that these communities most need shared mobility services that can bridge long-distance travel gaps within and outside the County. We considered ridehailing but rejected this option because of its high cost and limited availability in the County. Two non-profit round-trip electric carsharing services are available and provide similar low-cost services (\$4 per hour and \$35 per day) in surrounding communities, Míocar (2) and EV-Werx.

Destination Access

In this section, we compare local electric carsharing services to currently available modes to major destinations inside and outside Kings County. We use Google Maps data to understand the costs and feasibility of traveling from the city centers in Hanford and Avenal to key destinations by walking, taking transit, driving a personal vehicle, or driving one of the local electric carsharing services. The destinations were identified through consultation with stakeholders and community engagement as described above.

First, we identify the common destinations selected for Hanford and Avenal and assess transit travel times from central Hanford or Avenal to each location. Then, we review the walking travel times for the same destinations to understand the area's walkability. Finally, we estimate the travel time and cost for driving to these destinations and compare these costs to the estimated costs of using the local electric carsharing services to assess the potential use cases for the service.

Figure 2 displays the location of destinations within Hanford and surrounding cities by destination category. We selected three workplace locations, two medical locations, and one college within Hanford, which has a land area of approximately 18 square miles and was reported by community members as a common destination for residents of neighboring cities. We also identified major workplace, retail, and academic destinations in cities including Fresno, Visalia, Porterville, and Lemoore, where Hanford residents may need to travel. We grouped these destinations into the categories of 1) Downtown Hanford employment, 2) Downtown Hanford medical, 3) Hanford high school league destinations, 4) Colleges near Hanford, 5) City of Fresno destinations, and 6) City of Visalia destinations. The specific names of these destinations are listed in the following tables.

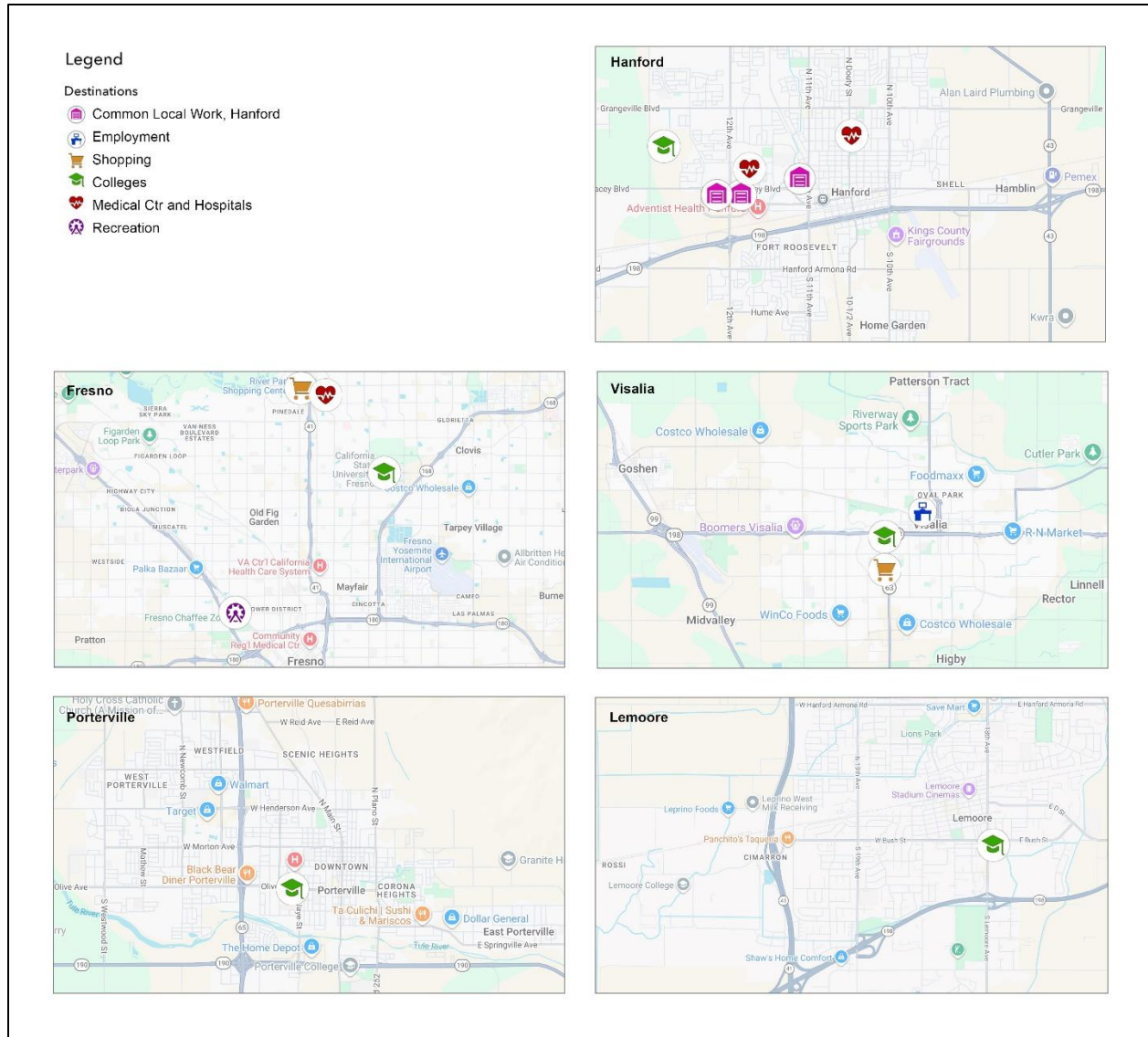


Figure 2. Selected Destination Locations and Categories, Hanford

Figure 3 displays the location of destinations within Avenal and surrounding cities by destination category. To assess travel across the main areas of Avenal, we selected one school, one recreation location, and one workplace location within the city, including the Avenal State Prison, which employs approximately 1,000 residents. We also identified major workplace, retail, and academic destinations in cities including Coalinga, Hanford, Fresno, and Visalia, where Avenal residents may need to travel. We grouped these destinations into the categories of 1) Avenal employment and medical, 2) Avenal high school and league destinations, 3) Colleges near Avenal, 4) Downtown Hanford employment, 5) City of Fresno destinations, and 6) City of Visalia destinations. The specific names of these destinations are listed in the following tables.

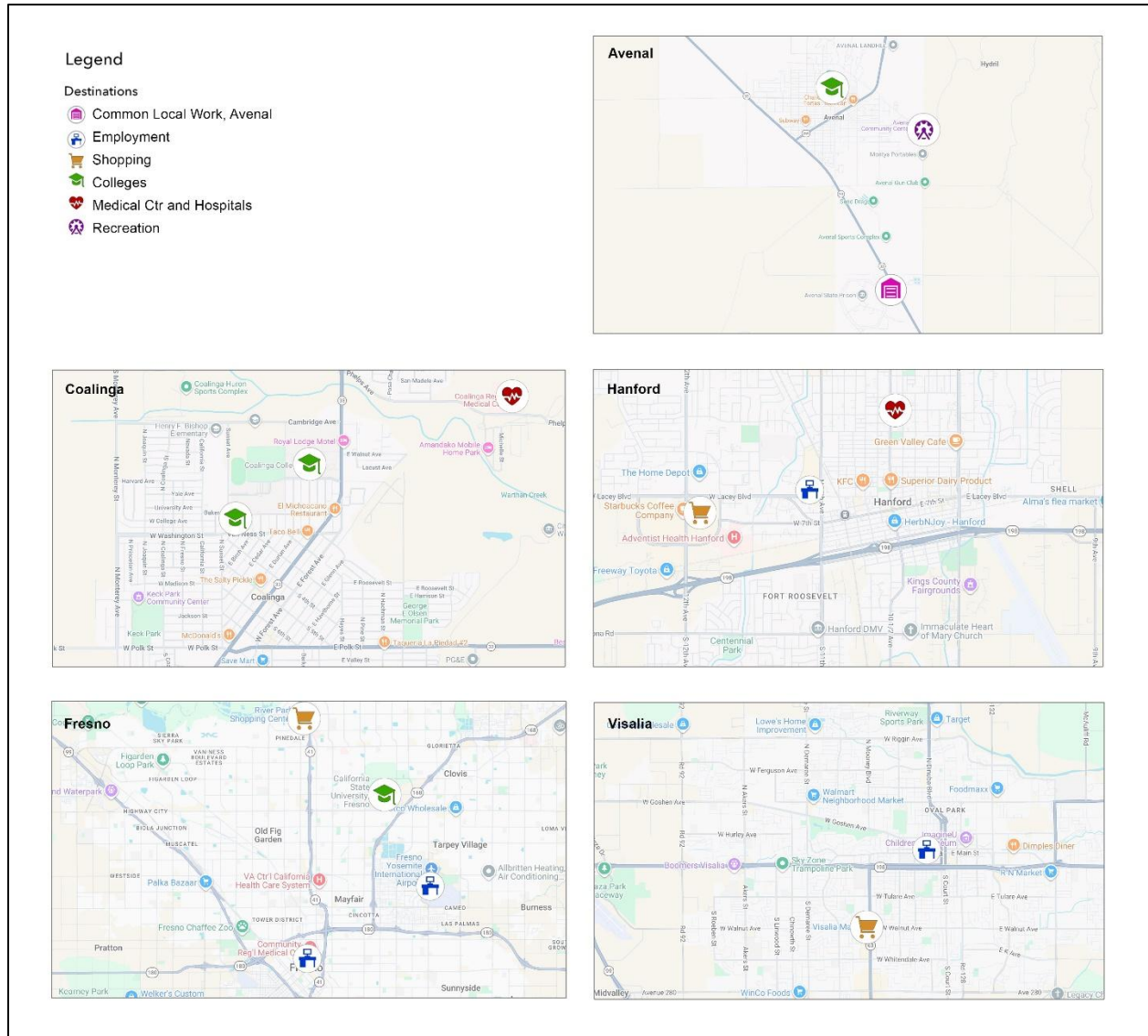


Figure 3. Selected Destination Locations and Categories, Avenal

The transit and walking assessments focused on these specific destinations, while the driving assessment included these destinations in addition to examining general travel from Avenal and Hanford to cities such as Visalia, Corcoran, Lemoore, Laton, and Fresno.

Transit

We recorded the shortest available transit time within Google Maps for each of these destinations to compare transit access within and around Hanford and Avenal. Table 5 displays transit times, inclusive of walking to and from transit stops, and shows that riders would be able to travel to and from a shared mobility site and employment and medical destinations in Hanford in approximately 25-30 minutes without transfers. Hanford is served by several bus routes that travel to and from neighboring cities, though like Avenal, travel from Hanford to

areas such as Visalia is limited to four trips per day. Additionally, Kings Area Rural Transit (KART) typically does not operate after 8 pm and does not offer service on Sundays (11).

Table 5. One-Way Distance and Travel Time for Transit Destinations from Central Hanford

Categories	Distance (miles)	Transit (including walking time)	Cumulative walking portion of transit (miles)	Number of transfers in transit trip
Downtown Hanford employment				
Hanford Joint Union High School District	1.2	0:27	0.8	0
Hanford Mall	2.2	0:35	1.1	0
Target	2.3	0:28	0.7	0
Downtown Hanford medical				
Adventist Health Medical Offices	0.1	NA	NA	NA
Adventist Health Lacy Medical Plaza	1.8	0:26	0.8	0
Hanford High School league destinations				
Lemoore High School	9.7	0:47	0.9	0
Porterville High School	49.8	3:05	1.8	2
Colleges near Hanford				
College of the Sequoias Hanford Campus	3.3	0:40	1.5	0
California State University, Fresno	37.4	2:11	1.4	2
Fresno State Visalia Campus	20.8	1:02	1.1	0
City of Fresno				
River Park Shopping Center	41.4	2:03	1.5	1
City of Visalia				
City of Visalia City Hall	20.8	1:04	1.2	0

Transit travel within Avenal is limited, and there are no transit routes to the state prison. There are also no transit services to nearby Coalinga. It is possible to travel from central Avenal to Hanford locations in about 80 minutes using transit. However, the Route 12 bus makes 4 trips from Avenal to Hanford per weekday and 2 trips on the weekend, meaning that transit may be challenging for time-sensitive or spontaneous trips. The transit travel time to Fresno is more than 3 hours and requires several transfers, and transit travel to Visalia takes approximately 2.5 hours with one transfer (Table 6).

Table 6. One-Way Distance and Travel Time for Transit Destinations from Central Avenal

Categories	Distance (miles)	Transit (including walking time)	Cumulative walking portion of transit (miles)	Number of transfers in transit trip
Avenal employment and medical				
Avenal State Prison	2.5	NA	NA	NA
Avenal Community Center	1.2	0:20	0.9	0
Avenal High School and league destination				
Avenal High School	0.6	NA	NA	NA
Coalinga High School	18.2	NA	NA	NA
Colleges near Avenal				
Coalinga College (community)	18.2	NA	NA	NA
California State University, Fresno	67.4	3:17	1.3	3
Downtown Hanford employment				
Hanford Joint Union High School District	39.8	1:16	0.1	0
Hanford Mall	38.9	1:21	0.4	0
Adventist Health Medical Offices	39.4	1:17	0.2	0
City of Fresno				
River Park Shopping Center	68.8	3:20	1.2	2
City of Visalia				
City of Visalia City Hall	60.3	2:36	0.6	1

These results align with community member feedback regarding transit system limitations in Kings County. Hanford residents benefit from several transit lines to surrounding cities, but limitations in frequency and operating hours create barriers for urgent, late-night, and weekend trips. While it would be possible for Avenal residents to travel to Hanford and access a potential shared mobility hub, this would require planning and long travel times, potentially limiting demand relative to a dedicated Avenal hub.

Walking

It is possible to walk from central Hanford to a variety of destinations within the city, though certain destinations are likely to require a vehicle. If a shared mobility service were in central Hanford, users could walk to locations such as the Adventist Health Medical Offices and Hanford High School District, both of which are located near other commercial destinations and shopping areas. Users could potentially walk to the Hanford Mall or Target, though we estimate that individuals are unlikely to walk longer than 1 mile for daily travel. Table 7 does not include destinations outside of Hanford, as the distances are too far to walk.

Table 7. One-Way Distance and Travel Time for Walking Destinations from Central Hanford

Categories	Distance (miles)	Walk (hr:min)
Downtown Hanford employment		
Hanford Joint Union High School District	1.2	0:26
Hanford Mall	2.2	0:48
Target	2.3	0:52
Downtown Hanford medical		
Adventist Health Medical Offices	0.1	0:02
Adventist Health Lacy Medical Plaza	1.8	0:39

Avenal is the fourth-largest city by land area in Kings County, and while its central area near Skyline Blvd. is somewhat walkable, several potentially common destinations may be inaccessible by walking from outer neighborhoods (Table 8). If located in central Avenal, a shared mobility hub would allow nearby residents walking access, and users would be able to walk to locations such as Avenal High School and potentially the Avenal Community Center from the hub. However, the Avenal State Prison, a larger employer for the area, is 2.5 miles outside of central Avenal and would likely require a vehicle. Table 8 does not include destinations outside of Avenal as they are impractical to reach by walking.

Table 8. One-Way Distance and Travel Time for Walking Destinations from Central Avenal

Categories	Distance (miles)	Walk (hr:min)
Avenal employment and medical		
Avenal State Prison	2.5	0:55
Avenal Community Center	1.2	0:26
Avenal High School		
Avenal High School	0.6	0:14

These results both highlight the long travel distances between certain destinations in and around these cities and suggest that a centrally located shared mobility service could allow for walking access to and from common destinations within the city limits.

Personal Vehicles and Comparison to Local Electric Carsharing Services

To explore the possibility of a shared mobility hub located in either Hanford or Avenal, we compared the driving costs to key cities and destinations to the cost of using an electric round-trip carsharing service. First, we considered the cost of one round-trip of driving a personal vehicle to the cost of driving one of the local round-trip carsharing services and parking it at a workplace for a full workday (equating to a \$35 daily reservation). Table 9 shows that travel from Hanford to each of the selected cities of Lemoore, Visalia, Corcoran, Laton, and Fresno is much less expensive by personal vehicle than the \$35 daily cost of carsharing. However, renting

an electric carsharing vehicle at the \$35 rate may be advantageous if it is combined with other errands and/or if a personal vehicle breaks down or is unavailable for some reason.

We also estimate the cost of drop-off and pick-up travel for two round-trip trips made with a carsharing vehicle. Such a trip requires someone to drive the passenger but avoids costly “stay” times. However, carsharing becomes the less expensive option if someone were available to drive the user to work, drop them off, return the vehicle, then do a second round trip to pick them up. This is most significant for longer travel distances such as Hanford to Fresno, where two round trips with carsharing would cost an estimated \$5.87 compared to an estimated \$14.85 for gasoline. The availability of this type of travel. As described above, this may be an option for households with one worker and two or more members who have a driver's license

Table 9. Comparison of Electric Carsharing (EC) to Personal Vehicle Travel Costs to Nearby Cities from Hanford

Destination Categories	1 ROUND TRIP					2 ROUND TRIPS (Drop-off, pick-up)	
	Distance (mi)	Drive (hr:min)	\$Drive	\$EC 9hr stay (Daily Rental)	\$EC-\$Drive	\$EC	\$EC-\$Drive
Nearby City							
Lemoore	8.9	0:12	4.03	35.00	30.97	1.60	-2.43
Visalia	20.1	0:22	9.10	35.00	25.90	2.93	-6.17
Corcoran	20.3	0:26	9.19	35.00	25.81	3.47	-5.72
Laton	9.6	0:17	4.35	35.00	30.65	2.27	-2.08
Fresno	32.8	0:44	14.85	35.00	20.15	5.87	-8.98

As with Hanford, it is less expensive to drive and park a personal vehicle from Avenal to Kettleman City, Coalinga, Lemoore, Corcoran, or Fresno for the workday than to pay for a \$35 daily reservation. Again, electric carsharing becomes the least expensive option by about 65% if taking two round trips with a drop-off and pick-up of a passenger.

Table 10. Comparison of Electric Carsharing (EC) to Personal Vehicle Travel Costs to Nearby Cities from Avenal

Destination Categories	1 ROUND TRIP					2 ROUND TRIPS (Drop-off, pick-up)	
	Distance (mi)	Drive (hr:min)	\$Drive	\$EC 9hr stay (Daily Rental)	\$ECar-Drive	\$EC	\$EC-Drive
Kettleman City	15.9	0:19	7.20	35.00	27.80	2.53	-4.66
Coalinga	18.2	0:21	8.24	35.00	26.76	2.80	-5.44
Lemoore	30.1	0:33	13.63	35.00	21.37	4.40	-9.23
Corcoran	47.8	0:53	21.64	35.00	13.36	7.07	-14.57
Fresno	59.7	1:09	27.02	35.00	7.98	9.20	-17.82

To examine this relationship in greater detail, we compared personal vehicle driving costs to shared mobility costs for the specific destinations and trip types identified for the walking and transit analysis. Table 11 displays the variety of destination types within and around Hanford and shows electric carsharing as the least expensive option for all destinations other than the very close-proximity location of Adventist Health Medical Offices, as it is just 0.1 miles away from the selected central Hanford origin. As local electric carsharing services charge by the hour rather than the mile, its favorability increases with total trip distance in terms of dollars saved. In terms of the break-even point, or how long a user could stay at a location before the cost of carsharing exceeds the cost of driving a personal car, the break-even time for local destinations within Hanford is typically less than 10 minutes. This could lead to comparable costs between carsharing and personal vehicle travel for short errands, especially for multiple errands across different locations in town. The break-even time increases drastically for long-distance destinations such as Visalia or Fresno, where users could spend 2 or 3 hours before reaching the cost of a gasoline trip.

Table 12 displays this analysis in relation to Avenal, with a similar trend. While it may be impractical to reserve carsharing for a single trip of a few miles that involves waiting time, the financial feasibility of the shared mobility option increases with more destinations and longer distances. Additionally, Avenal residents traveling to either Fresno or Visalia for work and staying there for the workday would incur similar gasoline costs (\$25-31) at the daily carsharing rate of \$35. This type of long-distance shared mobility travel, whether for work, longer-term stays, or passenger drop-offs, may be an appealing use-case for Avenal residents.

Table 11. Comparison of Electric Carsharing (EC) to Personal Vehicle Travel Costs to Destinations from Central Hanford

DESTINATION CATEGORIES	1-Way (mi)	1-Way (hr:min)	1 Round Trip				2 Round Trips (Drop-off, pick-up)	
		Drive (hr:min)	\$Drive	\$EC	\$EC- \$Drive	Break Even (hr:min)	\$EC	\$EC- \$Drive
Downtown Hanford employment	Distance							
Hanford Joint Union High School District	1.2	0:04	0.54	0.27	-0.28	0:04	0.53	-0.01
Hanford Mall	2.2	0:07	1.00	0.47	-0.53	0:07	0.93	-0.06
Target	2.9	0:08	1.31	0.53	-0.78	0:11	1.07	-0.25
Downtown Hanford medical								
Adventist Health Medical Offices	0.1	0:01	0.05	0.07	0.02	0:00	0.13	0.09
Adventist Health Lacy Medical Plaza	1.8	0:05	0.81	0.33	-0.48	0:07	0.67	-0.15
Hanford High School league destinations								
Lemoore High School	0.6	0:02	0.27	0.13	-0.14	0:02	0.27	0.00
Porterville High School	8.6	0:12	3.89	0.80	-3.09	0:46	1.60	-2.29
Colleges near Hanford								
College of the Sequoias Hanford Campus	3.6	0:08	1.63	0.53	-1.10	0:16	1.07	-0.56
California State University, Fresno	39.5	0:44	17.88	2.93	-14.95	3:44	5.87	-12.01
Fresno State Visalia Campus	19.8	0:21	8.96	1.40	-7.56	1:53	2.80	-6.16
City of Fresno								
River Park Shopping Center	41.1	0:47	18.60	3.13	-15.47	3:52	6.27	-12.34
Fresno Chaffee Zoo	34.2	0:40	15.48	2.67	-12.81	3:12	5.33	-10.15
Kaiser Permanente Fresno Medical Center	39.8	0:45	18.02	3.00	-15.02	3:45	6.00	-12.02
City of Visalia								
City of Visalia City Hall	20.4	0:22	9.23	1.47	-7.77	1:56	2.93	-6.30
Visalia Mall	20.9	0:25	9.46	1.67	-7.79	1:56	3.33	-6.13

Table 12. Comparison of Electric Carsharing to Personal Vehicle Travel Costs to Destinations from Central Avenal

DESTINATION CATEGORIES	1-Way (mi)	1-Way (hr:min)	1 Round Trip				2 Round Trips (Drop-off, pick-up)	
		Drive (hr:min)	\$Drive	\$EC	\$EC- \$Drive	Break Even (hr:min)	\$EC	\$EC- \$Drive
Avenal employment and medical	Distance							
Avenal State Prison	2.7	0:06	1.22	0.40	-0.82	0:12	0.80	-0.42
Avenal Community Center	1.4	0:04	0.63	0.27	-0.37	0:05	0.53	-0.10
Avenal High School and league destinations								
Avenal High School	0.6	0:03	0.27	0.20	-0.07	0:01	0.40	0.13
Coalinga High School	18.7	0:24	8.46	1.60	-6.86	1:42	3.20	-5.26
Colleges near Avenal								
Coalinga College (community)	19.4	0:24	8.78	1.60	-7.18	1:47	3.20	-5.58
California State University, Fresno	67.1	1:08	30.37	4.53	-25.84	6:27	9.07	-21.31
Downtown Hanford employment								
Hanford Joint Union High School District	37.3	0:40	16.88	2.67	-14.22	3:33	5.33	-11.55
Hanford Mall	36.4	0:39	16.48	2.60	-13.88	3:28	5.20	-11.28
Adventist Health Medical Offices	38.3	0:40	17.34	2.67	-14.67	3:40	5.33	-12.00
Downtown Fresno employment								
Fresno Unified School District (ED Center)	59.7	1:02	27.02	4.13	-22.89	5:43	8.27	-18.76
Fresno Yosemite International Airport	65.1	1:08	29.47	4.53	-24.94	6:14	9.07	-20.40
River Park Shopping Center	68.8	1:11	31.14	4.73	-26.41	6:36	9.47	-21.68
City of Visalia								
City of Visalia City Hall	56.8	0:56	25.71	3.73	-21.98	5:29	7.47	-18.24
Visalia Mall	57.3	1:01	25.94	4.07	-21.87	5:28	8.13	-17.80

Conclusion

The activities conducted in this study identified high levels of unmet transportation needs across Kings County and in the focus areas of Hanford and Avenal. Census data for each area indicated populations with elevated levels of financial struggle and vehicle insufficiency, suggesting that several thousand residents of Hanford and several hundred residents of Avenal may lack the transportation access needed to reliably travel to work or to time-sensitive appointments. Based on the community engagement activities, there is strong demand for alternatives to fixed-route transit in the region for intercity travel and more flexible travel times.

The travel destination analysis indicates that Avenal residents who need to travel long distances for work would incur lower costs using local electric carsharing services than driving their own vehicles, and this type of shared mobility service would allow them to travel to popular destinations such as Hanford without the barrier of a limited transit schedule. Hanford residents could use carsharing as a low-cost option in and around town, with larger cost savings for intercity errands and appointments. For both cities, carsharing would also provide a low-cost option for drivers who can drop off and pick up family members at work.

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Data Management Plan

Products of Research

This study primarily relied on publicly available data from the United States Census and Google Maps. Primary data collected through this study included community engagement interviews and focus groups.

Data Format and Content

The publicly available data recorded and cleaned from Google Maps and the US Census are stored in spreadsheet .csv files. The census dataset includes the tables presented in this report, which were populated using data directly from data.census.gov. The Google Maps dataset includes the full list of destinations, their locations, travel times, and travel distances for walking, transit, and driving, which were populated using data directly from maps.google.com.

Data Access and Sharing

The data from the United States Census (data.census.gov) and Google Maps (maps.google.com) can be found on their respective websites. The data can also be accessed via the Dryad repository link below.

Reuse and Redistribution

The data are publicly available both via the US Census and Google Maps, as well as the Dryad repository at DOI: [10.5061/dryad.qjq2bvqxd](https://doi.org/10.5061/dryad.qjq2bvqxd) and there is no restriction on reuse or redistribution of these data.