

# Opportunities for Shared-Use Mobility Services in Rural Disadvantaged Communities in California's San Joaquin Valley: Existing Conditions and Conceptual Program Development

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A Final Research Report from the National Center for Sustainable Transportation

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## EXECUTIVE SUMMARY

Shared-use mobility services largely serve major metropolitan areas. However, increasingly officials, who represent rural communities, want to know whether these types of services may be able to provide more cost-effective access to rural residents than is currently possible by fixed-route and dial-a-ride transit services. Many of these officials must contend with low farebox recovery rates that threaten transit funding and subsequent cutbacks in transit services that are often strongly opposed by constituents.

In this study, the cost-effectiveness of existing inter-city transit service in rural disadvantaged communities in the San Joaquin Valley (California) is compared to hypothetical ridesharing and carsharing services. The results show significant potential to reduce transit costs and reinvest those cost saving to expand shared mobility services.

The cost-effectiveness analysis is supplemented with reviews of existing shared-use mobility pilots and consultations with experts in shared mobility and local transportation planning. The result is two shared-use mobility pilot concepts in seven communities in four counties in the San Joaquin Valley region:

1. *Carsharing and ridesourcing in affordable housing complexes in the Dinuba, Cutler, and Orosi community of Tulare County and the Lamont-Arvin and Wasco communities of Kern County.* The development density of selected locations support walk access to carsharing for residents in the affordable housing complexes and surrounding neighborhoods. Ridesourcing would be introduced to provide first and last mile access to transit and carsharing when it is not possible for residents to walk to these services. Ridesourcing would also provide direct access to destinations when it is not possible to complete an essential trip with transit or carsharing. Carsharing and ridesourcing would be subsidized to ensure that the services are affordable. It is anticipated that this program will produce significant savings from reduced dial-a-ride service costs that can be used for sustained operations.
2. *A technology platform that enables improved efficiency for multiple independently operated demand responsive transportation services in jurisdictions in northeast Stanislaus and southeast San Joaquin counties.* The platform aggregates the demand and supply of available services (e.g., dial-a-ride, volunteer transportation organizations,

carsharing, and ridesourcing): (a) participating transit providers would communicate the demand for travel (departure/arrival times and locations) and (b) suppliers would communicate vehicle availability, capacity, and fares. The platform would use this data to match travelers and drivers to minimize service costs, travel times, and greenhouse gas emissions by filling available seats and reducing empty travel miles. Outreach would be conducted to engage and expand service providers and to increase the pool of volunteer drivers.

## Introduction

In the San Joaquin Valley, like other rural areas, long travel distances and low development densities contribute to transit service that is, all too often, infrequent and hard to access, despite the high-cost of providing this service. High-poverty levels in the Valley lead to low levels of auto availability, which leave many residents without access to jobs, health care, education, healthy food, and other basic services. With the dual goals of expanding access to residents in rural disadvantaged communities and reducing greenhouse gas (GHG) emissions, the eight metropolitan planning organizations (MPOs) of the San Joaquin Valley and the California Department of Transportation commissioned a study to explore the potential for subsidized shared-use mobility services to replace and/or augment underperforming inter-transit routes. This report describes the findings of the first phase of the study, which includes an analysis of existing conditions and the conceptual program development for rural transit alternatives. The existing conditions analysis identifies locations where shared-use mobility services might improve accessibility in Valley rural disadvantaged communities at a cost equal to or below currently available transit services. Potential pilot locations and concepts were identified by drawing on the existing conditions analysis, reviewing relevant pilot projects, and consulting with experts on shared-use mobility and local transportation planning. The report concludes with a description of the two pilot program concepts that were developed for seven communities in four San Joaquin Valley counties.

## Study Area

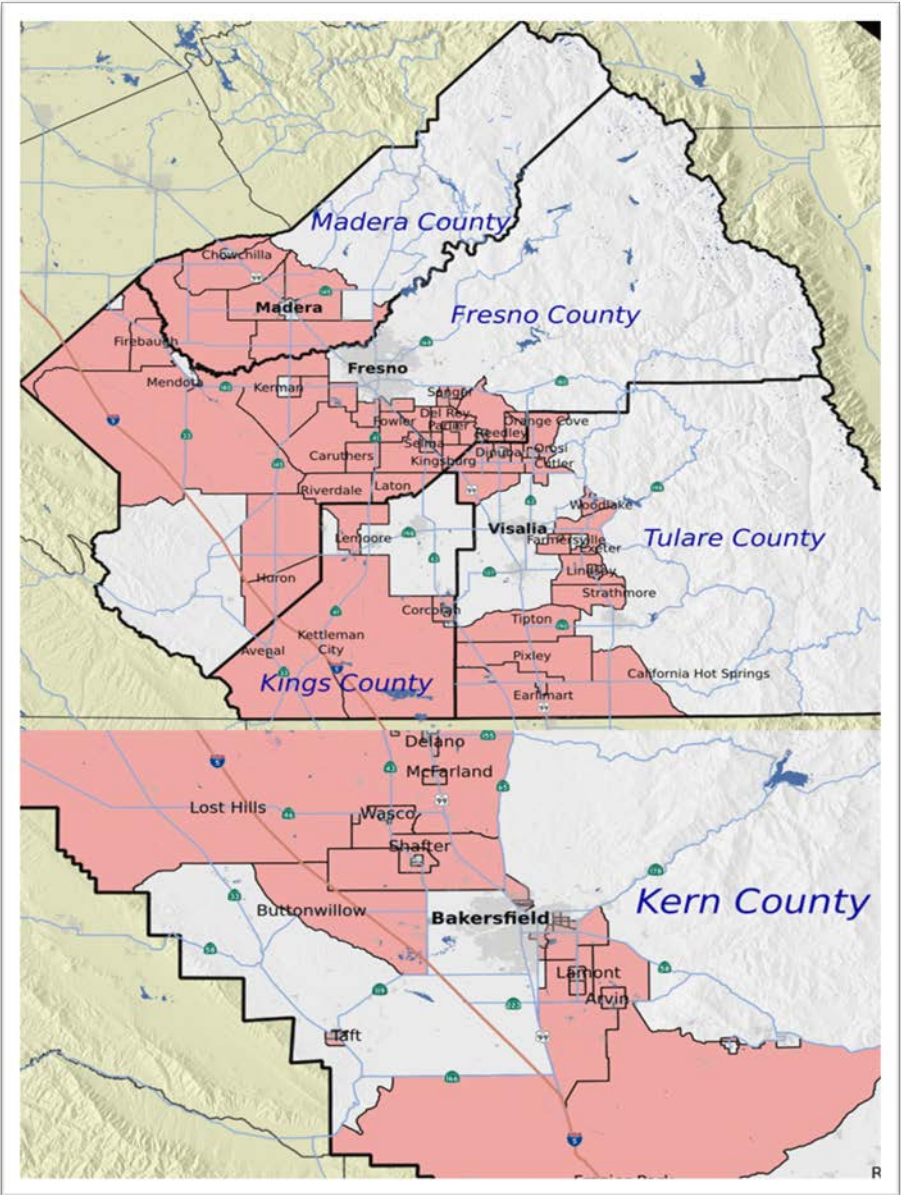
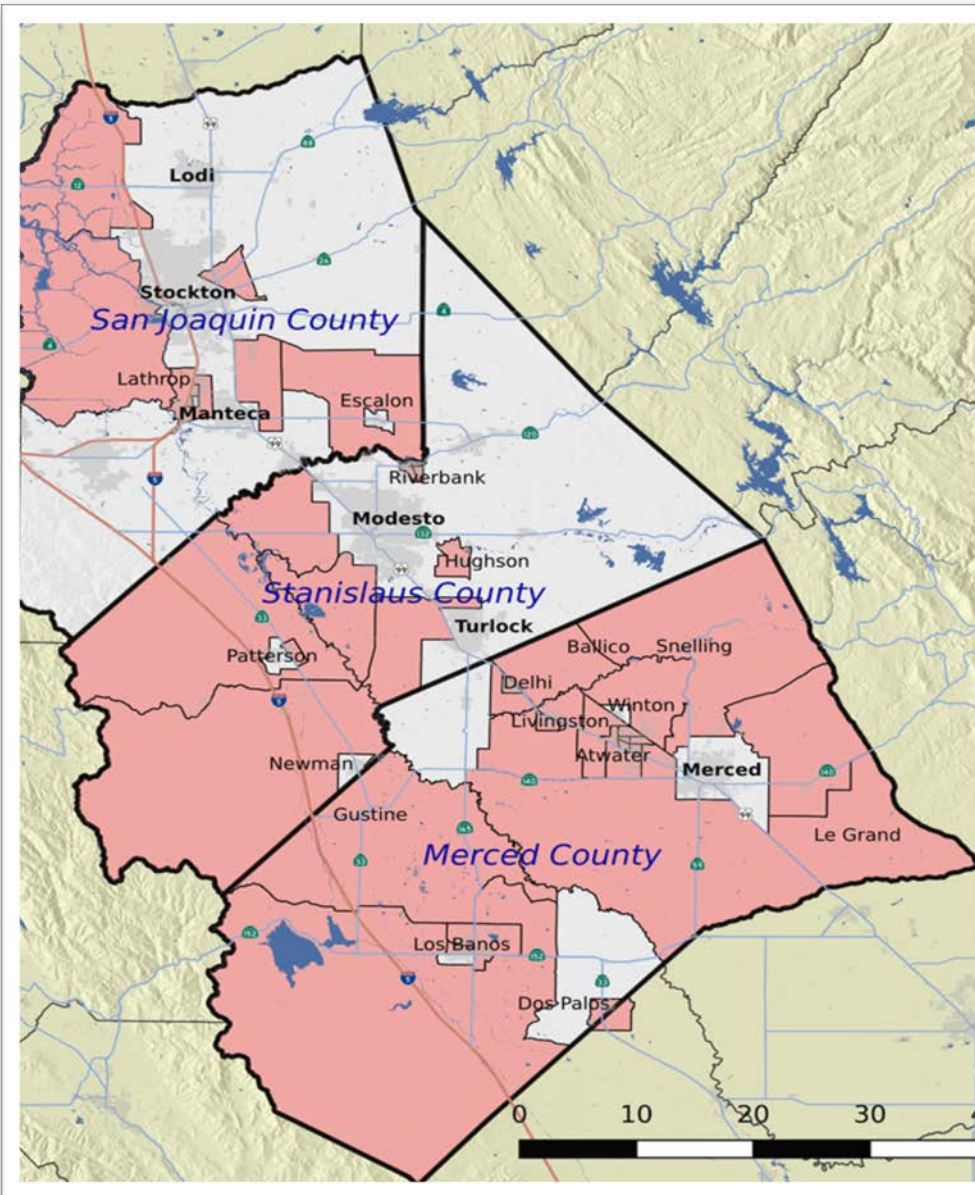
The San Joaquin Valley consists of twenty-seven thousand square miles in central California and is comprised of eight counties, which include San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and Kern. Major metropolitan areas surrounding the Valley include Sacramento to the north, Los Angeles to the south, and the San Francisco Bay Area to the west. The Valley is a highly productive agricultural area and is commonly known as the “food basket of the world.” While the Valley does include several metropolitan areas, Stockton, Fresno, and Bakersfield, a significant portion of its four million residents live in rural and urban fringe areas where low income residents are largely employed in the agricultural sector. The Valley also has some of the worst air quality in the nation, in part, because it is surrounded by mountain ranges that trap air pollutants.



## Methods

### Rural Disadvantaged Communities

Operationalizing rural disadvantaged communities involved identifying a geographic unit of analysis and defining the terms rural and disadvantaged. Census tracts were used as the spatial geographic unit of analysis. Data are commonly available at the census tract level, which is small enough to provide a representation of accessibility that is sufficient given the objectives of this study. Census tracts are considered rural, for purposes of this study, if they are consistent with any federal or California definition of rural, which included the Office of Management and Budget, Rural Urban Commuting Area Codes, and California Tax Credit Allocation Committee's 2015 Methodology for Determining Rural Status of a Project Site. Census tracts are deemed disadvantaged, if they scored above the 75th percentile of California census tracts burdened by environmental and socioeconomic challenges as ranked by the California Environmental Protection Agency's California Communities Environmental Health Screening Tool: CalEnviroScreen (CES) Version 2.0 (CalEnviroScreen 2.0) (1). Census tracts classified as both rural and disadvantaged were evaluated to identify communities that may benefit from public-private shared-use mobility partnerships. Rural disadvantaged census tracts referred to throughout the remainder of this report are illustrated in Figure 1.



**FIGURE 1. San Joaquin Valley Rural Disadvantaged Census Tracts**

## Transit and Shared-Use Mobility Alternatives

Four general types of shared-use mobility services were included in the evaluation of potential alternatives to transit in the rural disadvantaged San Joaquin Valley communities:

- *Ridesourcing*: Commercial taxi-like service, in which a single passenger uses a smart-phone application to order a ride in advance or at the time it is needed and to make payment (e.g., Uber and Lyft).
- *Ridesplitting*: Commercial or private service, in which multiple passengers use a smart-phone application to be paired in real-time with others traveling a similar route. Private drivers are reimbursed for some costs, such as tolls and gas (e.g., UberPool, Lyft Line, and Waze Carpool).
- *Carsharing*: Commercial service that offers short-term (typically less than a day) car rentals via website or phone app, in which the car is checked out and returned at the same location (e.g., Zipcar).
- *Split-carsharing*: Commercial service, in which a car renter uses a website or phone application to arrange to travel with other renters in advance or pick up others traveling on a similar route.

The relative quality and cost of current transit service across rural disadvantaged census tracts, between each rural disadvantaged census tract and its closest major destination city, was estimated by calculating transit agencies' operational service costs, frequency of inter-city transit service, and passengers' ability to access the nearest transit stop without using a private automobile. Transit operational costs were obtained, most frequently, from local transit agency data and reports (see Appendix A for a list of the local reports reviewed for this study), and, when necessary, supplemented with the Federal Transit Administration's 2015 National Transit Database (2). Frequency and access to transit service were estimated using transit agency schedules, Google Transit, and AllTransit™ transit metrics (3). MPOs reviewed the results and verified their accuracy given the objectives of the analysis.

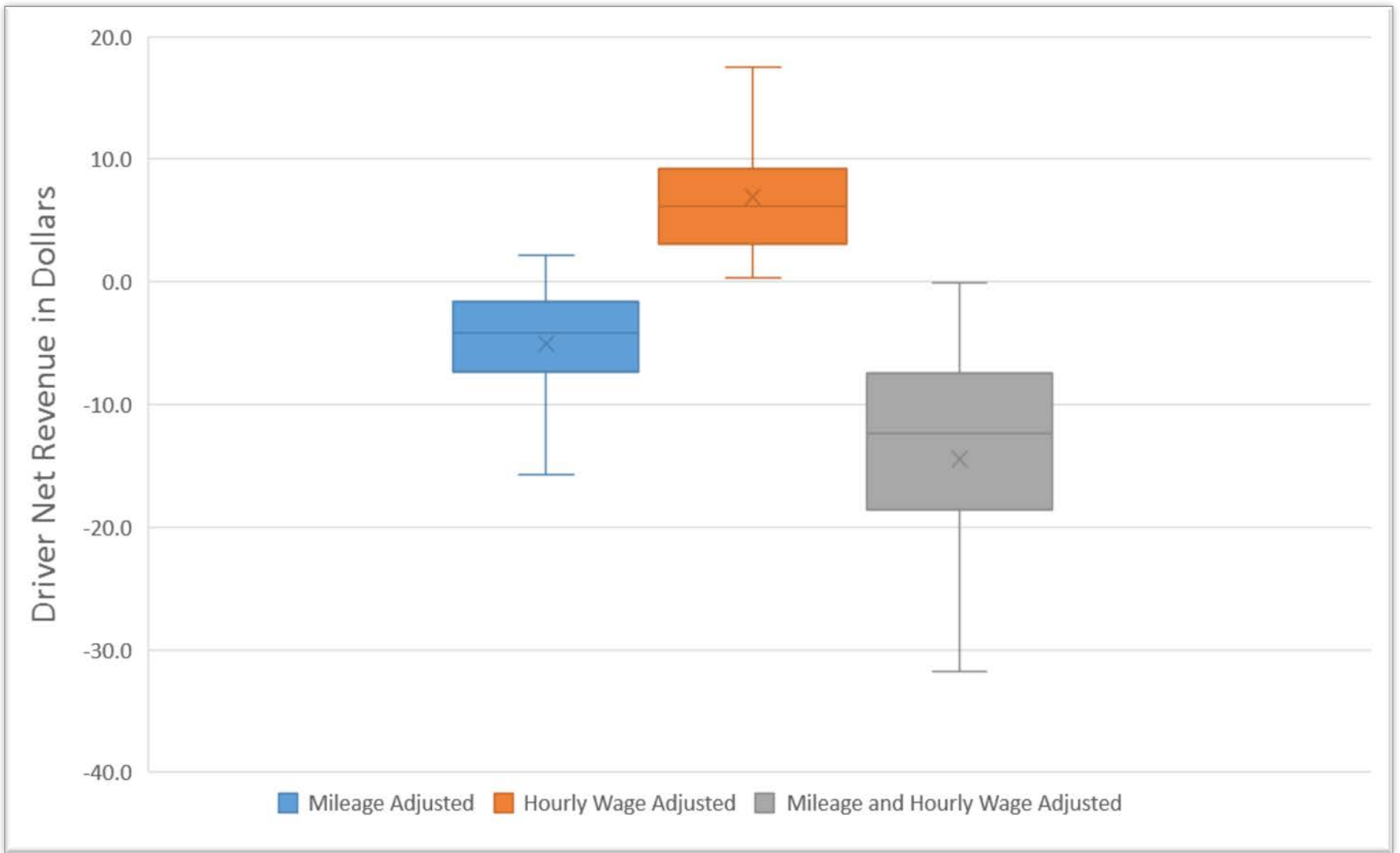
Next, we estimated the potential cost of providing ridesourcing services to the identified rural disadvantaged communities. Currently, ridesourcing services are largely restricted to larger cities where there tends to be a higher concentration of activities within a small geographic area. For a ridesourcing driver, this means shorter trip distances and a decent chance of securing a return trip passenger. The service demand characteristics in rural areas are almost exactly the opposite of those in urban areas: low population densities and long distances to activities, which would tend to contribute to a low chance of a return trip passenger for a ridesourcing driver.

The viability of current ridesourcing fare structures to serve the rural disadvantaged census tracts in our study area was evaluated by comparing total driver revenue given round trip vehicle distance and travel time costs between rural disadvantaged areas and their closest major destinations. Using Google maps, we calculated auto travel times and distances between the highest population density points of the rural disadvantaged census tracts and the central business district in the closest major destination location. We applied the current Uber fare structure for the City of Fresno to the auto travel time and distance values obtained from Google maps and adjusted current driver revenue with round-trip driver mileage costs using the Federal per Mile Reimbursement Rate (\$0.54) and driver time costs using the California minimum hourly wage (\$10.50). We assume that current driver share of total revenue from Fresno trip fare is 80% (5). The Fresno fare includes one-way origin and destination (OD) times costs (at 10 cents per minute) and distance cost (at 80 cents per mile), plus a \$1 fee, and a minimum fare of \$5.75. We adjusted this revenue to account for the full round-trip (non-return passenger) origin and destination time cost (8 cents per minute) and distance cost (54 cents per mile). See equations 1 to 3 below.

1. Net Revenue Mileage Adjusted = Current Revenue – (\$0.54 x OD Round Trip Distance)
2. Net Revenue Hourly Wage Adjusted = Current Revenue – (\$10.50 x OD Round Trip Travel Time)
3. Net Revenue Mileage and Hourly Wage Adjusted = Current Revenue – (1 + 2)

The distribution of the results of equations 1 to 3 are presented in the box-and-whisker plots in Figure 2 below. Mileage revenue is negative for all trips less than 5.7 miles, and the highest positive revenue is \$2.10. Hourly wage revenue per trip is positive with a range of \$0.30 to \$17.50 and a median of \$6.20 per trip. When both mileage and hourly wage costs are considered, drivers per trip revenue ranges from \$0 to negative \$32 and a median of negative \$12.30. In sum, total net revenue is negative for the current fare structure for our rural disadvantaged communities. The current ridesourcing fare structure is unlikely to result in drivers servicing many of the rural disadvantaged communities in our study area.





**FIGURE 2. Driver Revenue with Current Revenue Adjusted for Full Distance and Time Cost for Service between Rural Disadvantaged Census Tracts and Major Destinations**

As a result, we evaluate the potential for ridesourcing by using high and low fare estimates. The low ridesourcing fare is current driver revenue and the high ridesourcing fare includes the full round-trip vehicle use and time costs, as described above. We envision the application of book-ahead capabilities to ridesourcing services to form ridesplitting rides. To approximate a ridesplitting cost, we subtracted \$5 from the cost of the low ridesourcing cost.

Carsharing is available on a very limited basis in the Valley. As a result, we applied the Zipcar fare in Sacramento, which is just north of the San Joaquin Valley. The carsharing cost assumes a one-way, three-hour trip at \$4.50 per hour and waives member fees.

Given the low driver's license and income rates among the study population, we also imagine the possibility of two or more paying passengers using one carsharing vehicle (or "split-carsharing"). Split-carsharing costs are assumed to be half of carsharing costs.

Affordable housing complexes are commonly associated with higher population densities in rural areas and have amenities (e.g., community rooms and computer facilities) that could facilitate carsharing. To gauge the opportunity for community-based carsharing programs, information on the quantity of affordable rental housing units that use California low income housing tax credits by census tract was also gathered from the California Tax Credit Allocation Committee (TCAC) project mapping database (<http://www.treasurer.ca.gov/ctcac/projects.asp>).

At the end of this report, Appendix B provides tables on transit information and cost estimates for shared mobility alternatives by county and by census tract. Appendix C provides maps that show the relative quality of transit access and potential cost of shared-used mobility access by county.

## **Socio-Demographic Data**

Socio-demographic measures of transportation dependence, access to opportunities, access to health care, and challenges to participation in the rural disadvantaged census tracts were collected from a dataset developed by the UC Davis Center for Regional Change, which is called the Regional Opportunity Index or ROI (5). These data by theme are described in Table 1 below.

At the end of this report, Appendix D, E, F, and G include tables that detail the results of this analysis by county and by census tract, respectively, for the measures of transportation dependence, access to opportunities, access to health care, and challenges to participation.

**Table 1. Description of Data from the Regional Opportunity Index, UC Davis Center for Regional Change (5)**

Measure	Description	Source(s)
<b>Transit Dependence</b>		
<b>Percent Under 18</b>	Percent of tract population that is under 18	ACS 2010-14
<b>Percent Over 64</b>	Percent of tract population that is over 64	ACS 2010-14
<b>Vehicle Unavailability</b>	Percentage of households with less than 1 vehicle, or 1 vehicle per worker	ACS 2010-14
<b>Less than Basic Income</b>	Percentage of families with income under 200% of the federal poverty level	ACS 2010-14
<b>Housing Cost Burden</b>	Percentage of homeowners and renters for whom housing is less than 30% of household income	ACS 2010-14
<b>Access to Opportunities</b>		
<b>Elementary School Truancy</b>	Percentage of students who have missed more than 30 minutes of instruction without an excuse at least three times during the school year	CDE 2010/11 - 2012/13
<b>Job Availability</b>	Number of jobs per 1,000 people, within a 5-mile radius	LODES 2014, Census 2010
<b>Bank Accessibility</b>	Number of banks and credit unions per 1000 people, within a 5-mile radius	FDIC 2015, NCUA 2014, Census 2010
<b>Distance to Supermarket</b>	Percentage who live within 1/2 mile (urban) or 10 miles (rural) of supermarket	USDA Food Access Research Atlas, 2010 Census
<b>Health Care Availability</b>	Number of locations providing basic medical services per 1000 population within 5-mile radius	NETS 2011, Census 2010
<b>Access to Health Care</b>		
<b>Prenatal Care</b>	Percentage of mothers who received prenatal care in first trimester	CDPH 2010-2012
<b>Infant Health</b>	Percentage of births at or above healthy weight, or 2500 grams/5.5 pounds	CDPH 2010-2012
<b>Births to Teens</b>	Percentage of all births to teens	CDPH 2010-2012
<b>Years of Life Lost</b>	Years of potential life lost	CDPH 2010-2012, Census 2010
<b>Asthma Rates</b>	Age-adjusted rate of emergency department visits for asthma per 10,000 (averaged over 2007-2009)	California EnviroScreen 2.0 (note that this is not an ROI indicator)
<b>Challenges to Participation</b>		
<b>Voting Rates</b>	Percentage of citizens, voting age population that voted in 2010	2014 Registrar of Voters, ACS 2010-14
<b>English Speakers</b>	Percentage of citizens, age 18-64, who speak only English or speak English "well" or "very well"	ACS 2010-14
<b>US Citizenship</b>	Percentage of adults who are U.S. citizens	ACS 2010-14
<b>Neighborhood Stability</b>	Percentage of citizens, over age 1, who live in the same residence as the previous year	ACS 2010-14

ACS=American Community Survey; CDE=California Department of Education; LODES=[Longitudinal Employer-Household Dynamics](#) Origin-Destination Statistics; FDIC=Federal Deposit Insurance Corporation; NCUA=National Credit Union Administration; NETS=National Establishment Time-Series; CDPH=California Department of Public Health; FCC=Federal Communications Commission

## Results

### Regional Potential for Shared-Use Services

Table 2 below shows the share of rural disadvantaged census tracts for the San Joaquin Valley region where current inter-city transit and shared-use services by mode are relatively less expensive and corresponding changes in the average cost for the services, which is weighted by census tract population.

The cost of current transit services is lower in 33% to 48% of the census tracts than estimated for ridesourcing services. If existing transit were replaced by ridesourcing services in these census tracts, then the average per trip cost could increase by \$11 to \$31. The share of transit trips that cost less than high ridesourcing trips is slightly lower for low frequency routes (less than four round trips per day) than higher frequency trips (four or more round trips per day). This suggests that service frequency limitations may not account for the cost-effectiveness of transit relative to ridesourcing. On the other hand, if ridesourcing replaced current transit services, then 52% to 67% of the census tracts could see a reduction in average costs, which could range from an average of \$19 to \$27 per trip

Current transit service is less expensive than ridesplitting in 22% of the census tracts, with an average cost increase of \$11 per trip. Ridesplitting reduces costs on average by about \$27 per trip in about 78% of the census tracts.

Carsharing and split-carsharing show the greatest cost savings potential relative to current transit service. Carsharing is estimated to be less expensive in about 90% of the population census tracts and split-carsharing is less expensive in 100%. Average cost savings range from \$25 to \$28 per trip. In the 10% of the census tracts where transit is less expensive than carsharing, the average cost increase is \$4 per trip.



**Table 2. Relative Cost and Savings of Current Transit and Shared-Use Services in Rural Disadvantaged Communities in the San Joaquin Valley**

Rural Disadvantaged Census Tracts	High Ride-sourcing <i>(driver makes money)</i>	Low Ride-sourcing <i>(driver may not make money)</i>	Ride-splitting	Car-sharing	Split-Carsharing
Transit is Less Expensive than Shared-Use Alternative	48%	33%	22%	10%	0%
Average Increase in Cost with Shared-Use Mode (population weighted)	+\$31	+\$11	+\$11	+\$4	\$0
Shared-Use Less Expensive than Current Transit Service	52%	67%	78%	90%	100%
Average Savings over Transit with Shared-Use Mode (population weighted)	-\$19	-\$27	-\$27	-\$28	-\$25

## Community-Level Potential for Shared-Use Services

The subarea analysis identified communities along inter-city transit lines where different shared-use service modes could potentially provide more cost-effective service than existing fixed-route transit and/or general dial-a-ride service (DAR). Communities were identified where ridesourcing, ridesharing, and/or carsharing had a lower cost than existing fixed-route transit service and/or DAR. Key socio-demographic attributes are also identified. The three use cases are described in Table 3 below.

**Table 3. Use Case for Sub-Regional Analysis**

Use Case	Existing Transit Mode	Shared-use Mode(s) with Estimated Lower Cost
1	Fixed-Route Transit	Ridesourcing and/or Ridesplitting
2	General Dial-A-Ride	Ridesourcing and/or Ridesplitting
3	Fixed-Route and/or General Dial-A-Ride	Carsharing

The analysis indicates that ridesourcing, ridesplitting, and carsharing may provide better service than fixed-route transit and dial a ride transit (DAR) at a lower cost in many areas of the region. See Figure 3 below. Almost all of these areas have highly transit-dependent populations and

face challenges related to K-12 school attendance and access to employment, financial institutions, and health care. See Tables 4 to 6 below.

Most residents in communities that benefit from Use Case 1 live beyond walking distance to bus stops. Buses run infrequently and only from early morning to early evening, so travel to evening college classes and night shift work is not possible. Fewer people use the transit service and as a result the average cost of service is high. Table 4 provides information on transit service, shared-use cost savings, socio-demographic characteristics, and access challenges for these communities.

The cost of providing DAR service is very high in many sparsely populated San Joaquin Valley communities. Taking one rider from their home to the doctor and back, for example, can cost as much as \$80. Users must book rides in advance, which precludes use for urgent or unexpected trips, and reduces the frequency by which residents can access fixed-route transit. In many cases, areas served exclusively by DAR are near, but outside of walking distance, to towns with relatively frequent transit service. See Table 5.

In general, carsharing appears to be more cost-effective than ridesourcing and ridesplitting in areas, such as Huron, Avenal, and Earlimart, that are far from major destinations. Carsharing is competitive with ridesourcing and ridesharing alternatives in Patterson, northwest Kern County, Lamont, Arvin, and many areas of Tulare County. Costs could be further reduced by encouraging “split-carsharing” through carsharing reservation systems. See Table 6.

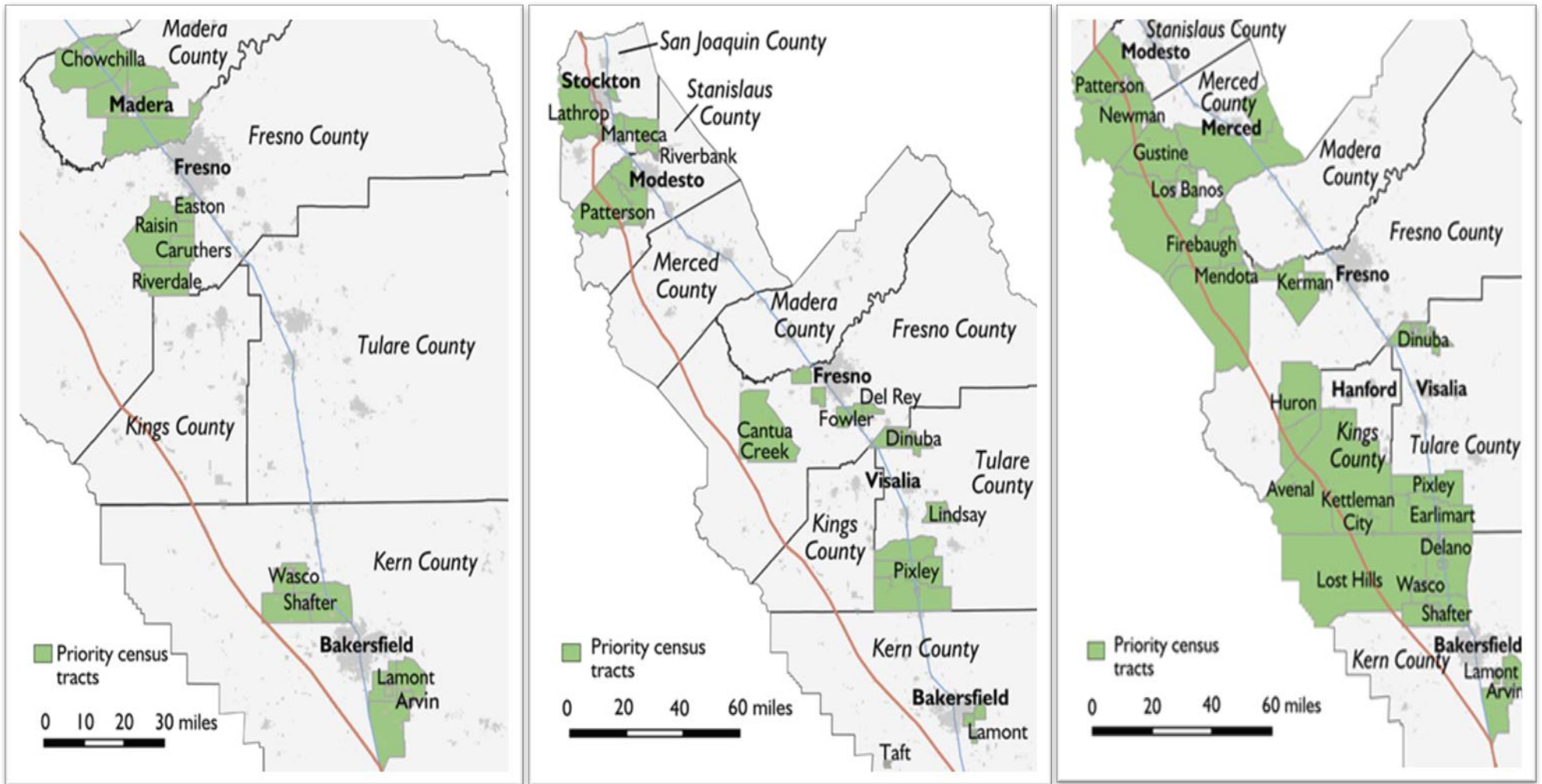


FIGURE 3. Use Case 1 to 3 (right to left)

**Table 4. Community Statistics for Use Case 1**

Counties	Madera			Kern	Kern	
Communities	Northwest Madera	Southwest Madera	East Madera	Caruthers, Easton, Raisin and Riverdale	Lamont and Arvin	Shafter and Wasco
<b>Population (1,000)</b>	31	7	5	21	44	36
<b>Transit Route</b>	Chowchilla-Fairmead	Eastin Arcola-Ripperdan-La Vina	Eastern Madera-College	Coalinga	140	110 & 115
<b>Transit Access</b>	No Walk	No Walk	No Walk	Walk, DAR <sup>h</sup>	DAR	No Walk, Walk, DAR
<b>CES Ranking<sup>a</sup></b>	81-90%	91-95%	76-80%	81-100%	76-90%	76-95%
<b>Daily Transit Round Trips</b>	3	2	3	1	16	5
<b>Average Auto Miles to Major Destination</b>	11	6	8	19	18	23
<b>Hourly Transit Passengers</b>	5	3	3	2	6	8
<b>Average Trip Cost:</b>						
<b>Transit</b>	\$18	\$18	\$18	\$48	\$37	\$24
<b>High Ridesourcing</b>	\$18	\$11	\$13	\$29	\$29	\$36
<b>Low Ridesourcing</b>	\$13	\$9	\$10	\$20	\$20	\$24
<b>Ridesplitting</b>	\$8	\$4	\$5	\$15	\$15	\$19
<b>Population &lt; 18</b>	25%	26%	31%	32%	35%	28%
<b>Population &gt; 64</b>	9%	16%	10%	10%	5%	5%
<b>Lack Vehicle<sup>b</sup></b>	4%	6%	10%	8%	18%	17%
<b>&gt; Basic Income<sup>c</sup></b>	39%	41%	58%	58%	70%	63%
<b>Elementary School Truancy<sup>d</sup></b>	21%	23%	25%	17%	12%	28%
<b>Job Access<sup>e</sup></b>	501	701	431	702	583	736
<b>Bank Access<sup>f</sup></b>	0.14	0	0.2	0.1	0.1	0.1
<b>Health Care Access<sup>g</sup></b>	0.6	0	1.0	0.4	0.1	0.4

<sup>a</sup> California Environmental Protection Agency’s California Communities Environmental Health Screening Tool: CalEnviroScreen (CES) Version 2.0 (CalEnviroScreen 2.0) for ranking communities burdened by environmental and socioeconomic challenges. <sup>b</sup> Households with less than 1 vehicle, or 1 vehicle per worker. <sup>c</sup> Homeowners and renters for whom housing is less than 30% of household income. <sup>d</sup> Students who have missed more than 30 minutes of instruction without an excuse at least three times during the school year. <sup>e</sup> Jobs per 1,000 people, within a 5-mile radius. <sup>f</sup> Banks and credit unions per 1000 people, within a 5-mile radius. <sup>g</sup> Locations providing basic medical services per 1000 population within 5-mile radius. <sup>h</sup> Dial-a-Ride

**Table 5. Community Statistics for Use Case 2**

Counties	Communities	Population (1,000)	Transit Access	CES Ranking	Average Auto Miles to Major Destination	Hourly Transit Passengers	Average Trip Cost: <ul style="list-style-type: none"> <li>• Transit</li> <li>• High Ridesourcing</li> <li>• Low Ridesourcing</li> <li>• Ridesplitting</li> </ul>	% Population < 18	% Population > 64	% Lack Vehicle <sup>b</sup>	% > Basic Income <sup>c</sup>	% Elementary School Truancy <sup>d</sup>	Job Access <sup>e</sup>	Bank Access <sup>f</sup>	Health Care Access <sup>g</sup>
San Joaquin	Escalon	6	DAR <sup>h</sup>	81-85%	16	4	\$33, \$28, \$19, \$14	37	32	5	33	42	22	.14	.8
	Lathrop	15	DAR	81-100%	10	4	\$29, \$16, \$12, \$7	32	8	8	36	25	441	.20	.6
	Rural Manteca	5	DAR	81-85%	11	4	\$33, \$20, \$15, \$10	26	13	8	42	22	668	.21	1.1
	Holt	2	DAR	96-100%	7	4	\$33, \$19, \$14, \$9	27	19	1	61	39	1102	NA	.0
	Southeast Waterloo	3	DAR	91-95%	9	4	\$33, \$12, \$10, \$5	14	21	7	31	21	695	.16	1.5
Stanislaus	Riverbank	16	DAR	81-100%	9	2	\$30, \$17, \$12, \$7	30	10	9	49	18	422	.23	1.7
	Patterson	11	DAR	76-90%	17	2	\$30, \$29, \$19, \$14	33	8	6	1	32	411	.21	.4
	Rural Modesto	8	DAR	76-95%	10	2	\$30, \$17, \$12, \$7	27	12	10	43	22	556	.13	.4
Fresno	Del Rey	3	DAR	91-95%	17	4	\$14, \$27, \$19, \$19	29	10	7	59	27	455	.11	.5
	Fowler	11	DAR	91-100%	13	2	\$28, \$20, \$15, \$10	31	12	10	49	8	1187	.10	.4
	West Park	3	DAR	91-95%	8	2	\$44, \$14, \$11, \$6	23	17	8	54	10	1089	.17	1.2
	Biola	3	DAR	81-85%	15	1	\$99, \$24, \$17, \$10	33	17	11	58	15	878	NA	0
	Cantua Creek	7	DAR	81-85%	35	1	\$57, \$54, \$35, \$30	36	8	16	73	22	611	.18	0
Kern	Fuller Acres Lamont	8	DAR	96-100%	12	3	\$44, \$21, \$14, \$9	41	4	11	60	18	494	.12	.5
	East Bakersfield	10	DAR	86-90%	11	2	\$28, \$17, \$10, \$5	37	5	16	57	42	288	.09	.6

<sup>a</sup> California Environmental Protection Agency's California Communities Environmental Health Screening Tool: CalEnviroScreen (CES) Version 2.0 (CalEnviroScreen 2.0) for ranking communities burdened by environmental and socioeconomic challenges. <sup>b</sup> Households with less than 1 vehicle, or 1 vehicle per worker. <sup>c</sup> Homeowners and renters for whom housing is less than 30% of household income. <sup>d</sup> Students who have missed more than 30 minutes of instruction without an excuse at least three times during the school year. <sup>e</sup> Jobs per 1,000 people, within a 5-mile radius. <sup>f</sup> Banks and credit unions per 1000 people, within a 5-mile radius. <sup>g</sup> Locations providing basic medical services per 1000 population within 5-mile radius. <sup>h</sup> Dial-a-Ride

**Table 6. Community Statistics for Use Case 3**

County	Stanislaus	Merced		Fresno		Kings	Tulare		Kern		
	Patterson Newman	Los Banos, Dos Palos and Gustine	Planada, Le Grand and Althone	Mendota	Huron	Avenal	Cutler, Dinuba and Orosi	Earlimart and Pixley	Lamont and Arvin	Wasco, Delano, MC Farland and Shafter	Lost Hills
<b>Population (1,000)</b>	12	36	10	29	8	19	32	22	41	90	4
<b>Affordable Housing Units</b>	322	687	64	199	451	364	764	288	964	1992	122
<b>CES Ranking <sup>a</sup></b>	76-90%	71-95%	76-90%	76-100%	81-85%	71-75%	81-100%	76-100%	76-95%	76-100%	86-90%
<b>Average Auto Miles to Major Destination</b>	21	36	14	34	47	41	18	38	19	19	52
<b>Daily Transit Round Trips</b>	18	6	4	2	1	3	12	10	17	8	2
<b>Hourly Transit Passengers</b>	2	3	6	6	12	9	8	30	6	6	2
<b>Transit Access</b>	DAR <sup>h</sup>	DAR	No Walk	DAR	DAR	NW	DAR	DAR	DAR	No Walk, Walk, DAR	DAR
<b>Average Trip Cost:</b>											
<b>Transit</b>	\$30	\$42	\$8	\$22	\$48	\$9	\$80	\$91	\$37	\$17	\$21
<b>Carshare</b>	\$15	\$16	\$16	\$15	\$17	\$16	\$13	\$15	\$13	\$16	\$17
<b>Split Carshare</b>	\$7	\$8	\$8	\$8	\$9	\$8	\$6	\$7	\$6	\$5	\$9
<b>Population &lt; 18</b>	32%	31%	30%	12%	37%	39%	34%	41%	35%	30%	41%
<b>Population &gt; 64</b>	8%	9%	7%	8%	6%	5%	9%	4%	5%	5%	2%
<b>Lack Vehicle <sup>b</sup></b>	6%	10%	6%	18%	22%	16%	16%	16%	18%	18%	19%
<b>&gt; Basic Income <sup>c</sup></b>	55%	61%	58%	67%	84%	68%	67%	81%	70%	72%	73%
<b>Elementary School Truancy <sup>d</sup></b>	32%	31%	21%	8%	25%	15%	9%	18%	12%	21%	25%
<b>Job Access <sup>e</sup></b>	402	347	338	581	232	206	689	492	583	663	628
<b>Bank Access <sup>f</sup></b>	0.20	0.17	NA	0.15	NA	0.06	0.10	0.03	NA	0.10	0.00
<b>Health Care Access <sup>g</sup></b>	0.44	0.74	0.09	0.22	0.15	0.45	0.91	0.82	0.88	0.66	0.81

<sup>a</sup> California Environmental Protection Agency's California Communities Environmental Health Screening Tool: CalEnviroScreen (CES) Version 2.0 (CalEnviroScreen 2.0) for ranking communities burdened by environmental and socioeconomic challenges. <sup>b</sup> Households with less than 1 vehicle, or 1 vehicle per worker. <sup>c</sup> Homeowners and renters for whom housing is less than 30% of household income. <sup>d</sup> Students who have missed more than 30 minutes of instruction without an excuse at least three times during the school year. <sup>e</sup> Jobs per 1,000 people, within a 5-mile radius. <sup>f</sup> Banks and credit unions per 1000 people, within a 5-mile radius. <sup>g</sup> Locations providing basic medical services per 1000 population within 5-mile radius. <sup>h</sup> Dial-a-Ride

## Relevant Pilots

Project partners tracked public-private shared-use mobility pilots for lessons learned. Pilots were identified with specific relevance to the goals of this San Joaquin Valley study.

An example of rural ridesharing was found in San Bernardino County, California, where Victor Valley Transit Authority has partnered with Enterprise CarShare to start a carsharing program in Needles at a centrally located credit union. Hourly rentals start at \$5 an hour and daily rentals start at \$40. Vehicles are available twenty-four hours a day, seven days a week. Credit cards are required to use the service, but no application or membership fees are required. The project has been on-going since August 2016.

Examples of carsharing located at affordable housing complexes are programs in Colorado and California. The Denver Housing Authority and Boulder Housing Partners partnered in 2014 with eGo to provide carsharing service in affordable housing neighborhoods. Today, four of five locations are still in service with revenue from full cost (or “market rate”) users and 50% discount users. A key challenge of the pilot was funding staff time and resources to effectively educate residents about the program. Sacramento CarShare launched in June 2017. This program includes eight battery electric vehicles (BEVs) located at three affordable housing communities and the Sacramento Valley Train Station. It is funded by the California Air Resources Board. The partnership includes Zipcar, the City of Sacramento, the Sacramento Municipal Utility District, and the Sacramento Housing Redevelopment Authority. The pilot launched in June of 2017.

Ridesourcing pilots that attempt to address transit gaps have been implemented in Florida, Ohio, and Colorado. Pinellas County Suncoast Transit Authority (St. Petersburg, Fla.) partnered with Uber, Lyft, and taxi companies to launch the Transit Disadvantaged Late Shift service to provide free, on-demand rides between 9 p.m. and 6 a.m. for low-income workers. Key challenges were educating clients to use the service. The pilot began August 1, 2016 and is on-going. In Denver, the Centennial First/Last Mile (Denver) program provided free Lyft Line rides to and from the Dry Creek LRT station. The transit agency in Dayton (Ohio) has recently partnered with Lyft to provide first and last mile service (<http://www.i-riderta.org/RTAConnect>).

## Considerations for Detailed Program Designs

Project partners identified numerous issues that would need to be addressed to develop pilot programs for actual implementation. As discussed above, the typical base ridesourcing fare may not be sufficient to generate enough drivers to meet service demand in the rural disadvantaged areas targeted in this study. The cost-effectiveness analysis in this study uses relative one-way per trip costs. Full annual program costs for existing transit service and alternative shared-use mobility programs would need to be evaluated in a detailed pilot design study.



As the analysis above points out, in many areas existing fixed-route transit service in the San Joaquin Valley is frequently more cost effective than ridesourcing alternatives. Public partners should develop programs with ridesourcing companies that protect cost-effective transit routes. As discussed in the section above, many public-private partnerships with ridesourcing agencies limit subsidies to services that directly address gaps in transit service, such as first and last mile access and travel for late-shift workers.

Ridesourcing services are currently available in some San Joaquin Valley cities from Lyft and Uber. Those companies say mobile broadband coverage is sufficient in the Valley to use the services' smart-phone applications. Many ridesourcing pilots supplement smart-phone access with a telephone dispatching service, which are typically provided by the transit agency. This would also help address language barriers to using ridesourcing apps by the significant share of Valley residents who only speak Spanish. Many of the residents in the study communities also do not have credit cards or bank accounts. Currently this challenge is addressed by including taxis in pilot programs. Methods to permit cash payments are in development as part of pilot program with Pinellas County Suncoast Transit Authority (St. Petersburg, Fla.), which is funded by the Federal Transit Administration, could be available by early 2018. Pre-paid cards are also another payment alternative.

The Americans with Disability Act requires that federal funds be restricted to transit service that provides equal access to both disabled and non-disabled users. Ridesourcing companies typically partner with specialized service providers (like transit agencies) to provide door-to-door services. To reduce DAR costs, the agency will most likely need to meet disabled travel needs with another existing service (e.g., for example, maintaining one or more DAR vans or deviating existing fixed-route transit service).

To achieve GHG reductions from ridesourcing programs, it will likely be important to encourage owners of low-emissions and zero-emissions vehicles, especially battery electric vehicles (BEVs), to become ridesourcing/ridesplitting drivers. Incentives might include the significant rebates from the State of California that are available to Valley residents who purchase BEVs, free or reduced-cost access to recharging stations, and BEV lease support to ridesourcing drivers. The San Joaquin Valley Air Pollution Control District has a robust incentive program, including the Enhanced Fleet Modernization Program designed for lower income participants. The availability of these types of programs could be included in the education and outreach efforts that should be included in the design of the pilot program.

Ridesplitting is not available outside select major cities. The low spatial and temporal demand in rural areas may make ridesplitting challenging in the San Joaquin Valley. Ridesplitting may be facilitated by using the "book ahead" (a day or more in advance of travel) feature that is available from some ridesourcing companies. It may also be facilitated by drivers who live in the community in which a program is focused. Increasing subsidies for volunteer transportation driver programs should also be examined as a cost-effective alternative to meeting travel needs in study areas.



Commercial carsharing services, such as Zipcar, could be hosted at California Low-Income Housing Tax Credit developments, which provide community rooms, access to computers, and yearly funds that could be allocated to operation and maintenance costs of a carsharing program. These developments also create areas of relatively high rural density in the San Joaquin Valley and thus may facilitate carsharing and shared carsharing. However, these programs should be made available to the larger community in order to increase use and revenues. The geographic reach of carsharing programs could be expanded (and drivers' costs reduced) by allowing carsharing members to join a ridesourcing company and use the carsharing vehicles to pick up travelers who live beyond walking distance of the host location.

Lessons learned from many pilots are that significant effort needs to be expended to inform community members about the program and educate them on how to use the program. Given the language, education, and technology barriers in the study areas, outreach and education would be a critical component of any pilot design in the San Joaquin Valley.

## Process

The study was guided by an advisory board that included key MPO staff and Caltrans. This group met monthly (in-person or via teleconference webinar) for the first year of the project. Researchers proposed methodological approaches and data sources with the group and shared early research results. In response, MPO staff provided suggestions and substantive comments. Three stakeholder meetings (one for the northern three MPOs, one for the central four MPOs, and one for Bakersfield) were held in November of 2016 (see Appendix H). An initial existing conditions report was prepared as a draft report for discussion purposes only and released to MPO partners in February of 2017. Researchers reviewed the results of this report with each county through a series of in-person or telephone meetings that included additional stakeholders (most typically transit agency staff) necessary to make informed decisions about priority pilot locations.

Researchers also conducted in-depth discussions with Creighton Randall at the Shared-Use Mobility Center. He is an expert on urban and rural shared-use mobility program operations. Creighton Randall set up a series of meeting for project researchers with shared mobility operators to discuss alternative pilot concepts in more detail.

Researchers presented research results and priority pilot locations for each county at a San Joaquin Valley Regional Policy Council meeting that included all the San Joaquin Valley MPO Directors on April 6, 2017. The MPO directors voted on priority locations and concepts for a deeper analysis in the second phase of the current project. These locations and concepts are described in the next section.

## Pilot Concepts and Locations

In general, the pilot concepts and locations were selected by the eight MPOs for implementation because they could be supported by redirecting funding from current underperforming transit services, showed significant promise for improving mobility and access in rural disadvantaged communities, and could be replicated in other communities throughout the San Joaquin Valley. MPOs and pilot partners in these locations also demonstrated a commitment to contribute funding and staff to pilot development and implementation. Two pilot concepts in four counties were identified.

The first concept is *carsharing and ridesourcing in affordable housing complexes (or Valley GO)* in the Dinuba, Cutler, and Orosi community of Tulare County and the Lamont-Arvin and Wasco communities of Kern County. The development density of selected locations supports walk access to carsharing for residents in the affordable housing complexes and surrounding neighborhoods. Ridesourcing would be introduced to provide first and last mile access to transit and carsharing when it is not possible for residents in these communities to walk to these services. Ridesourcing would also provide direct access to destinations when it is not possible to complete an essential trip with transit or carsharing. Local ridesourcing drivers and discounted access to carsharing vehicles for approved ridesourcing services may overcome the revenue barriers for drivers. Carsharing and ridesourcing would be subsidized to ensure that the services are affordable to users. It is anticipated that this program would produce significant savings from reduced DAR service costs that can be used for sustained operation of public-private partnerships between transit agencies and the carsharing and ridesourcing providers.

The identified pilot communities in Kern and Tulare counties have relatively frequent transit service with stops in town centers. However, residents who live in the sparsely populated areas surrounding these towns must rely on DAR to get to those transit stops. This type of DAR service is very expensive (upwards of \$80 per one-way trip) and limited to advanced reservations (up to seven days in advance). More than one DAR van serves these communities. The intent of the pilot would be to serve enough DAR demand to retire one or more DAR vehicle in each county. Retiring DAR vehicles would provide considerable cost savings (annually \$375,000 in Kern and \$176,000 in Tulare) that could be applied to sustain and expand the carsharing and resourcing programs. Moreover, there are numerous rural disadvantaged communities (with affordable housing complexes) throughout the San Joaquin Valley that could benefit from a similar pilot model (see Figure 3 above).

Vehicles would be installed at seven affordable Self-Help Enterprises Inc. (SHE) housing properties in Kern and Tulare counties (see Table 7) for use in a carsharing and ridesourcing service. A carsharing service would be selected through a competitive bid process. The carsharing service would purchase vehicles; equip vehicles; provide insurance; manage reservations (accessed by phone, website, and smart phone application), vehicle access, and payment systems; and maintain and clean vehicles. The carsharing service would be available to those who live in the pilot affordable housing complexes and the broader community.

Memberships and use would be subsidized (by grant funds) for affordable housing residents and low-income community members.

**Table 7. Proposed Location for Carsharing and Ridesharing Pilots at Affordable Housing Complexes**

Location	Property Name	Address	Units
Dinuba-Cutler-Orosi (Tulare)	Sand Creek	41020 Road 124, Orosi, CA 93647	60
	Villa de Guadalupe	12554 Avenue 408, Orosi, CA 93647	60
	Viscaya Gardens	1000 Rosemary Ave., Dinuba, CA 93618	48
Lamont-Arvin (Kern)	Rancho Lindo	9023 Camino La Jolla, Lamont, CA 93241	44
	Caliente Creek	909 Meyer Street, Arvin, CA 93203	46
Wasco (Kern)	Sunrise Villa	1600 Poplar Avenue, Wasco, CA 93280	44
	Almond Court	801 Almond Court, Wasco, CA 93280	36

Some of the vehicles provided by the carsharing service would be dedicated to ridesourcing use. Residents of affordable housing complexes would be able to join ridesourcing companies and use these vehicles to provide first and last mile travel to existing transit service or direct transport for eligible trips (e.g., medical appointments, late shift workers, night school students, and grocery shopping) in designated service areas. Drivers would be paid an adjusted ridesourcing rate that will cover some cost of the carsharing rental, which would be linked to the quantity of rides provided. Users could access their local DAR provider by phone (who will forward the request to participating ridesourcing companies) or book a ride on a ridesourcing website or smartphone application. Qualified users and trips would be allowed to use the service at no or reduced cost (subsidized by the grant). Methods would be developed to allow unbanked users to access the carsharing and ridesourcing pilot services. We have interviewed potential carsharing partners to confirm the feasibility and cost-estimates of providing the described carsharing and ridesourcing service (Enterprise CarShare, Zipcar, and e-rive). Victor Valley Transit Authority in Needles California started a carsharing program in August of 2016 with a minimum revenue guarantee (about \$35,000) to Enterprise Carshare ([vvta.org/carshare](http://vvta.org/carshare)). The program is largely self-sufficient with a healthy share of the revenue guarantee still available.

The second concept is a *technology platform that enables improved efficiency for multiple independently operated responsive transportation services (or Valley FLEX)* in jurisdictions of northeast Stanislaus and southeast San Joaquin counties. These services include DAR, volunteer transportation organizations, carsharing, taxis, and ridesourcing. The platform aggregates the demand and supply of available services: (a) participating transit providers will communicate the demand for travel (departure/arrival times and locations) and (b) suppliers will communicate vehicle availability, capacity, and fares. The platform will use this data to match travelers and drivers to minimize service costs, travel times, and GHG emissions by filling

available seats and reducing empty travel miles. Outreach will be conducted to engage and expand service providers and to increase the pool of volunteer drivers.

Communities in San Joaquin and Stanislaus counties also have high DAR costs. However, here no single transit provider can reduce the number of DAR vans they operate and still meet the needs of those who must transport wheelchair equipment when they travel. Multiple independent transit agencies, volunteer transportation organizations, and ridesourcing services provide transportation in these areas. To reduce DAR costs and expand access in these communities, a technology platform is needed to coordinate existing services and travel demand to better match trips, fill empty seats, and reduce empty vehicle miles traveled. Such a technology platform (FlexDenmark) was implemented in most of rural Denmark and reduced costs of five participating transit agencies by 20% (6). The program has operated for 15 years.

The Valley FLEX technology platform will merge the demand for DAR and the supply of vehicles from public DAR vans, deviated buses, volunteer transportation organizations (VTOs), carsharing, taxis, and ridesourcing (e.g., Uber and Lyft). Participating transit providers will communicate the demand for travel (departure/arrival times and locations) and suppliers will communicate vehicle availability, capacity, and fares. Valley FLEX will use demand and supply data to match travelers with compatible origin-destination locations and departure-arrival times to minimize service costs, travel times, vehicle miles traveled (VMT), and GHG emissions (see Figure 4). Reservations can be made in advance or on-demand. Methods will be developed to address the payment barriers of unbanked customers. The platform acts as a competitive marketplace that lowers costs by rewarding the cheapest and fastest providers. Two companies that provide the proposed platform (DemandTrans and TransLoc) have confirmed that they are ready and able to provide and operate the pilot technology platform for this project. A vendor will be secured through a competitive bidding process.

Project partners are DAR providers in the pilot areas (San Joaquin Regional Transit, Stanislaus County Transit, and City of Escalon Transit), volunteer transportation organizations (MOVE), and ridesourcing services that operate in the area. Users can request the service by calling the DAR service provider, using a smart phone application, and/or accessing a website. Advanced and real-time travel demand information is provided by the DAR transit agencies and supply information is provided by transportation services (i.e., DAR, VTOs, carsharing, and ridesourcing). The Valley FLEX technology platform vendor would continuously input the demand and supply data from project partners and communicate available rides to users via phone, internet, or smart phone to users and drivers via smart phone or tablet. The project would also support the growth of the existing pool of volunteer transportation drivers through outreach and engagement services provided by MOVE.

The service would be scaled, first, throughout San Joaquin and Stanislaus counties (incorporated and unincorporated areas), and subsequently throughout the Valley. Economies of scale are achieved with high trip volumes. Assuming operating cost reduction of 20% and using total operating expenses for DAR in San Joaquin and Stanislaus counties (from the 2016

Federal Transit Database), we estimate a cost savings of \$1.2 million annually, which could be applied to fund ongoing operations (see Table 8). If implemented throughout the Valley, annual operating costs could be reduced by almost \$6 million.

**Table 8. Estimated Annual Cost Savings from Valley FLEX in San Joaquin and Stanislaus Counties**

<b>Transit Agencies</b>	<b>Annual Operating Savings</b>
San Joaquin Regional Transit District	\$406,000
Stanislaus County Public Works – Transit	\$278,000
City of Escalon	\$14,000
Modesto Area Express	\$516,000
City of Manteca	\$68,000
<b>Total</b>	<b>\$1,283,000</b>

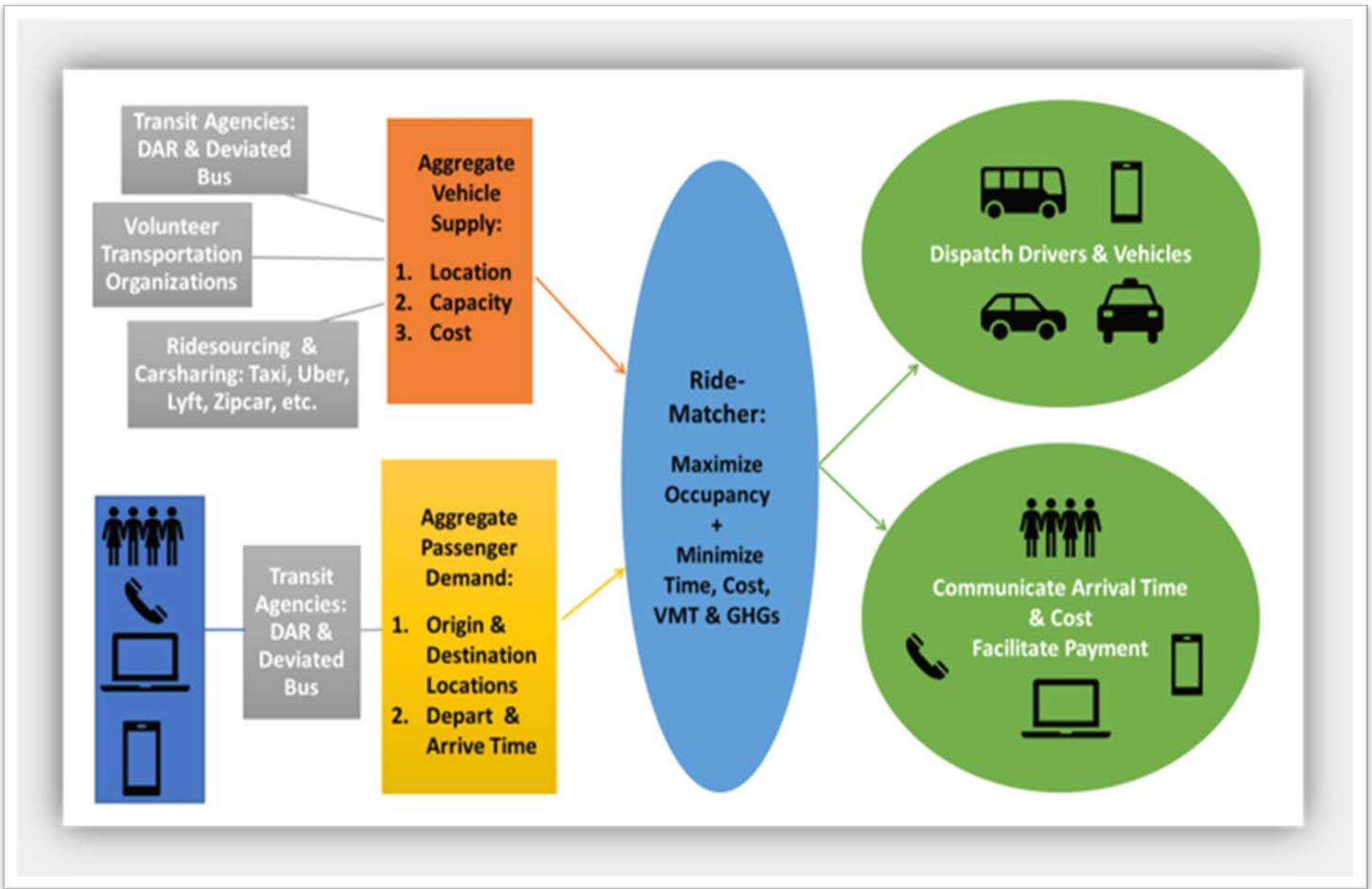


FIGURE 4. System diagram for Valley FLEX

## Conclusions

Shared-use mobility services largely serve major metropolitan areas. However, increasingly officials who represent rural communities want to know whether these types of services may be able to help them provide more cost-effective access to rural residents than is currently possible by fixed-route and DAR transit services. Many of these officials must contend with low farebox recovery rates that threaten transit funding and subsequent cutbacks in transit services that are often strongly opposed by constituents. In this study, the cost-effectiveness of existing inter-city transit service in rural disadvantaged communities in the San Joaquin Valley (California) is compared to hypothetical ridesharing and carsharing services. The results of our analysis suggest that there is potential to reduce-transit costs and reinvest those cost savings to expand shared mobility services, if demonstrations show that these services improve access in rural disadvantaged communities. However, the results also show that transit agencies provide very cost-effective transit services under challenging conditions in many communities across the Valley. Moreover, current ridesourcing fares are unlikely to generate enough drivers to serve more remote rural disadvantage areas of the Valley. Counties that want to contract with ridesourcing companies to provide services in more remote rural areas need to understand how to motivate drivers to serve those areas using some form of increased financial compensation, which should be included in any estimate of cost for a public-private partnership. Programs that undercut the ridership base of cost-effective transit services would tend to increase total long-run costs to agencies and passengers. Careful analysis is required to understand where, when, and how shared-use mobility services can be introduced to expand transportation access in to residents in rural communities. We developed two project concepts suitable for seven communities in four San Joaquin Valley counties based on our analysis. The next step in this project is to conduct more in-depth evaluation of the proposed concepts and locations to further refine the pilot concepts for implementation.

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- (3) Center for Neighborhood Technology 2016, AllTransitTM, [alltransit.cnt.org](http://alltransit.cnt.org), Accessed July 25, 2017.
- (4) CNET, Uber tests taking 30% commission from new drivers. Dara Kerr. May 18, 2015. Accessed July 2017.
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## Appendix A: List of Reports Reviewed

### Fresno

- Fresno Council of Governments, Short Range Transit Plan for the Rural Fresno County Area 2016-2020, June 2015
- City of Fresno, Fresno County Public Transportation Gap Analysis and Service Coordination Plan, December 2013
- Fresno County Rural Transit Agency, Section III 2015 Productivity Report
- Fresno County Gap Analysis, Appendix 1: Survey of Transportation Disadvantaged Populations
- City of Fresno, Short Range Transit Plan 2016-2020, June 2015
- Fresno Council of Governments, Short Range Transit Plan for the Rural Fresno County Area 2015-2020, Proposed Adoption June 2015
- City of Fresno, 2014-2018 Short Range Transit Plan, June 2013
- Fresno Council of Governments, Unmet Public Transportation Need Within Fresno County (Notice of 2015-2016 Findings), June 2015
- Fresno Council of Governments, Unmet Public Transportation Needs Within Fresno County (Notice of 2014-2015 Findings), June 2014
- Fresno Council of Governments, Letter of Support – LEAP Green Raiteros (Riders) Rural RideShare Pilot Project, April 2015
- City of Fresno, Fresno County Public Transportation Gap Analysis and Service Coordination Plan, March 2015
- Fresno Council of Governments, Fresno County Transportation Guide
- Fresno Rural Transit Map

### Kern

- Kern Council of Governments, HOV/BRT Study, June 2012
- Kern Council of Governments, Regional Rural Transit Strategy, August 2003

- Kern County Rail Advisory Committee, Metropolitan Bakersfield Fixed Guideway Passenger System, October 1991
- Kern Council of Governments, Eastern Sierra Public Transportation Study, June 2005
- Kern Council of Governments, Unmet Transit Needs Public Hearing Process 2014, February 2014
- Regional Rural Transit Strategy Presentation, August 2003
- Kern county UTN Information
- Kern Council of Governments, Kern County's 2013 Update to the Coordinated Public Transit-Human Services Transportation Plan, November 2013
- Kern Council of Governments, Program Management Plan FY 2008-2009 Funding, May 2009

#### **Kings**

- Kings County Association of Governments, Trans Development Plan, March 2015
- Kings County Association of Governments, Meeting Agenda, June 2016

#### **Madera**

- Madera County Transportation Commission, Unmet Transit Needs for Madera County, May 2016
- Unmet Transit Needs within Madera County (Notice of 2012-2013 Findings) , May 2012
- Madera County Transportation Commission, Madera County Short Rang Transit Development Plan FY 2009/10-2013/14, October 2009
- Madera County Transportation Commission, 2015 Coordinated Public Transit Human Services Transportation Plan, July 2015

#### **Merced**

- Transit Joint Powers Authority for Merced County, 2012-2017 Short Range Transit Plan (Volume 1), June 2012

- Transit Joint Powers Authority for Merced County, 2012-2017 Short Range Transit Plan (Volume 4), June 2012
- Merced County of Association of Governments, Unmet Transit Needs FY 2016-2017
- Transit Joint Powers Authority for Merced County, 2012-2017 Short Range Transit Plan (Volume 3), June 2012
- Transit Joint Powers Authority for Merced County, 2012-2017 Short Range Transit Plan (Volume 2), June 2012
- Delivery System Gap Analysis Merced County, November 2013
- Merced County Association of Governments, Meeting Notes, July 2015
- Merced SRTP, Notes

### **San Joaquin**

- San Joaquin Regional Transit District, Short Range Transit Plan 2014-2018, September 2013
- San Joaquin Council of Governments, Draft Regional Transit Systems Plan: Strategically Investing In Public Transportation, July 2016
- San Joaquin Regional Transit District, 2014-2018 Short Range Transit Plan
- San Joaquin Council of Governments, Fiscal Year 2016-2017 Unmet Transit Needs
- San Joaquin Council of Governments, Analysis & Determination of Unmet Transit Needs for Fiscal Year 2014-2015
- San Joaquin Council of Governments, Analysis & Determination of Unmet Transit Needs for Fiscal Year 2015-2016
- Short Range Transit Plan Review Template, June 8
- Personal Notes, Lyft Presentation to SJCOG, July 2015
- 2013-2014 San Joaquin COG Unmet Transit Needs Info Report
- Personal Notes, Ripon SRTP AB

- San Joaquin Regional Transit District and the City of Stockton, Transit Gap Study, January 2010
- San Joaquin Regional Transit District, San Joaquin County Coordinated Transportation Plan, Updated: February 2012

### **Stanislaus**

- Stanislaus Council of Governments, 2016/2017 Unmet Transit Needs Identification and Analysis Report, March 2016
- Stanislaus Regional Transit, Stanislaus Regional Transit Comprehensive Operations Analysis, June 2014
- Stanislaus Council of Governments, Public Transit – Human Services Coordination Plan, February 2016
- Stanislaus Council of Governments, 2015-2016 Unmet Transit Needs Identification and Analysis Report, March 2015

### **Tulare**

- Tulare County Association of Governments, Unmet Transit Needs: Identification and Analysis Report, June 2015
- Tulare County Association of Governments, Southeast Tulare County Transit Mobility Plan, December 2015
- Tulare County Association of Governments, Tulare County Coordinated Transportation Plan, 2015
- Tulare County Association of Governments, Program Management Plan - FTA Section 5310 Program: Enhanced Mobility of Seniors and Individuals with Disabilities, September 2015
- Tulare County Association of Governments, Tulare County Long Range Transit Plan: State of the System Report, March 2015
- Tulare County Association of Governments, FY 2013-2015 Triennial Performance Audit of Tulare County Association of Governments, June 2016

## **Appendix B: Transit Information and Cost Estimates for Shared-Use Alternatives by Census Tract by County**

County	Census Tracts	Origin City/CDP	Population	Transit Round Trips	Transit Cost per Passenger	Transit Passengers per Hours	Transit Access	Route	Auto Distance (miles)	High Ridesource Fare	Low Ridesource Fare	Ridesplit Fare	Affordable Housing Units	Carshare Fare	Split-Carshare Fare
Fresno	6019007500	Caruthers	5,312	1	\$41	3.66	WA	Coalinga Transit	16.7	\$26	\$18	\$13	0	\$12	\$6
Fresno	6019001800	Fresno: Easton	4,485	1	\$44	2.44	WA	Coalinga Transit	7.3	\$13	\$10	\$5	0	\$11	\$5
Fresno	6019007600	Fresno: Raisin City	4,968	1	\$44	2.44	DAR	Coalinga Transit	20	\$32	\$21	\$16	0	\$13	\$7
Fresno	6019007802	Huron	4,908	1	\$48	12.31	DAR+TR	Coalinga Transit	43.1	\$65	\$42	\$37	260	\$17	\$8
Fresno	6019007801	Huron	3,050	1	\$48	12.31	DAR+TR	Coalinga Transit	53.1	\$79	\$51	\$46	191	\$18	\$9
Fresno	6019007700	Riverdale	6,534	1	\$60	1.19	DAR	Coalinga Transit	26.9	\$41	\$28	\$23	0	\$14	\$7
Fresno	6019006900	Del Rey	3,017	1	\$14	4.06	DAR	DAR Del Rey Transit	17	\$27	\$19	\$14	48	\$12	\$6
Fresno	6019001700	Fresno: Fowler	5,861	1	\$28	2.06	DAR	DAR Fowler	12	\$19	\$14	\$9	0	\$11	\$6
Fresno	6019001900	Fresno: West Park	2,743	1	\$44	2.44	DAR	DAR Rural Transit	8.1	\$14	\$11	\$6	0	\$11	\$6
Fresno	6019004100	Fresno	2,568	1	\$99	0.68	DAR	DAR Rural Transit	14.9	\$24	\$17	\$12	44	\$12	\$6
Fresno	6019008200	Cantua Creek	6,830	2	\$57	1.26	DAR	San Joaquin Transit	35	\$54	\$35	\$30	0	\$16	\$8
Fresno	6019001600	Fowler	5,281	3	\$28	2.06	DAR	Southeast Transit	12.7	\$20	\$15	\$10	0	\$11	\$6
Fresno	6019008401	Firebaugh	8,282	1	\$25	4.24	DAR+TR	Westside Transit	43.7	\$65	\$43	\$38	118	\$16	\$8
Fresno	6019008402	Firebaugh	1,344	1	\$25	4.24	DAR+TR	Westside Transit	53.2	\$80	\$51	\$46	0	\$18	\$9
Fresno	6019004002	Kerman	7,325	2	\$11	7.43	WA	Westside Transit	14.4	\$22	\$16	\$11	81	\$12	\$6
Fresno	6019003900	Kerman	4,978	2	\$34	4.88	DAR+TR	Westside Transit	20.6	\$32	\$22	\$17	0	\$13	\$7
Fresno	6019008302	Mendota	6,745	2	\$22	7.02	DAR+TR	Westside Transit	51.4	\$78	\$50	\$45	81	\$18	\$9
Kern	6029006301	Arvin	4,239	17	\$23	7.6	NW	140	19.9	\$30	\$21	\$16	0	\$13	\$6
Kern	6029006303	Arvin	6,768	17	\$23	7.6	NW	140	21.4	\$33	\$23	\$18	426	\$13	\$7
Kern	6029006304	Arvin	4,124	17	\$23	7.6	NW	140	22.1	\$34	\$23	\$18	49	\$13	\$7
Kern	6029006202	Arvin	6,887	17	\$23	7.6	NW	140	24.5	\$39	\$26	\$21	72	\$14	\$7
Kern	6029002400	Acres	8,470	15	\$29	1.7	DAR	DAR	7.4	\$14	\$10	\$5	222	\$11	\$6
Kern	6029001000	Bakersfield	10,276	15	\$29	1.7	DAR	DAR	10.7	\$17	\$13	\$8	0	\$11	\$6
Kern	6029006201	Lamont	3,244	17	\$32	4.41	WA	140	12.9	\$21	\$15	\$10	0	\$12	\$6
Kern	6029005003	Delano	3,468	6	\$23	NA	WA	110	31.9	\$48	\$32	\$27	0	\$14	\$7
Kern	6029004800	Delano	10,591	6	\$23	7.6	WA	110	32	\$47	\$32	\$27	346	\$14	\$7
Kern	6029004901	Delano	5,039	6	\$23	7.6	WA	110	34.3	\$51	\$34	\$29	346	\$15	\$7
Kern	6029006401	Lamont	8,698	17	\$54	3.4	DAR+TR	140	13.4	\$21	\$15	\$10	136	\$12	\$6
Kern	6029006403	Lamont	6,513	17	\$54	3.4	DAR+TR	140	14.3	\$24	\$16	\$11	0	\$12	\$6
Kern	6029006404	Lamont	3,318	17	\$54	3.4	DAR+TR	140	16.5	\$26	\$18	\$13	281	\$12	\$6
Kern	6029004500	Lost Hills	3,838	2	\$21	3.4	DAR	115	51.7	\$76	\$50	\$45	122	\$17	\$9
Kern	6029004701	MC Farland	9,277	8	\$23	7.6	WA	110	26.1	\$39	\$27	\$22	339	\$14	\$7
Kern	6029004702	MC Farland	4,121	8	\$23	7.6	WA	110	26.1	\$39	\$27	\$22	0	\$13	\$7
Kern	6029004604	MC Farland	13,758	8	\$23	7.6	NW	110	27.3	\$41	\$28	\$23	142	\$14	\$7
Kern	6029004601	MC Farland	4,434	8	\$23	7.6	NW	110	35.9	\$54	\$36	\$31	0	\$15	\$8
Kern	6029004603	MC Farland	2,731	8	\$23	7.6	NW	110	36.8	\$55	\$36	\$31	0	\$15	\$8
Kern	6029003900	Shafter	2,791	9	\$33	10.1	DAR+TR	110	13.8	\$22	\$16	\$11	0	\$12	\$6
Kern	6029004000	Shafter	8,007	9	\$23	7.6	WA	29	18.8	\$29	\$20	\$15	129	\$13	\$6
Kern	6029004102	Shafter	5,553	9	\$23	7.6	WA	29	18.8	\$30	\$20	\$15	81	\$13	\$6
Kern	6029004200	Shafter	1,279	9	\$33	10.1	DAR+TR	29	25.6	\$41	\$27	\$22	0	\$14	\$7
Kern	6029003500	Taft	6,465	6	\$173	3.7	DAR	120	36	\$55	\$36	\$31	0	\$16	\$8
Kern	6029003600	Taft	4,867	6	\$173	3.7	DAR	120	37.9	\$58	\$38	\$33	0	\$16	\$8
Kern	6029004301	Wasco	7,763	8	\$23	7.6	NW	110	26.6	\$40	\$27	\$22	492	\$14	\$7
Kern	6029004402	Wasco	5,150	8	\$23	7.6	WA	110	26.9	\$41	\$27	\$22	117	\$14	\$7
Kern	6029004302	Wasco	5,923	8	\$23	7.6	NW	110	31.3	\$48	\$32	\$27	0	\$15	\$7
Kings	6031981800	Avenal	4,635	3	\$9	8.6	NW	Avenal	41	\$62	\$40	\$35	0	\$16	\$8
Kings	6031001701	Avenal	9,918	3	\$9	8.6	NW	Avenal	45	\$67	\$44	\$39	364	\$17	\$8
Kings	6031001601	Kettleman City	4,681	3	\$9	8.6	NW	Avenal	30.8	\$49	\$32	\$27	0	\$16	\$8

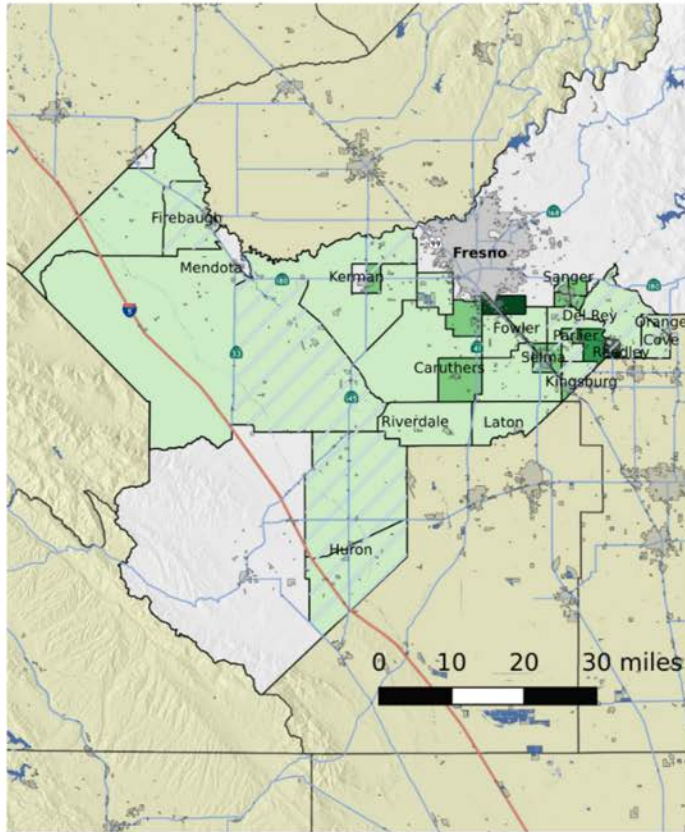
County	Census Tracts	Origin City/CDP	Population	Transit Round Trips	Transit Cost per Passenger	Transit Passengers per Hours	Transit Access	Route	Auto Distance (miles)	High Ridesource Fare	Low Ridesource Fare	Ridesplit Fare	Affordable Housing Units	Carshare Fare	Split-Carshare Fare
Madera	6039000201	Chowchilla:Sharon, Berenda, Fairmead	9,123	5	\$18	4.6	NW	Chowchilla-Fairmead	12.4	\$19	\$14	\$9	0	\$11	\$6
Madera	6039000202	Chowchilla: Dairyland, Minturn, Sierra Vista, Fairmead	5,939	5	\$18	4.6	NW	Chowchilla-Fairmead	16.9	\$25	\$18	\$13	0	\$12	\$6
Madera	6039000508	Madera:Parkside, Borden, Bondelle-Madera	7,414	5	\$18	3.3	NW	Eastern Madera, College	6.1	\$11	\$9	\$4	48	\$11	\$5
Madera	6039000503	Madera:Italian Swiss Colony, Notarb	9,547	5	\$18	4.6	NW	Chowchilla-Fairmead	7.2	\$13	\$10	\$5	0	\$11	\$6
Madera	6039001000	Madera:La Vina, Ripperdan, Gregg, Triago	5,326	2	\$18	3.3	NW	Eastin Arcola-Ripperdan -La Vina	8.4	\$13	\$10	\$5	56	\$10	\$5
Madera	6039000506	Madera:Kismet, Notabre, Madera Acres	6,590	5	\$18	4.6	NW	Chowchilla-Fairmead	9.2	\$15	\$11	\$6	0	\$11	\$6
Madera	6039000507	Madera:Lake Madera County Estates	10,841	5	\$18	3.3	NW	Eastern Madera, College	10.3	\$17	\$13	\$8	0	\$11	\$6
Merced	6047002402	Dos Palos	8,390	8	\$37	2.7	DAR+TR	Dos Palos Link	28	\$43	\$29	\$24	367	\$14	\$7
Merced	6047002000	Gustine	8,093	3	\$57	2.7	DAR+TR	Gustine Link	37.1	\$58	\$37	\$32	114	\$16	\$8
Merced	6047001902	Le Grand	2,545	7	\$8	5.9	NW	Planada Commuter	17	\$27	\$19	\$14	0	\$13	\$6
Merced	6047002202	Los Banos	10,363	7	\$37	2.7	DAR+TR	Dos Palos Link, Gustine Link, Los Banos Commuter	35.4	\$54	\$35	\$30	0	\$16	\$8
Merced	6047002201	Los Banos	5,690	7	\$37	2.7	DAR+TR	Los Banos Commuter	36.6	\$56	\$37	\$32	206	\$16	\$8
Merced	6047002100	Los Banos	3,589	7	\$37	2.7	DAR+TR	Dos Palos Link, Gustine Link, Los Banos Commuter	51.5	\$79	\$50	\$45	0	\$19	\$9
Merced	6047001901	Merced:Planata	5,539	7	\$8	6	NW	Planada Commuter	12.9	\$23	\$16	\$11	64	\$13	\$6
Merced	6047000901	Nido	4,037	7	\$8	6	NW	Planada Commuter	14.4	\$24	\$17	\$12	0	\$12	\$6
San Joaquin	6077004902	Escalon	6,215	4	\$33	3.9	DAR	1 Escalon, 14 Modesto Area Express, 60 Stan RT, 41 Modesto Area Express)	15.9	\$28	\$19	\$14	0	\$14	\$7
San Joaquin	6077005127	Lathrop	5,442	4	\$33	3.9	DAR	97	9.7	\$16	\$12	\$7	0	\$11	\$6
San Joaquin	6077005119	Lathrop	6,100	4	\$33	3.9	DAR	97	9.9	\$15	\$12	\$7	0	\$11	\$5
San Joaquin	6077005129	Lathrop	3,364	4	\$14	3.9	DAR	97	10.7	\$18	\$13	\$8	0	\$11	\$6
San Joaquin	6077005131	Manteca	4,626	11	\$33	3.9	DAR	91	13.1	\$20	\$15	\$10	0	\$11	\$6
San Joaquin	6077003601	East Waterloo	3,481	9	\$33	3.9	DAR	77	7.4	\$12	\$10	\$5	0	\$11	\$5
San Joaquin	6077003900	Stockton: Holt	1,648	1	\$33	3.9	DAR	77	11.1	\$19	\$14	\$9	0	\$12	\$6

County	Census Tracts	Origin City/CDP	Population	Transit Round Trips	Transit Cost per Passenger	Transit Passengers per Hours	Transit Access	Route	Auto Distance (miles)	High Ridesource Fare	Low Ridesource Fare	Ridesplit Fare	Affordable Housing Units	Carshare Fare	Split-Carshare Fare
Stanislaus	6099004000	Modesto	3,780	1	\$30	2.4	DAR	45	9.2	\$16	\$12	\$7	0	\$11	\$6
Stanislaus	6099003100	Modesto	3,985	1	\$30	2.4	DAR	45	10.3	\$19	\$13	\$8	0	\$12	\$6
Stanislaus	6099003400	Newman	1,289	18	\$30	2.4	DAR	45	35.8	\$70	\$40	\$35	0	\$22	\$11
Stanislaus	6099003201	Patterson	5,347	18	\$30	2.4	DAR	45	16.5	\$28	\$19	\$14	322	\$13	\$7
Stanislaus	6099003300	Patterson	5,837	18	\$30	2.4	DAR	45	21.3	\$36	\$23	\$18	0	\$14	\$7
Stanislaus	6099000303	Riverbank	5,714	16	\$30	2.4	DAR	60	8.7	\$16	\$12	\$7	0	\$12	\$6
Stanislaus	6099000302	Riverbank	2,738	16	\$30	2.4	DAR	60	9	\$17	\$12	\$7	42	\$12	\$6
Stanislaus	6099000304	Riverbank	5,378	16	\$30	2.4	DAR	60	9.3	\$17	\$12	\$7	65	\$12	\$6
Stanislaus	6099000301	Riverbank	1,993	16	\$30	2.4	DAR	60	10.6	\$19	\$13	\$8	20	\$12	\$6
Tulare	6107000600	Cutler	6,124	12	\$80	7.9	DAR	10 (North County)	13.2	\$22	\$15	\$10	121	\$12	\$6
Tulare	6107000502	Dinuba	4,121	12	\$80	7.9	DAR	Route 50	20.3	\$31	\$22	\$17	54	\$13	\$6
Tulare	6107000401	Dinuba	6,020	12	\$80	7.9	DAR	10 (North County)	20.7	\$34	\$22	\$17	273	\$14	\$7
Tulare	6107000301	Dinuba	6,771	12	\$80	7.9	DAR	Route 50	21.5	\$33	\$23	\$18	36	\$13	\$7
Tulare	6107004400	Earlimart	7,157	10	\$91	30.1	DAR	20 (South County)	39.3	\$57	\$38	\$33	123	\$15	\$7
Tulare	6107004300	Earlimart	7,755	10	\$91	30.1	DAR	20 (South County)	41.7	\$61	\$41	\$36	70	\$16	\$8
Tulare	6107001400	Exeter	5,874	25	\$10	10.6	DAR	none	9.8	\$15	\$12	\$7	48	\$11	\$5
Tulare	6107002500	Lindsay	4,429	12	\$51	3.1	DAR	60+40	17.8	\$27	\$19	\$14	0	\$12	\$6
Tulare	6107002601	Lindsay	4,443	12	\$51	3.1	DAR	40	18.6	\$29	\$20	\$15	18	\$12	\$6
Tulare	6107000201	Orosi	9,338	12	\$80	7.9	DAR	10 (North County)	15	\$25	\$17	\$12	280	\$13	\$6
Tulare	6107004200	Pixley	7,093	10	\$91	30.1	DAR	20 (South County)	32.9	\$47	\$32	\$27	95	\$14	\$7
Tulare	6107003200	Tipton	6,718	10	\$91	30.1	DAR	20 (South County)	27.8	\$40	\$28	\$23	0	\$13	\$7
Tulare	6107000701	Woodlake	2,564	18	\$10	10.6	DAR	30 (Northeast County)	16	\$24	\$17	\$12	60	\$12	\$6

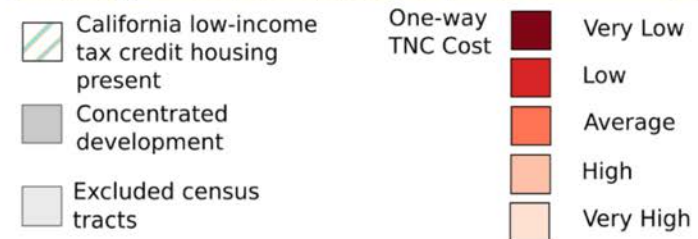
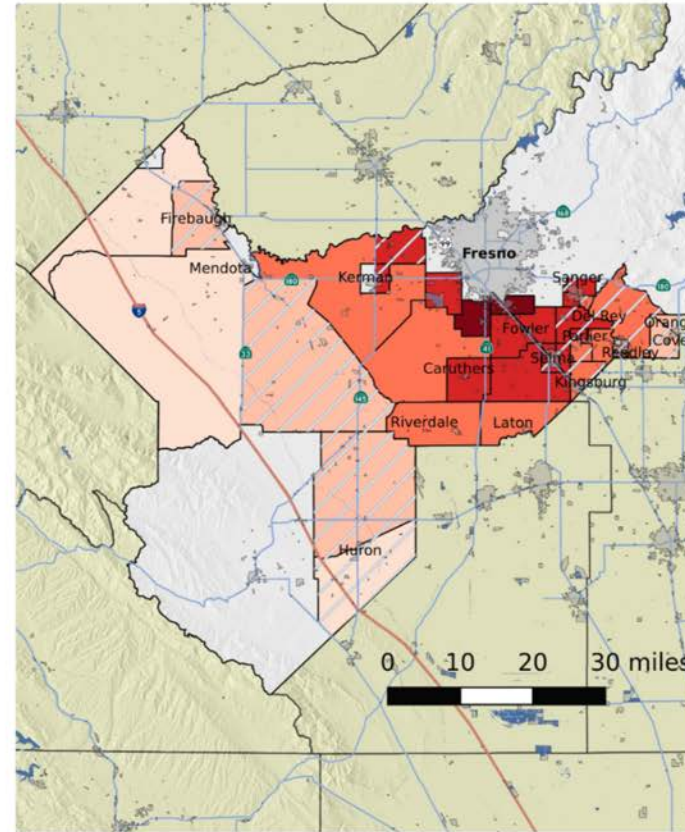


**Appendix C: Maps of Relative Transit Service and New Shared-Use  
Mobility Costs by Census Tract by County**

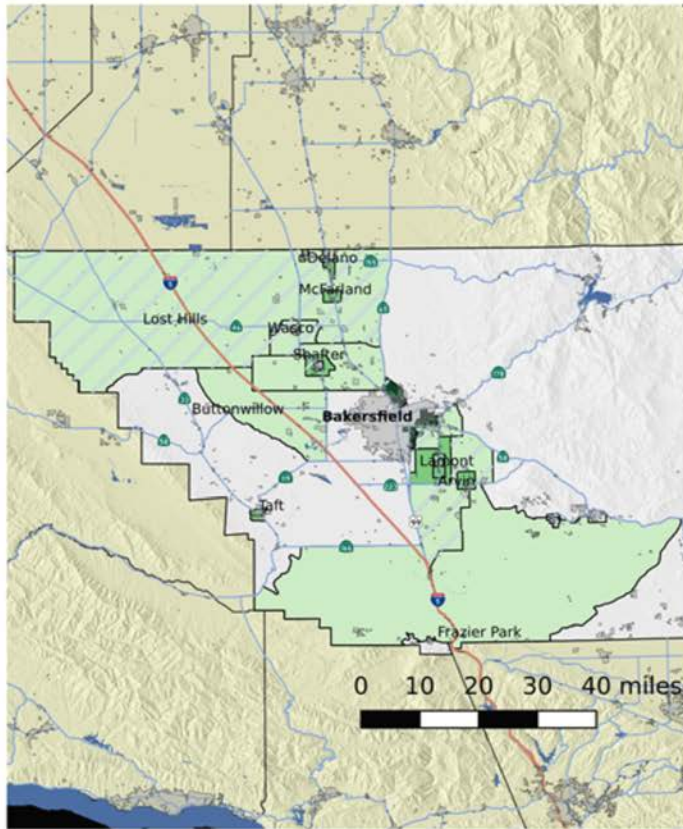
## Transit Service for Fresno County



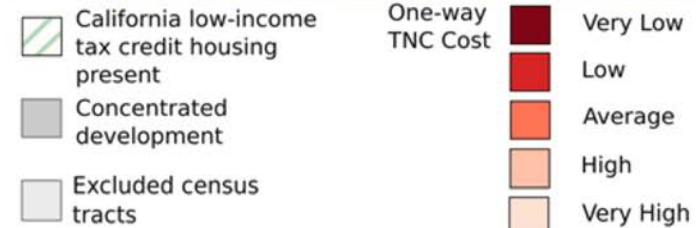
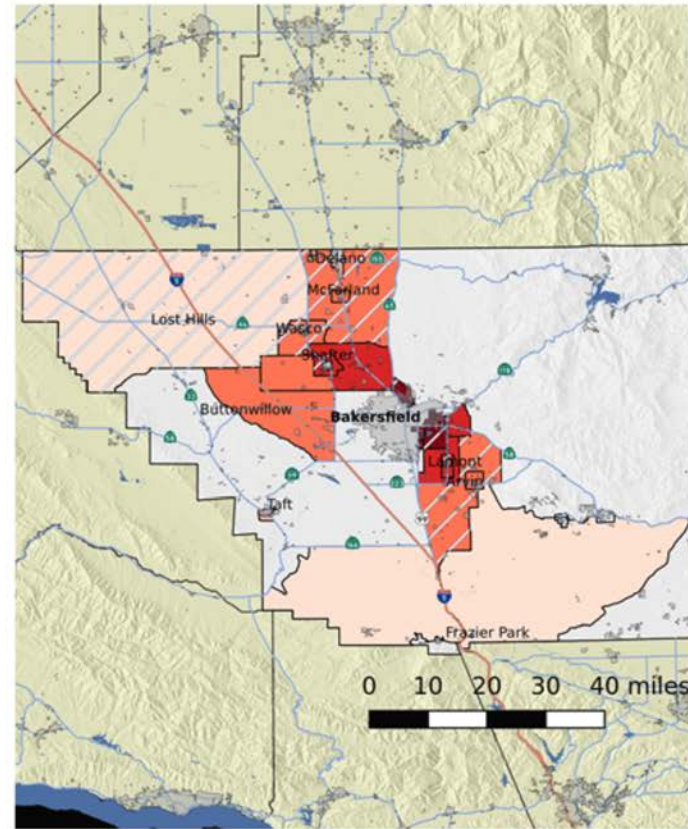
## Relative New Mobility Costs for Fresno County



## Transit Service for Kern County

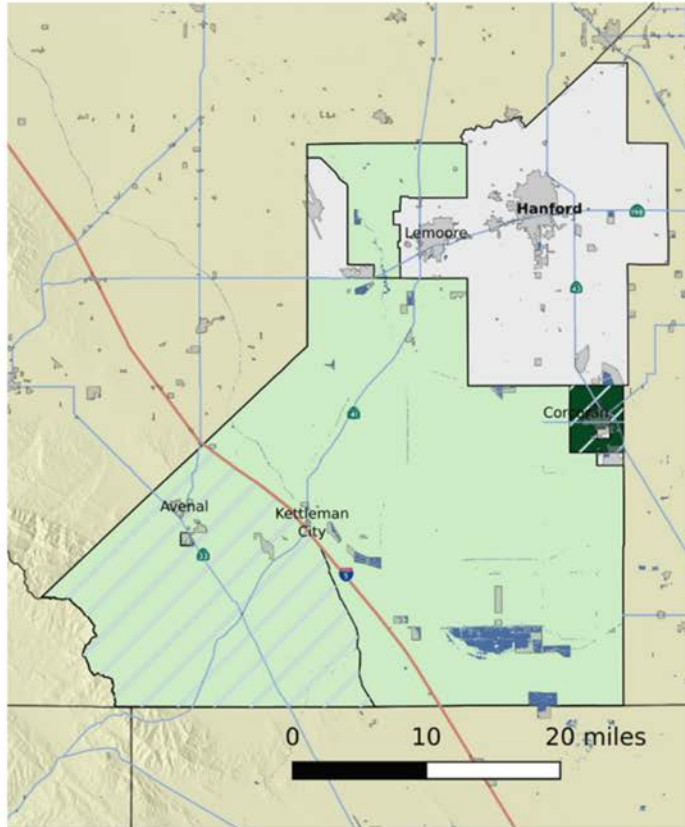


## Relative New Mobility Costs for Kern County



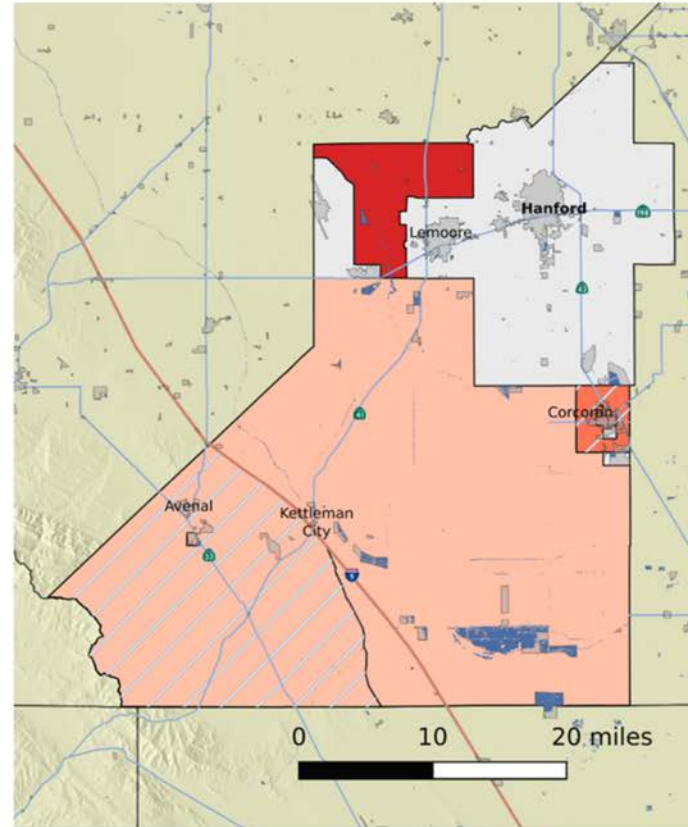


### Transit Service for Kings County



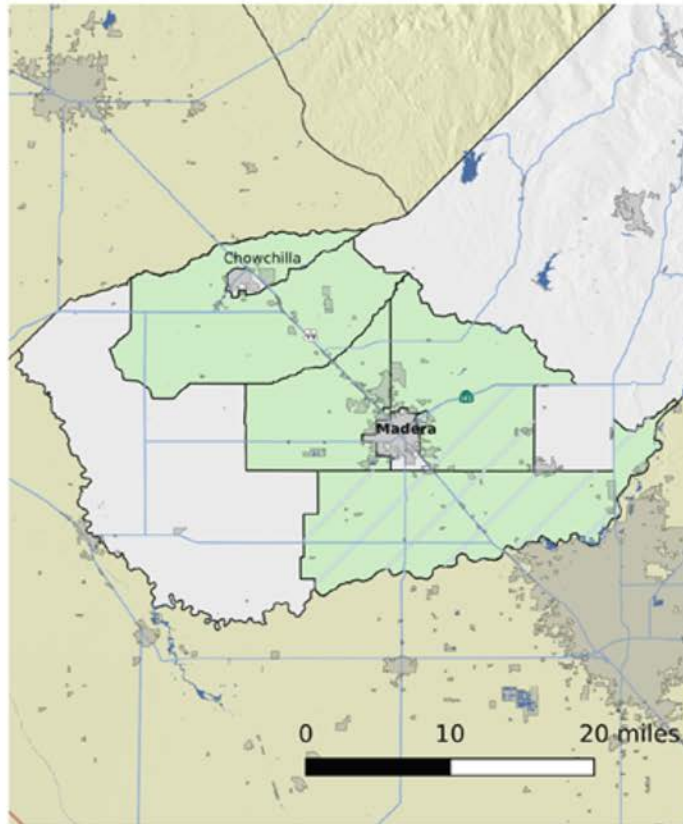
- |  |                                |
|--|--------------------------------|
| California low-income tax credit housing present | Poor access and frequency      |
| Concentrated development                         | Good access and poor frequency |
| Excluded census tracts                           | Poor access and good frequency |
|  | Good access and frequency      |

### Relative New Mobility Costs for Kings County



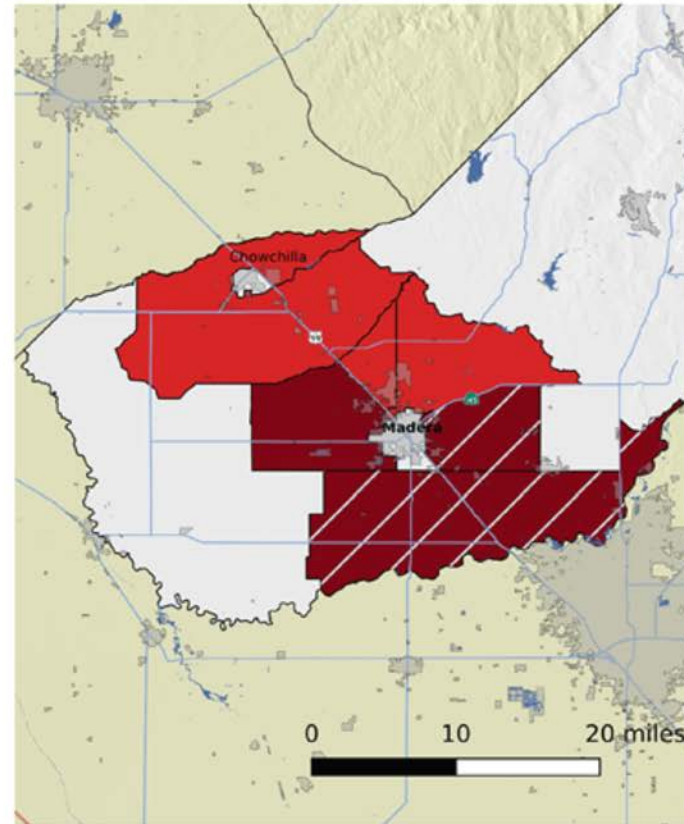
- |  |                             |
|--|-----------------------------|
| California low-income tax credit housing present | One-way TNC Cost: Very Low  |
| Concentrated development                         | One-way TNC Cost: Low       |
| Excluded census tracts                           | One-way TNC Cost: Average   |
|  | One-way TNC Cost: High      |
|  | One-way TNC Cost: Very High |

### Transit Service for Madera County



- |  |                                |
|--|--------------------------------|
| California low-income tax credit housing present | Poor access and frequency      |
| Concentrated development                         | Good access and poor frequency |
| Excluded census tracts                           | Poor access and good frequency |
|  | Good access and frequency      |

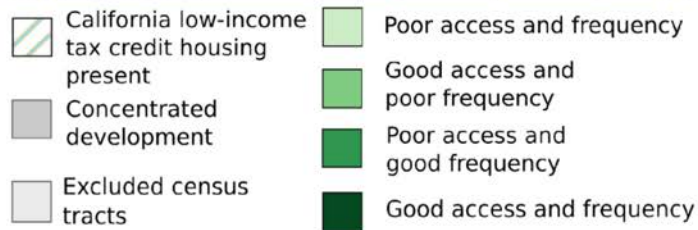
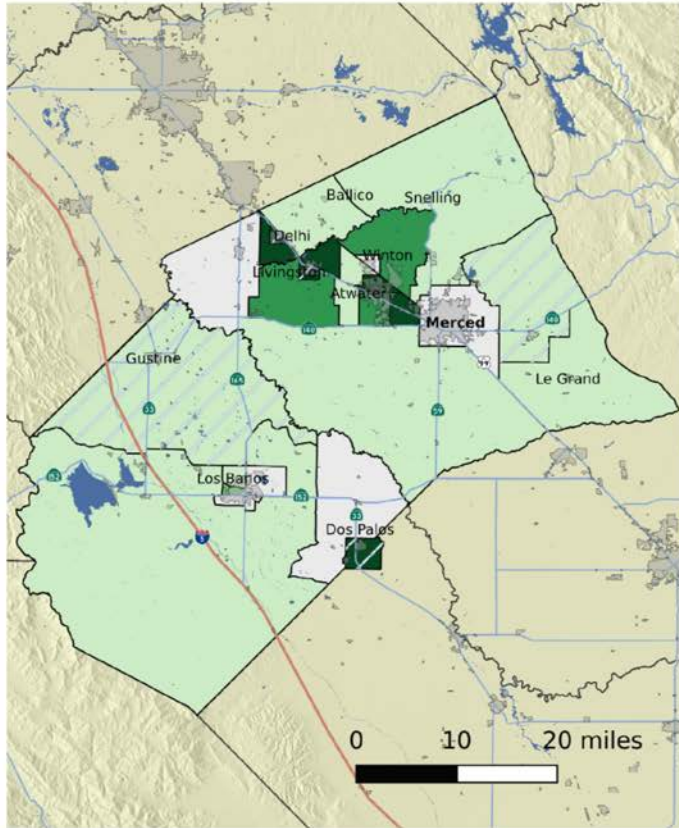
### Relative New Mobility Costs for Madera County



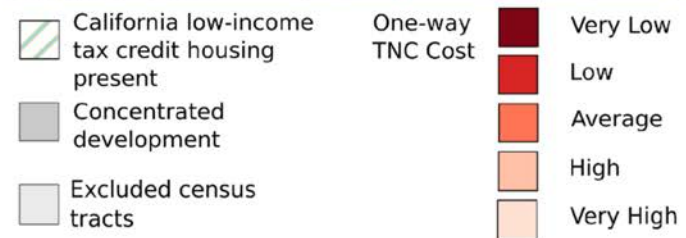
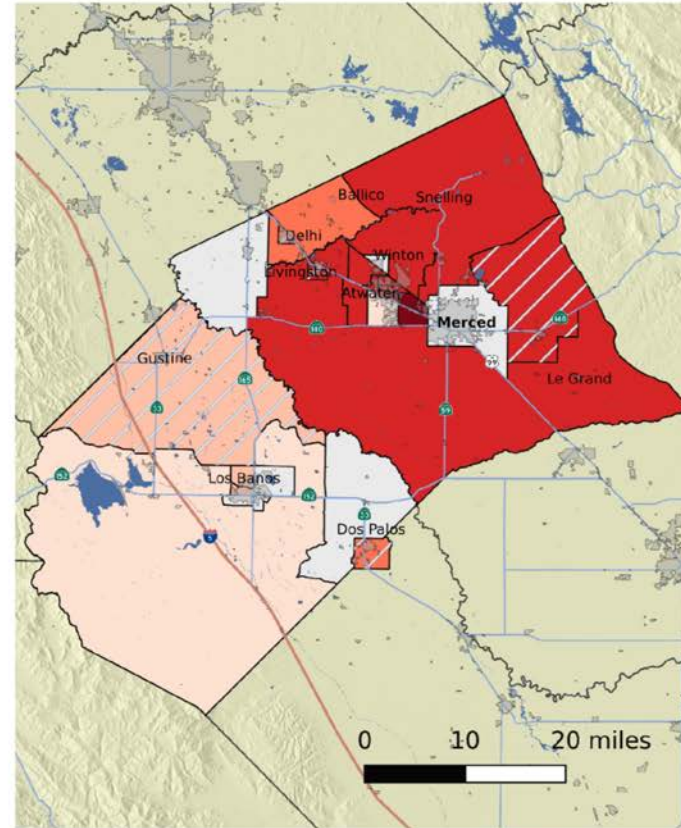
- |  |                            |
|--|----------------------------|
| California low-income tax credit housing present | One-way TNC Cost: Very Low |
| Concentrated development                         | Low                        |
| Excluded census tracts                           | Average                    |
|  | High                       |
|  | Very High                  |



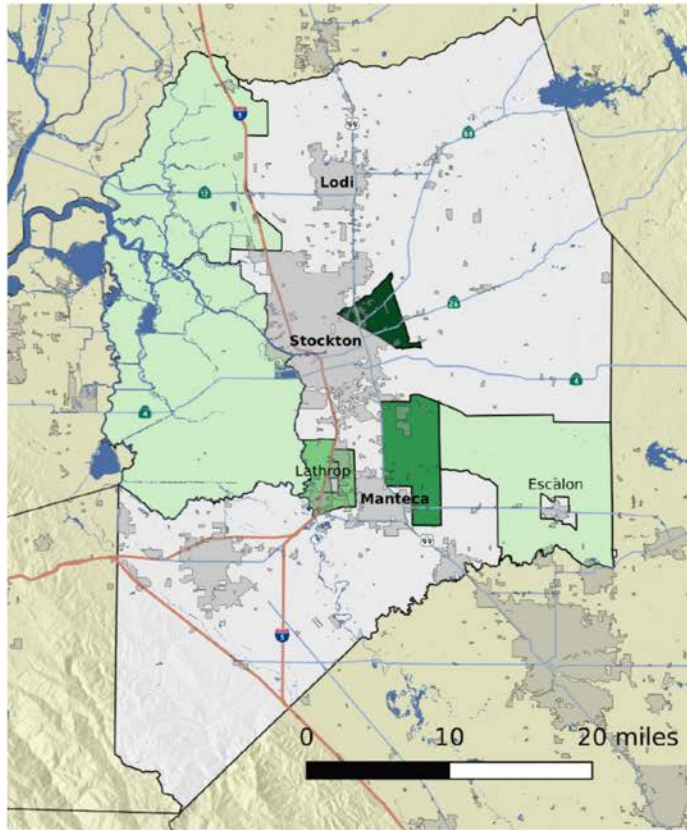
## Transit Service for Merced County



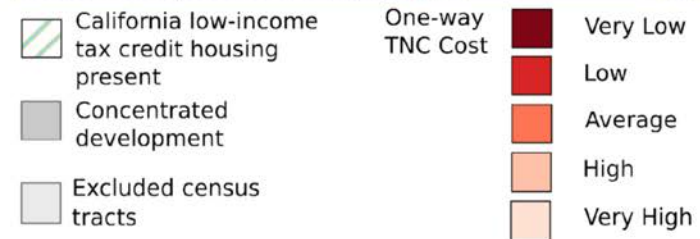
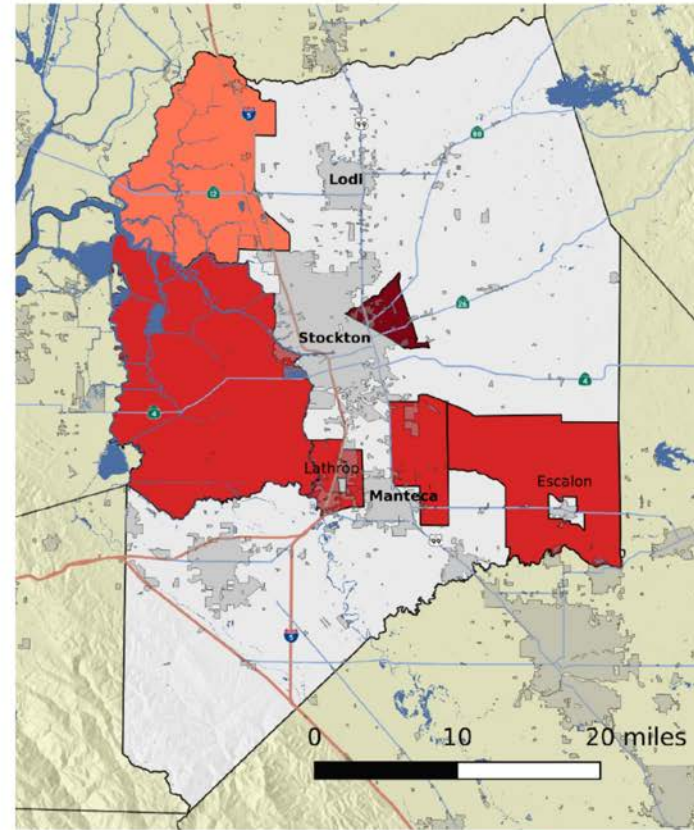
## Relative New Mobility Costs for Merced County



## Transit Service for San Joaquin County

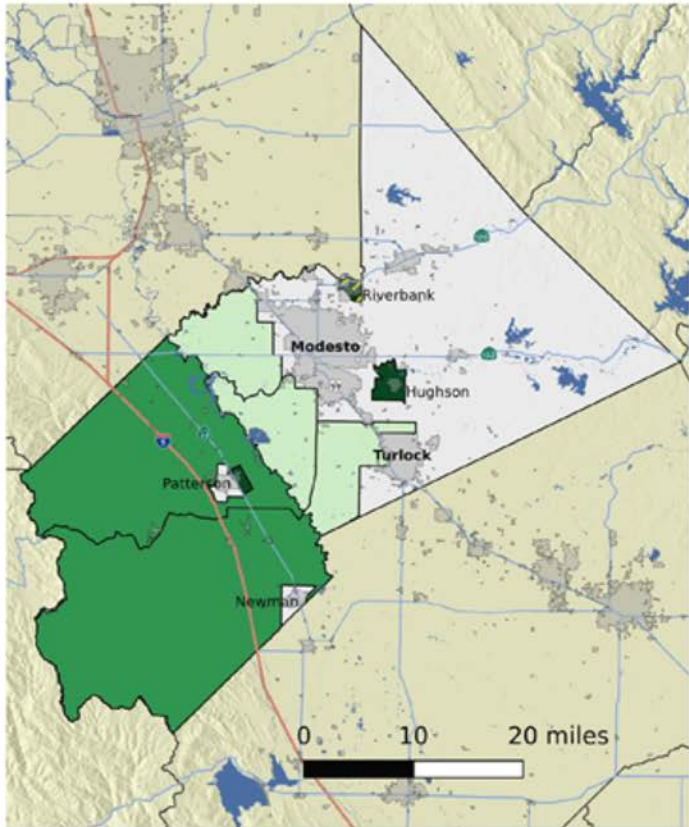


## Relative New Mobility Costs for San Joaquin County



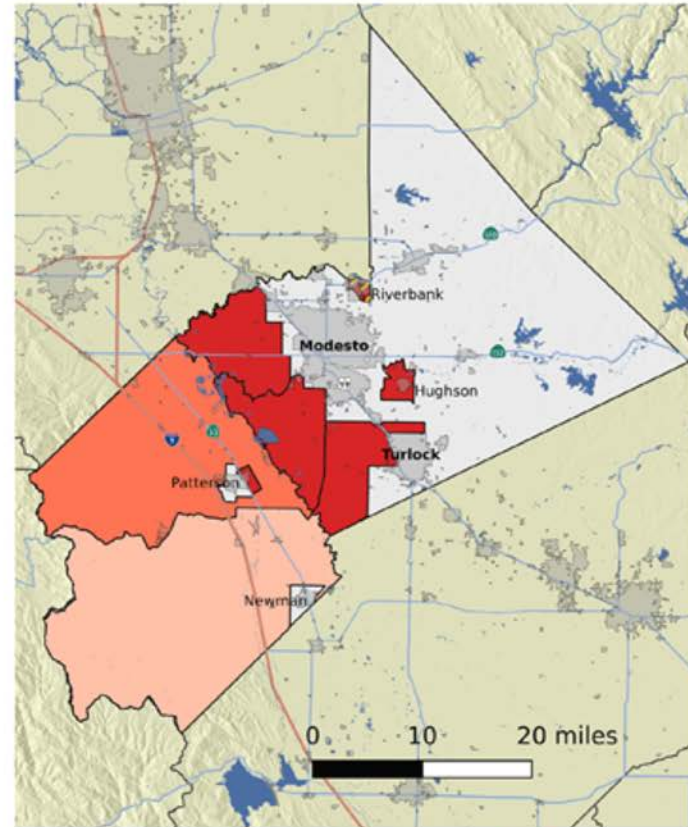


## Transit Service for Stanislaus County



- |  |                                |
|--|--------------------------------|
| California low-income tax credit housing present | Poor access and frequency      |
| Concentrated development                         | Good access and poor frequency |
| Excluded census tracts                           | Poor access and good frequency |
|  | Good access and frequency      |

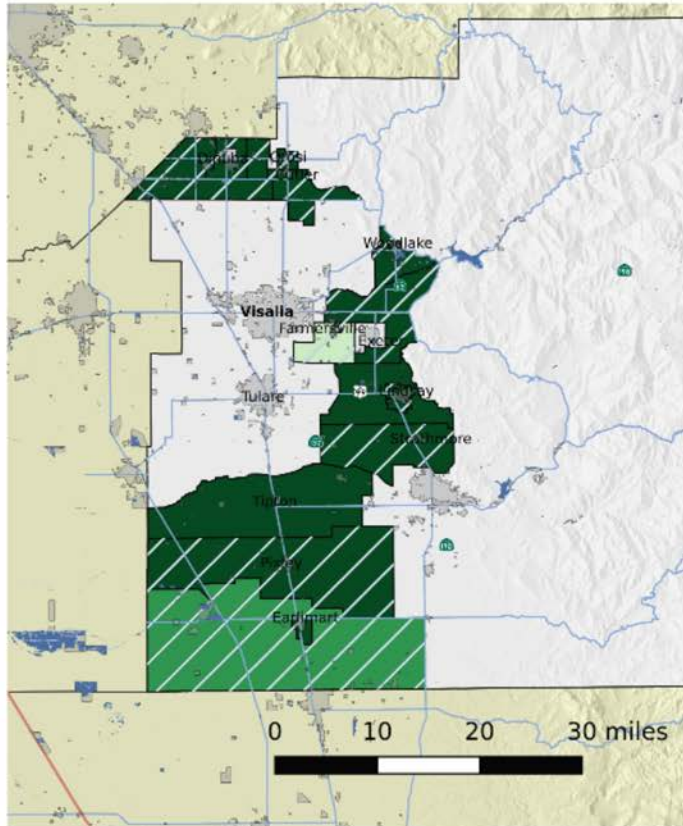
## Relative New Mobility Costs for Stanislaus County










- |  |                             |
|--|-----------------------------|
| California low-income tax credit housing present | One-way TNC Cost: Very Low  |
| Concentrated development                         | One-way TNC Cost: Low       |
| Excluded census tracts                           | One-way TNC Cost: Average   |
|  | One-way TNC Cost: High      |
|  | One-way TNC Cost: Very High |

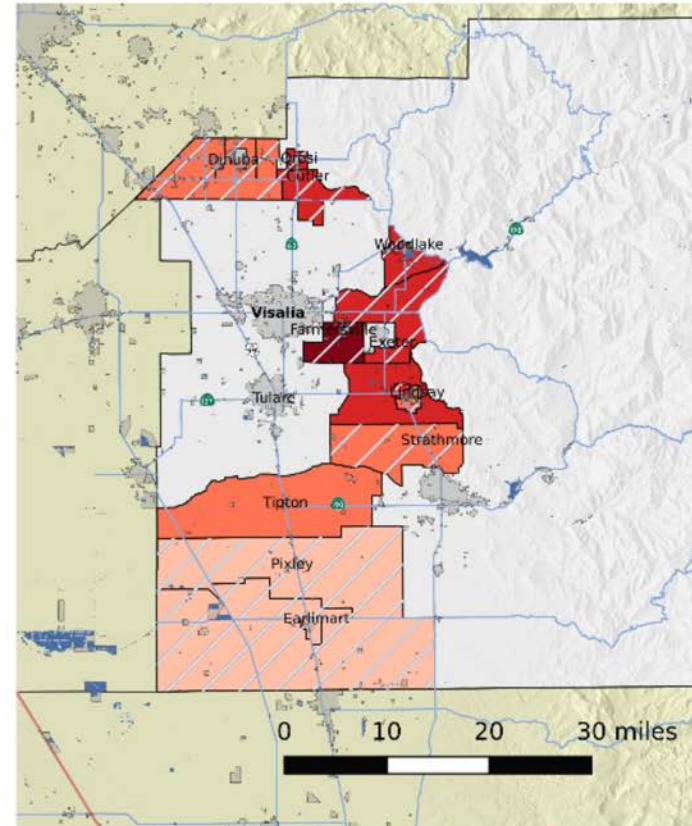










### Transit Service for Tulare County



- |  |  |
|--|--|
|  California low-income tax credit housing present |  Poor access and frequency      |
|  Concentrated development                         |  Good access and poor frequency |
|  Excluded census tracts                           |  Poor access and good frequency |
|  |  Good access and frequency      |

### Relative New Mobility Costs for Tulare County



- |  |  |
|--|--|
|  California low-income tax credit housing present |  One-way TNC Cost: Very Low |
|  Concentrated development                         |  Low                        |
|  Excluded census tracts                           |  Average                    |
|  |  High                       |
|  |  Very High                  |

## Appendix D: Transit Dependence Metrics by Disadvantaged Rural Census Tract by County

County	Census Tract	Origin City/CDP	Population	% < 18	% > 64	% Vehicle Unavailable	% < Basic Income	% > Housing Cost Burden
Fresno	6019007500	Caruthers	5,312	30	9	11	55	48
Fresno	6019001800	Fresno: Easton	4,485	25	12	8	44	35
Fresno	6019007600	Fresno: Raisin City	4,968	35	10	9	69	58
Fresno	6019007802	Huron	4,908	39	3	22	88	53
Fresno	6019007801	Huron	3,050	34	10	21	77	45
Fresno	6019007700	Riverdale	6,534	36	9	5	64	40
Fresno	6019006900	Del Rey	3,017	29	10	7	59	40
Fresno	6019001700	Fresno: Fowler	5,861	30	12	6	47	38
Fresno	6019001900	Fresno: West Park	2,743	23	17	8	54	41
Fresno	6019004100	Fresno: Biola	2,568	33	17	11	58	42
Fresno	6019008200	Cantua Creek	6,830	36	8	16	73	51
Fresno	6019001600	Fowler	5,281	31	11	14	51	41
Fresno	6019008401	Firebaugh	8,282	32	6	19	63	48
Fresno	6019008402	Firebaugh	1,344	36	6	8	68	57
Fresno	6019004002	Kerman	7,325	34	8	14	49	41
Fresno	6019003900	Kerman	4,978	32	12	10	67	58
Fresno	6019008302	Mendota	6,745	34	5	27	89	66
Kern	6029006301	Arvin	4,239	29	8	9	65	47
Kern	6029006303	Arvin	6,768	39	5	19	81	51
Kern	6029006304	Arvin	4,124	34	5	21	79	41
Kern	6029006202	Arvin	6,887	36	2	12	61	50
Kern	6029002400	Bakersfield: Fuller Acres	8,470	41	4	11	60	50
Kern	6029001000	Bakersfield: East	10,276	37	5	16	57	38
Kern	6029006201	Bakersfield: Rural Lamont	3,244	37	9	10	69	47
Kern	6029005003	Delano	3,468	33	9	16	78	47
Kern	6029004800	Delano	10,591	40	7	22	81	56
Kern	6029004901	Delano	5,039	34	7	15	68	50
Kern	6029006401	Lamont	8,698	35	6	23	69	47
Kern	6029006403	Lamont	6,513	36	4	18	64	43
Kern	6029006404	Lamont	3,318	37	8	23	79	40
Kern	6029004500	Lost Hills	3,838	41	2	19	73	46
Kern	6029004701	MC Farland	9,277	37	4	18	78	43
Kern	6029004702	MC Farland	4,121	34	7	18	78	43
Kern	6029004604	MC Farland	13,758	30	5	18	78	43
Kern	6029004601	MC Farland	4,434	0	1	18	78	43
Kern	6029004603	MC Farland	2,731	0	1	18	78	43
Kern	6029003900	Shafter	2,791	10	5	12	56	50
Kern	6029004000	Shafter	8,007	34	6	12	56	50
Kern	6029004102	Shafter	5,553	39	5	18	75	48
Kern	6029004200	Shafter	1,279	37	8	15	55	42
Kern	6029003500	Taft	6,465	29	12	16	48	40
Kern	6029003600	Taft	4,867	33	7	13	52	31
Kern	6029004301	Wasco	7,763	36	5	15	56	43
Kern	6029004402	Wasco	5,150	39	7	35	82	46
Kern	6029004302	Wasco	5,923	0	1	15	56	43
Kings	6031981800	Avenal	4,635	0	3	15	56	43
Kings	6031001701	Avenal	9,918	39	6	17	74	56
Kings	6031001601	Kettleman City	4,681	35	4	3	61	39

County	Census Tract	Origin City/CDP	Population	% < 18	% > 64	% Vehicle Unavailable	% < Basic Income	% > Housing Cost Burden
Madera	6039000201	Chowchilla: Sharon, Berenda, Fairmead	9,123	6	4	2	41	46
Madera	6039000202	Chowchilla: Dairyland, Minturn, Sierra Vista, Fairmead	5,939	30	12	2	41	46
Madera	6039000508	Madera: Parkside, Borden, Bondelle-Madera	7,414	29	10	10	60	47
Madera	6039000503	Madera: Italian Swiss Colony, Notarb	9,547	32	11	5	30	38
Madera	6039001000	Madera: La Vina, Ripperdan, Gregg, Triago	5,326	26	16	6	41	41
Madera	6039000506	Madera: Kismet, Notabre, Madera Acres	6,590	34	9	6	45	41
Madera	6039000507	Madera: Lake Madera County	10,841	32	10	11	56	56
Merced	6047002402	Dos Palos	8,390	31	12	9	70	44
Merced	6047002000	Gustine	8,093	28	10	11	54	46
Merced	6047001902	Le Grand	2,545	29	13	12	51	43
Merced	6047002202	Los Banos	10,363	35	6	6	55	47
Merced	6047002201	Los Banos	5,690	31	13	18	74	49
Merced	6047002100	Los Banos	3,589	27	6	13	48	46
Merced	6047001901	Merced: Planata	5,539	31	8	9	65	47
Merced	6047000901	Merced: Althone	4,037	28	6	1	48	41
San Joaquin	6077004902	Escalon	6,215	24	14	5	33	43
San Joaquin	6077005127	Lathrop	5,442	32	7	7	37	49
San Joaquin	6077005119	Lathrop	6,100	33	8	7	30	48
San Joaquin	6077005129	Lathrop	3,364	28	9	12	44	45
San Joaquin	6077005131	Manteca	4,626	26	13	8	42	45
San Joaquin	6077003601	Stockton: South East Waterloo	3,481	14	21	7	31	41
San Joaquin	6077003900	Stockton: Holt	1,648	27	19	1	61	41
Stanislaus	6099004000	Modesto	3,780	27	13	13	29	40
Stanislaus	6099003100	Modesto	3,985	28	10	7	55	49
Stanislaus	6099003400	Newman	1,289	22	11	8	60	43
Stanislaus	6099003201	Patterson	5,347	33	8	7	60	54
Stanislaus	6099003300	Patterson	5,837	33	8	5	50	55
Stanislaus	6099000303	Riverbank	5,714	27	10	11	42	45
Stanislaus	6099000302	Riverbank	2,738	26	13	7	36	39
Stanislaus	6099000304	Riverbank	5,378	33	8	7	59	49
Stanislaus	6099000301	Riverbank	1,993	31	11	13	65	52
Tulare	6107000600	Cutler	6,124	39	6	32	86	55
Tulare	6107000502	Dinuba	4,121	35	9	13	63	46
Tulare	6107000401	Dinuba	6,020	33	5	8	62	47
Tulare	6107000301	Dinuba	6,771	30	13	13	48	35
Tulare	6107004400	Earlimart	7,157	41	3	23	82	52
Tulare	6107004300	Earlimart	7,755	37	4	14	77	51
Tulare	6107001400	Exeter	5,874	27	13	12	48	45
Tulare	6107002500	Lindsay	4,429	30	12	6	52	35
Tulare	6107002601	Lindsay	4,443	35	6	15	70	46
Tulare	6107000201	Orosi	9,338	35	10	14	75	47
Tulare	6107004200	Pixley	7,093	45	4	11	85	57
Tulare	6107003200	Tipton	6,718	39	5	12	78	48
Tulare	6107000701	Woodlake	2,564	29	12	4	60	38

## Appendix E: Access to Opportunity Metrics by Disadvantaged Rural Census Tract by County

County	Census Tract	Origin City/CDP	% School Truancy	# Jobs Available	# Banks Available	% Supermarket Accessible	# Health Care Locations Available
Fresno	6019007500	Caruthers	16	709	0.13	84	0.38
Fresno	6019001800	Fresno: Easton	19	1299	0.07	81	0.26
Fresno	6019007600	Fresno: Raisin City	17	474	0.13	83	0.40
Fresno	6019007802	Huron	27	235	0.00	73	0.15
Fresno	6019007801	Huron	24	228	0.00	76	0.15
Fresno	6019007700	Riverdale	16	460	0.15	84	0.61
Fresno	6019006900	Del Rey	27	455	0.11	73	0.46
Fresno	6019001700	Fresno: Fowler	3	1366	0.11	97	0.34
Fresno	6019001900	Fresno: West Park	10	1089	0.17	90	1.17
Fresno	6019004100	Fresno: Biola	15	878	0.00	85	0.00
Fresno	6019008200	Cantua Creek	22	611	0.18	78	0.00
Fresno	6019001600	Fowler	14	988	0.08	86	0.45
Fresno	6019008401	Firebaugh	22	323	0.24	78	0.24
Fresno	6019008402	Firebaugh	24	329	0.12	76	0.75
Fresno	6019004002	Kerman	19	952	0.17	82	0.23
Fresno	6019003900	Kerman	19	928	0.17	82	0.22
Fresno	6019008302	Mendota	22	290	0.00	78	0.08
Kern	6029006301	Arvin	12	479	0.05	88	0.05
Kern	6029006303	Arvin	12	493	0.05	88	0.05
Kern	6029006304	Arvin	12	493	0.05	88	0.05
Kern	6029006202	Arvin	12	509	0.05	88	0.05
Kern	6029002400	Bakersfield: Fuller Acres	18	494	0.12	82	0.53
Kern	6029001000	Bakersfield: East	42	288	0.09	58	0.56
Kern	6029006201	Bakersfield: Rural Lamont	16	512	0.05	84	0.21
Kern	6029005003	Delano	17	584	0.13	83	1.08
Kern	6029004800	Delano	18	581	0.13	82	1.08
Kern	6029004901	Delano	13	575	0.13	87	1.08
Kern	6029006401	Lamont	10	705	0.04	90	0.22
Kern	6029006403	Lamont	16	668	0.08	84	0.33
Kern	6029006404	Lamont	10	674	0.09	90	0.26
Kern	6029004500	Lost Hills	25	628	0.00	75	0.81
Kern	6029004701	MC Farland	16	929	0.00	84	0.30
Kern	6029004702	MC Farland	16	928	0.00	84	0.30
Kern	6029004604	MC Farland	18	566	0.13	82	1.08
Kern	6029004601	MC Farland	16	476	0.13	84	1.11
Kern	6029004603	MC Farland	18	476	0.17	82	1.34
Kern	6029003900	Shafter	10	3708	0.00	90	0.48
Kern	6029004000	Shafter	46	675	0.15	54	0.46
Kern	6029004102	Shafter	46	675	0.15	54	0.46
Kern	6029004200	Shafter	44	627	0.15	56	0.41
Kern	6029003500	Taft	27	366	0.22	73	0.56
Kern	6029003600	Taft	27	366	0.22	73	0.56
Kern	6029004301	Wasco	19	358	0.08	81	0.27
Kern	6029004402	Wasco	19	346	0.08	81	0.27
Kern	6029004302	Wasco	17	333	0.08	83	0.27
Kings	6031981800	Avenal	15	207	0.06	85	0.45
Kings	6031001701	Avenal	15	206	0.06	85	0.45
Kings	6031001601	Kettleman City	18	455	0.00	82	0.00

County	Census Tract	Origin City/CDP	% School Truancy	# Jobs Available	# Banks Available	% Supermarket Accessible	# Health Care Locations Available
Madera	6039000201	Chowchilla: Sharon, Berenda, Fairmead	23	478	0.00	77	0.09
Madera	6039000202	Chowchilla: Dairyland, Minturn, Sierra Vista, Fairmead	14	601	0.21	86	0.68
Madera	6039000508	Madera: Parkside, Borden, Bondelle-Madera	19	413	0.17	81	1.12
Madera	6039000503	Madera: Italian Swiss Colony, Notarb	19	480	0.19	81	0.91
Madera	6039001000	Madera: La Vina, Ripperdan, Gregg, Triago	23	701	0.00	77	0.33
Madera	6039000506	Madera: Kismet, Notabre, Madera Acres	26	472	0.20	74	0.96
Madera	6039000507	Madera: Lake Madera County Estates	30	443	0.20	70	0.94
Merced	6047002402	Dos Palos	15	321	0.11	85	0.76
Merced	6047002000	Gustine	27	365	0.25	73	0.89
Merced	6047001902	Le Grand	12	568	0.00	88	0.33
Merced	6047002202	Los Banos	36	334	0.16	64	0.61
Merced	6047002201	Los Banos	44	335	0.16	56	0.60
Merced	6047002100	Los Banos	40	424	0.20	60	0.92
Merced	6047001901	Merced:Planata	12	297	0.00	88	0.15
Merced	6047000901	Merced: Althone	33	393	0.00	67	0.00
San Joaquin	6077004902	Escalon	5	436	0.14	95	0.76
San Joaquin	6077005127	Lathrop	22	460	0.17	78	0.69
San Joaquin	6077005119	Lathrop	28	426	0.24	72	0.40
San Joaquin	6077005129	Lathrop	26	440	0.19	74	0.76
San Joaquin	6077005131	Manteca	22	668	0.21	78	1.10
San Joaquin	6077003601	Stockton: South East Waterloo	21	695	0.16	79	1.47
San Joaquin	6077003900	Stockton: Holt	39	1102	0.00	61	0.00
Stanislaus	6099004000	Modesto	14	782	0.24	86	0.80
Stanislaus	6099003100	Modesto	29	341	0.03	71	0.08
Stanislaus	6099003400	Newman	31	334	0.16	69	0.41
Stanislaus	6099003201	Patterson	35	433	0.21	65	0.43
Stanislaus	6099003300	Patterson	30	391	0.21	70	0.46
Stanislaus	6099000303	Riverbank	16	439	0.25	84	1.81
Stanislaus	6099000302	Riverbank	16	460	0.29	84	1.73
Stanislaus	6099000304	Riverbank	20	409	0.21	80	1.67
Stanislaus	6099000301	Riverbank	23	355	0.16	77	1.17
Tulare	6107000600	Cutler	8	528	0.05	92	0.27
Tulare	6107000502	Dinuba	8	941	0.12	92	0.45
Tulare	6107000401	Dinuba	10	743	0.23	90	0.84
Tulare	6107000301	Dinuba	11	783	0.12	89	0.44
Tulare	6107004400	Earlimart	24	316	0.00	76	0.09
Tulare	6107004300	Earlimart	17	640	0.09	83	0.50
Tulare	6107001400	Exeter	25	609	0.15	75	0.55
Tulare	6107002500	Lindsay	11	622	0.10	89	0.37
Tulare	6107002601	Lindsay	15	599	0.10	85	0.34
Tulare	6107000201	Orosi	8	580	0.04	92	0.25
Tulare	6107004200	Pixley	13	508	0.00	87	0.13
Tulare	6107003200	Tipton	10	727	0.18	90	0.18
Tulare	6107000701	Woodlake	15	401	0.09	85	0.37

## Appendix F: Access to Health Care Metrics by Disadvantaged Rural Census Tract by County

County	Census Tract	Origin City/CDP	% Prenatal Care	% Infant Healthy Weight	% Births to Teens	Years of Life Lost	Asthma Rates
Fresno	6019007500	Caruthers	83	92	16	25	67
Fresno	6019001800	Fresno: Easton	85	94	13	50	119
Fresno	6019007600	Fresno: Raisin City	85	97	6	37	106
Fresno	6019007802	Huron	64	99	18	19	29
Fresno	6019007801	Huron	68	97	16	10	29
Fresno	6019007700	Riverdale	88	96	15	25	56
Fresno	6019006900	Del Rey	78	93	16	26	63
Fresno	6019001700	Fresno: Fowler	87	94	10	50	61
Fresno	6019001900	Fresno: West Park	87	93	10	46	129
Fresno	6019004100	Fresno: Biola	89	92	12	33	37
Fresno	6019008200	Cantua Creek	86	94	13	22	29
Fresno	6019001600	Fowler	85	95	11	22	53
Fresno	6019008401	Firebaugh	82	95	13	23	41
Fresno	6019008402	Firebaugh	72	94	8	33	53
Fresno	6019004002	Kerman	89	95	10	29	44
Fresno	6019003900	Kerman	88	98	11	43	57
Fresno	6019008302	Mendota	90	94	15	31	33
Kern	6029006301	Arvin	66	94	17	19	28
Kern	6029006303	Arvin	68	95	18	29	24
Kern	6029006304	Arvin	73	95	15	40	24
Kern	6029006202	Arvin	73	94	15	28	27
Kern	6029002400	Bakersfield: Fuller Acres	72	96	10	32	56
Kern	6029001000	Bakersfield: East	74	97	12	40	49
Kern	6029006201	Bakersfield: Rural Lamont	72	99	15	17	55
Kern	6029005003	Delano	81	93	13	38	34
Kern	6029004800	Delano	79	96	17	40	34
Kern	6029004901	Delano	68	95	14	34	34
Kern	6029006401	Lamont	70	94	11	61	33
Kern	6029006403	Lamont	68	94	14	23	34
Kern	6029006404	Lamont	67	95	17	60	33
Kern	6029004500	Lost Hills	67	95	16	19	29
Kern	6029004701	MC Farland	77	96	12	16	32
Kern	6029004702	MC Farland	76	96	22	34	32
Kern	6029004604	MC Farland	74	93	17	32	34
Kern	6029004601	MC Farland	74	93	17	32	0
Kern	6029004603	MC Farland	74	93	17	32	0
Kern	6029003900	Shafter	73	92	19	4	41
Kern	6029004000	Shafter	71	97	16	34	23
Kern	6029004102	Shafter	69	92	22	38	23
Kern	6029004200	Shafter	86	100	28	60	23
Kern	6029003500	Taft	62	92	19	31	22
Kern	6029003600	Taft	64	93	22	54	22
Kern	6029004301	Wasco	76	95	15	26	30
Kern	6029004402	Wasco	66	93	16	34	30
Kern	6029004302	Wasco	66	93	16	10	0
Kings	6031981800	Avenal	66	95	13	49	0
Kings	6031001701	Avenal	66	95	13	49	23
Kings	6031001601	Kettleman City	70	94	14	45	38



County	Census Tract	Origin City/CDP	% Prenatal Care	% Infant Healthy Weight	% Births to Teens	Years of Life Lost	Asthma Rates
Madera	6039000201	Chowchilla: Sharon, Berenda, Fairmead	62	93	7	15	59
Madera	6039000202	Chowchilla: Dairyland, Minturn, Sierra Vista, Fairmead	79	96	10	23	59
Madera	6039000508	Madera: Parkside, Borden, Bondelle-Madera	70	94	17	32	59
Madera	6039000503	Madera: Italian Swiss Colony, Notarb	85	94	9	19	75
Madera	6039001000	Madera: La Vina, Ripperdan, Gregg, Triago	67	92	11	51	52
Madera	6039000506	Madera: Kismet, Notabre, Madera Acres	71	95	11	22	86
Madera	6039000507	Madera: Lake Madera County Estates	75	95	13	45	84
Merced	6047002402	Dos Palos	45	94	10	47	68
Merced	6047002000	Gustine	65	93	10	33	46
Merced	6047001902	Le Grand	55	94	15	42	30
Merced	6047002202	Los Banos	54	95	12	35	73
Merced	6047002201	Los Banos	54	95	14	44	73
Merced	6047002100	Los Banos	46	92	14	52	62
Merced	6047001901	Merced: Planata	69	97	16	24	82
Merced	6047000901	Merced: Althone	63	96	13	34	25
San Joaquin	6077004902	Escalon	78	95	1	20	36
San Joaquin	6077005127	Lathrop	75	95	6	42	76
San Joaquin	6077005119	Lathrop	85	95	4	34	75
San Joaquin	6077005129	Lathrop	75	94	7	23	76
San Joaquin	6077005131	Manteca	89	91	10	28	60
San Joaquin	6077003601	Stockton: South East Waterloo	73	95	15	53	57
San Joaquin	6077003900	Stockton: Holt	77	94	14	33	80
Stanislaus	6099004000	Modesto	82	95	5	25	42
Stanislaus	6099003100	Modesto	85	95	10	42	45
Stanislaus	6099003400	Newman	70	98	11	12	38
Stanislaus	6099003201	Patterson	77	96	12	32	28
Stanislaus	6099003300	Patterson	79	98	15	40	29
Stanislaus	6099000303	Riverbank	74	96	8	32	45
Stanislaus	6099000302	Riverbank	71	92	6	37	44
Stanislaus	6099000304	Riverbank	71	95	12	45	44
Stanislaus	6099000301	Riverbank	62	98	6	45	45
Tulare	6107000600	Cutler	76	97	17	42	38
Tulare	6107000502	Dinuba	80	91	8	20	37
Tulare	6107000401	Dinuba	76	96	16	30	37
Tulare	6107000301	Dinuba	75	97	13	23	42
Tulare	6107004400	Earlimart	78	95	15	19	31
Tulare	6107004300	Earlimart	79	96	18	17	32
Tulare	6107001400	Exeter	82	95	7	43	42
Tulare	6107002500	Lindsay	74	93	15	47	39
Tulare	6107002601	Lindsay	75	97	24	16	39
Tulare	6107000201	Orosi	78	96	14	32	28
Tulare	6107004200	Pixley	85	94	14	35	43
Tulare	6107003200	Tipton	87	95	13	25	54
Tulare	6107000701	Woodlake	85	97	19	32	33

## Appendix G: Challenges to Participation Metrics by Disadvantaged Rural Census Tract by County

County	Census Tract	Origin City/CDP	% English Speakers	% US Citizens	% Voted	% Neighborhood Stable
Fresno	6019007500	Caruthers	66	70	28	84
Fresno	6019001800	Fresno: Easton	87	87	32	88
Fresno	6019007600	Fresno: Raisin City	66	62	35	74
Fresno	6019007802	Huron	35	30	25	82
Fresno	6019007801	Huron	42	40	22	96
Fresno	6019007700	Riverdale	70	59	29	83
Fresno	6019006900	Del Rey	72	74	25	90
Fresno	6019001700	Fresno: Fowler	78	77	30	82
Fresno	6019001900	Fresno: West Park	85	83	30	89
Fresno	6019004100	Fresno: Biola	75	77	46	97
Fresno	6019008200	Cantua Creek	48	47	31	94
Fresno	6019001600	Fowler	87	87	28	79
Fresno	6019008401	Firebaugh	60	59	24	91
Fresno	6019008402	Firebaugh	61	54	29	95
Fresno	6019004002	Kerman	71	66	27	95
Fresno	6019003900	Kerman	71	67	41	98
Fresno	6019008302	Mendota	47	38	23	89
Kern	6029006301	Arvin	57	57	22	90
Kern	6029006303	Arvin	57	49	22	79
Kern	6029006304	Arvin	54	46	25	83
Kern	6029006202	Arvin	51	43	22	97
Kern	6029002400	Bakersfield: Fuller Acres	73	66	23	86
Kern	6029001000	Bakersfield: East	84	76	24	88
Kern	6029006201	Bakersfield: Rural Lamont	76	70	22	85
Kern	6029005003	Delano	70	54	27	83
Kern	6029004800	Delano	61	51	25	85
Kern	6029004901	Delano	67	54	28	85
Kern	6029006401	Lamont	52	49	19	86
Kern	6029006403	Lamont	61	47	19	94
Kern	6029006404	Lamont	53	51	20	91
Kern	6029004500	Lost Hills	43	32	23	91
Kern	6029004701	MC Farland	50	49	27	92
Kern	6029004702	MC Farland	50	49	27	92
Kern	6029004604	MC Farland	50	49	27	92
Kern	6029004601	MC Farland	50	49	27	92
Kern	6029004603	MC Farland	50	49	27	92
Kern	6029003900	Shafter	76	69	21	82
Kern	6029004000	Shafter	76	69	21	82
Kern	6029004102	Shafter	66	55	23	76
Kern	6029004200	Shafter	72	73	39	88
Kern	6029003500	Taft	87	84	28	76
Kern	6029003600	Taft	96	91	18	59
Kern	6029004301	Wasco	74	68	25	86
Kern	6029004402	Wasco	62	53	23	78
Kern	6029004302	Wasco	62	53	23	78
Kings	6031981800	Avenal	54	46	22	86
Kings	6031001701	Avenal	54	46	22	86
Kings	6031001601	Kettleman City	70	65	23	90



County	Census Tract	Origin City/CDP	% English Speakers	% US Citizens	% Voted	% Neighborhood Stable
Madera	6039000201	Chowchilla: Sharon, Berenda, Fairmead	88	89	37	91
Madera	6039000202	Chowchilla: Dairyland, Minturn, Sierra Vista, Fairmead	88	89	37	91
Madera	6039000508	Madera: Parkside, Borden, Bondelle-Madera	79	77	30	89
Madera	6039000503	Madera: Italian Swiss Colony, Notarb	91	85	30	88
Madera	6039001000	Madera: La Vina, Ripperdan, Gregg, Triago	76	78	41	86
Madera	6039000506	Madera: Kismet, Notabre, Madera Acres	78	78	29	88
Madera	6039000507	Madera: Lake Madera County Estates	82	80	23	91
Merced	6047002402	Dos Palos	73	75	23	80
Merced	6047002000	Gustine	76	71	35	85
Merced	6047001902	Le Grand	69	67	37	94
Merced	6047002202	Los Banos	83	76	22	83
Merced	6047002201	Los Banos	74	72	23	77
Merced	6047002100	Los Banos	74	72	31	93
Merced	6047001901	Merced: Planata	67	58	28	88
Merced	6047000901	Merced: Althone	81	77	26	81
San Joaquin	6077004902	Escalon	81	76	47	94
San Joaquin	6077005127	Lathrop	94	83	25	86
San Joaquin	6077005119	Lathrop	87	78	50	86
San Joaquin	6077005129	Lathrop	95	81	29	90
San Joaquin	6077005131	Manteca	91	84	35	83
San Joaquin	6077003601	Stockton: South East Waterloo	93	91	39	89
San Joaquin	6077003900	Stockton: Holt	66	78	65	89
Stanislaus	6099004000	Modesto	88	91	39	91
Stanislaus	6099003100	Modesto	78	80	25	78
Stanislaus	6099003400	Newman	60	52	51	78
Stanislaus	6099003201	Patterson	72	65	26	88
Stanislaus	6099003300	Patterson	77	70	29	84
Stanislaus	6099000303	Riverbank	91	87	26	93
Stanislaus	6099000302	Riverbank	88	85	26	84
Stanislaus	6099000304	Riverbank	78	71	19	89
Stanislaus	6099000301	Riverbank	82	81	25	76
Tulare	6107000600	Cutler	55	49	21	87
Tulare	6107000502	Dinuba	63	63	21	80
Tulare	6107000401	Dinuba	73	67	24	83
Tulare	6107000301	Dinuba	77	76	38	88
Tulare	6107004400	Earlimart	55	54	13	90
Tulare	6107004300	Earlimart	55	51	19	90
Tulare	6107001400	Exeter	82	80	32	95
Tulare	6107002500	Lindsay	73	72	27	95
Tulare	6107002601	Lindsay	62	68	17	91
Tulare	6107000201	Orosi	51	47	19	85
Tulare	6107004200	Pixley	56	49	26	84
Tulare	6107003200	Tipton	54	51	27	89
Tulare	6107000701	Woodlake	82	83	25	82

## Appendix H: Summary and Agenda of Stakeholder Focus Groups

### Northern San Joaquin Valley Summary Report

#### *What is working in the northern San Joaquin Valley?*

Transit agencies and local jurisdictions across the northern San Joaquin Valley over the years have used surveying tools, such as a community needs assessment to analyze the transportation needs of residents from various communities. There has been continuous outreach, at various levels, in communities with limited to no transit service (e.g. Westside), to gain a better understanding of what level of services are needed. Outreach has also been done (and will continue to take place) within academic institutions on developing partnerships that support students traveling to and from campus. There have been some reports of transit agencies implementing an application system that allows passengers to text the agency when pick-up transit services are needed.

#### *What is not working in the northern San Joaquin Valley?*

Many communities in the northern San Joaquin Valley use the General Public Dial-a-Ride service for transportation services – courtesy of the San Joaquin Regional Transit District – which typically operates as a curbside-to-curbside, fixed-route service. However, during the focus group discussion, participants mentioned that some areas have added a customized shuttle service. In some areas of the three counties, residents can call the same day for a dial-a-ride pick-up, while other areas request may require a 7-day notice. The exception is the City of Stockton, who operates their dial-a-ride for passengers with an Americans with Disabilities Act Certification (pre-approval required). The dial-a-ride service can be expensive to operate (additional research on other, low-cost transit options were requested).

Furthermore, many communities in the northern San Joaquin Counties face ‘connectivity’ and ‘first mile and last mile’ issues, creating barriers for many residents who need to get from point A to point B. In some instances, making a round trip may take an entire day or more. In communities that are located closer to the metropolitan areas, interest has been expressed in improved infrastructure that promote bicycle ridership or at least maps that highlight safe routes for entering into these areas.

In communities located further out from the metropolitan areas, transit services are limited or not available. Thus, creating a challenge for many residents who need “on-demand” services (e.g. medical services) in other areas of the county. There are few areas in the northern San Joaquin Valley that provide medical transportation providers or shuttle services to and from medical facilities but the level of service is limited. In such cases where services are limited or non-existent, residents must rely on family and friends to drive them. Other informal services have also been developed over the years. Bicycle ridership may be a challenge for communities.

### *Future goals:*

There is an interest in adding additional routes in areas, along with extended service times to help cover individuals that work the swing shift and graveyard, (whenever feasible).

Participants expressed assistance with identifying an alternative plan to American's with Disability Act dial-a ride in order to help to lower cost and serve more people.

### *Needs:*

- Additional service times
- Lower operating costs
- Reliable transportation that is ADA accessible
- Increase biking lanes and/or more information on safe paths to get into town
- Driver and reliable car shortage—some counties may assist with matching up residents—potential barriers: older cars; credit checks
- Demand for transit at night due to shift work and graveyard shifts
- Limited hospital facilities that provide full service
- Continued education on difference between services and needs for those services. Ex: dial-a-ride and ADA needs
- Most people have smartphones but not computers – mobile platform would be better than a computer base
- Accessibility to banking services
- More awareness needed around programs that offer support to people that have older cars
- Additional infrastructure for electric vehicles. Possibly look at incorporating charging stations at affordable housing units and in senior communities

### *Resources:*

Counties have TDA (Transportation Development Act) funds and 5311 funds from the Federal Transit Administration. Both funds assist with transportation needs in rural areas.

## Central San Joaquin Valley Summary Report

### *What is working in the central San Joaquin Valley?*

Fresno State is a great partner to help with educating residents on new modes of transportation and services, and new technology; educational programs have already been launched.

### *What is not working in the central San Joaquin Valley?*

Residents face challenges when needing to get to medical facilities, work and school. The bus is typically the only viable option that residents have to travel because the Amtrak is either too far from their home or the rider fee is higher than taking the bus (\$0.75 vs. \$12). However, riding the bus may be a challenge for the elderly and/or residents with critical conditions due to its limited service times, non-personalized pick-up locations, and other critical accommodations.

Furthermore, many communities in the central San Joaquin County face 'first mile and last mile' issues, creating barriers for many residents who need to get from point A to point B. In some instances, making a round trip may take at least half the day or the entire day. In communities that are located closer to the metropolitan areas there have been expressed interests in improving infrastructure that promotes bicycle ridership. However, bicycle ridership may be a challenge for communities that are further from the more urbanized or metropolitan areas of a county.

Several communities in the San Joaquin Valley have established informal carsharing services to help transport residents to work, school, medical appointments, etc. There are concerns with the liability and reliability issues with being able to maintain such informal services. In many cases there may be only a few residents that currently volunteer to be drivers. In order to formalize such a program there will need to be extensive outreach to identify and train additional drivers. Potential barriers were brought up with being able to identify available drivers that meet the minimum qualifications (e.g. reliable car, drivers license).

### *Future goals:*

CALSTART is launching a pilot project in the rural communities of Fresno County that will include mobile electric vehicle charging stations called the EV Arc. The charging stations will be rotated around the various communities to help bring more awareness to their availability and to establish a fueling location.

### *Needs:*

- Upgrading buses with virtual wallet capabilities
- Lack of cell phone coverage in areas of the counties
- Additional bike lanes needed
- Additional bike racks on the buses

- Additional transit routes and service times needed

*Resources:*

Fresno State provides several education workshops for adults on cell phone applications and services. The Fresno Housing Authority and the school district help fund these types of programs.

## **Southern San Joaquin Valley Summary Report**

### *What is working in the southern San Joaquin Valley?*

Transit routes being available on Google maps making it easier for individuals to track their routes. There are some hospitals that will provide limited transportation service for people with specific needs. The costs for such services may be covered by certain health insurances (e.g. Kern Family Health?).

### *What is not working in the Southern San Joaquin Valley?*

In communities located further out from the metropolitan areas (e.g. Bakersfield), transit services are limited or unavailable. Thus, creating a challenge for many residents who need “on-demand” services (e.g. medical services) in other areas of the county.

Many communities in the San Joaquin Valley use the General Public Dial-a-Ride service for transportation services, which typically operates as a curb-to-curb, fixed-route service. Some areas have cut back on route services, partially due to costs and ridership, making it difficult for residents to identify a bus that will get them from point A to point B in a timely manner.

During the focus group discussion, participants mentioned that some community organizations and school districts offer pick-up and drop-off services for residents who meet certain needs (e.g. homeless children needing to get to school). Some institutions may have access to vehicles (e.g. school district) that could help with transportation; however, liability is a concern. In most cases community service agencies try to offer residents one-day bus passes and help with matching them up with the appropriate transit routes and/or coordinate rides with other residents.

Residents face ‘connectivity’ and ‘first mile and last mile’ issues that create barriers for many residents who need to get from point A to point B and back to their original destination. In communities that are located closer to the metropolitan areas interest has been expressed in improved infrastructure that will promote bicycle ridership. During the focus group meeting there was discussion on establishing a bikeshare program to help alleviate some of the first mile, last mile issues. However, skepticism centered on the ability for a bikeshare program working considering the distance from the City of Bakersfield to surrounding areas and the current safety conditions of the roads.

### *Future goals:*

In Tehachapi, there is money to build a park-and-ride and possibly partner with another organization to include a bus stop. This new addition would allow residents who are driving to park their cars and take public transit.

*Needs:*

- Improved infrastructure
- Additional routes and service times (look at affordability!)
- Additional parking around transit centers
- First mile, Last mile

*Resources:*

- There are grant programs from First 5 and Kern County Network for Children to help cover transportation for medical appointments
- The some school district have unrestricted monies that may be able to be used for transportation needs

# Focus Group on Rural Transportation Needs and Opportunities in the San Joaquin Valley

Monday, November 7, 2016  
11:30am – 2:00pm  
Larry E. Reider Education Center  
2000 K Street, Room 202  
Bakersfield, CA 93301

Tuesday, November 8, 2016  
11:30am – 2:00pm  
Fresno Council of Governments  
2035 Tulare Street, Suite 201, Fresno, CA 93721  
Meeting Room: Ash

Wednesday, November 9, 2016  
11:30am – 2:00pm  
City of Modesto / Stanislaus County Building  
1010 10th, Modesto, CA 95354  
Meeting Room: Suite 1013 (on first floor between elevators)

**BACKGROUND:** The eight San Joaquin Valley Metropolitan Transportation Organizations (MPOs) have come together in partnership with the Institute of Transportation Studies at UC Davis (ITS-Davis) and Michael Sigala (Sigala Inc.) to develop a pilot program that leverages new technology-driven, shared access services (such as ridesharing, carsharing, and bikesharing) to cost-effectively expand transportation options and access in rural, disadvantaged communities in the San Joaquin Valley. The purpose of today's focus groups is to gain a better understanding of transportation needs, issues, and barriers residents face; and to gain a better understanding of communities in the San Joaquin Valley that are best positioned to participate in a pilot program.

## **AGENDA:**

- 11:30am Welcome and Introductions**  
*Caroline Rodier and Laura Podolsky – Institute of Transportation Studies, UC Davis*
- 11:40am Introduction the Pilot Program Project and Purpose of the Focus Group**  
*Caroline Rodier and Laura Podolsky*
- 12:00pm Facilitated Discussion with Focus Group Participants**



## Understanding the Transportation Needs in Rural Communities

- I. What are unique travel behaviors and/or travel needs in rural communities in this region? For example, are there destinations (e.g., employment, healthcare, school/university, shopping) that are difficult to reach based on currently available transportation options?
- II. Please describe the type, cost, reliability and convenience of transportation options currently available in these communities.
- III. Are there existing on-demand transportation services in rural communities? If so, who uses these services and are there any gaps in service?
- IV. Do residents ever use ridesharing or carsharing type services? Can you describe any informal or formal use of these types of services?

## Criteria for Selecting Community to Participate in Pilot Program

What criteria should be used for selecting the location for the pilot project?

Potential criteria can include but is not limited to the following:

- **Need** – Does the community lack affordable, reliable, and convenient transportation options? Is there low auto ownership in the community and/or is the community located in an area with limited transit service? Is the community identified as being disproportionately affected by pollution and/or environmental impacts? Are a large proportion of residents low income?
- **Service** – What would the magnitude of service improvement be if the community received additional transportation options? For example, would additional transportation options allow more residents to receive healthcare, attend school, and/or access jobs?
- **Capacity / Readiness** – Is there institutional support for the pilot? Is the community engaged and supportive? Is there a political and/or community champion?
- **Cost-Effective** – Would a new shared transportation service (e.g., carsharing, ridesharing, bikesharing) be more cost effective to operate than current public transportation options?
- **Economic Impact** – Would a new shared transportation service pilot help provide jobs or connect residents to jobs?
- **Representative** – Is the community representative of other communities in the Valley? Could the pilot be easily replicated in other communities?

## Understanding Barriers to Using New Shared Service Transportation

- Many shared transportation service models require the customer to create an account that has a debit or credit card on file to be used for payment. In addition, customers must request rides via a smart phone application. Will

these requirements restrict residents' use of the service? If so, can you suggest alternative user-interfaces and/or payment methods?

- What are additional barriers you see for residents using these new models of transportation services?

**1:45pm**      Wrap-up, Next Steps, and Closing Thoughts  
Laura Podolsky

**2:00pm**      Adjourn