

Prepared for

The Leonard Transportation Center

San Bernardino, CA

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Providing Senior Citizen Mobility at Minimum Public Cost (Final Report)



California Polytechnic State University

San Luis Obispo, CA 93407

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Table of Contents

Acknowledgments	viii
Summary of Key Findings	ix
1.0 Introduction	1
The Senior Mobility Study	1
Problem Statement	1
2.0 Studies and Efforts	4
Issues with Senior Mobility	5
Senior Mobility Programs	6
Public Services	6
Personal Services	10
Programs	10
Senior Mobility Services in San Luis Obispo County	10
Evaluation	11
Systems and Policies	11
3.0 Key Funding Sources	13
Introduction	13
Federal Sources	13
Federal Funding Targets	15
General Public	15
Seniors	15
Medical and Disabilities	18
Low-Income Persons	18
Other Specified Target Groups	18
Other Funding Sources	18
Flow of Federal Funds	19
Attributes of Federal Funding Programs	20
Existing Federal Funding for California	20
State Sources	21
General	21
State Support for San Luis Obispo County	22
Local Sources	22
Sample Level of Transit Funding in SLO County	23
4.0 Fare Payment & Equity	24
Senior Mobility and Cost	24
Standard Pricing Issues	24
Group Pricing	25
5.0 Study Approach	27
Overview	27
Synthesis of Senior Mobility Options and Needs	27
Literature Review	27
Senior Mobility Survey	27
Mobility Gap Analysis	27

Case Study Selection	28
Survey Administration	28
Sample Data and Weighting	28
6.0 Overview of Survey Data	30
Introduction	30
Access to Transportation	30
Driver Licenses	30
Residing With Licensed Drivers	31
Access to Vehicles	31
Vehicle Maintenance Costs	32
Driving Difficulties	32
Access to Public Transportation	33
Mode Choice	33
Mode Choice by Gender	34
Mode Choice by Age	35
Use of Other Modes by Auto Users	36
Economic and Housing Profile	36
Income	36
Housing Type	37
Physical Limitations	39
Types of Physical Limitations	39
Disability Placards	39
Characteristics of Trips by Purpose	39
How Often Trips Are Made	40
Length of Trips	42
Time of Day of Trips	45
7.0 Origins, Destinations and Public Transportation Routes	47
Introduction	47
Origins: Spatial Distribution of Senior Citizen Population	47
Proximity of Senior Citizen Population to Transit	49
Destinations of Most Common Trips by Purpose	55
Shopping Trips	55
Medical Trips	61
Social/Recreational Trips	67
Occupational Trips	73
Measures of Accessibility	79
Implications of Findings with Origins, Destinations, Trip Types and Transit Access	81
8.0 Findings: Revealed vs. Stated Preferences	82
Introduction	82
Choice of Travel Mode by Purpose	82
Travel Mode Choices vs. Preferences	82
Reasons for not Choosing Public Transportation	83

Reasons Why Seniors Prefer Certain Modes of Transportation	84
Overall	84
Drive Alone	84
Auto Passenger	85
Demand-Response Service	86
Fixed Route Transit Service	86
Choices vs. Preferences of Seniors with Physical Limitations	87
Physical Limitations vs. Mode Choice	87
Physical Limitations vs. Mode Preferences	87
9.0 Transferable Procedure	89
Factors of Transit Accessibility	89
Measuring Spatial Access	89
Transit Accessibility Metric	90
User Characteristics and Preferences	90
10.0 Conclusion	91
References	93
Appendix to Chapter 3	96
Appendix 3-1: Federal and State Sources of Transit Funding	96
Transit Project Eligibility by Federal Funding Source (1 of 2)	96
Transit Project Eligibility by Federal Funding Source (2 of 2)	97
Transit Project Eligibility by State Funding Source (1 of 2)	98
Transit Project Eligibility by State Funding Source (2 of 2)	99
Appendix 3-2: Federal and State Transit Funding Programs	100
Federal Transit Project Funding Programs (1 of 3)	100
Federal Transit Project Funding Programs (2 of 3)	101
Federal Transit Project Funding Programs (3 of 3)	102
State Transit Project Funding Programs (1 of 1)	103
Appendix 3-3: County-Sponsored Transit Tax Ballot Measures in California	104
Appendix to Chapter 5	105
Appendix 5-1: Distributions and Weighting of Survey Data	105
Distribution of Seniors: 2009 Population vs. Survey Sample	105
Two-Stage Weighting	105
Weighting to Match Census Population	106
Appendix to Chapter 6	107
Appendix 6-1: Senior Mobility Survey Instrument	107
Appendix to Chapter 7	111
Appendix 7-1: Distances between Residences and Transit Routes	111
General Population	111
Senior Population	112
Land Area	113

List of Tables

Table 2-1: Matrix of Senior Mobility Options.....	7
Table 3-1: Funding Sources and Target Groups of 15 Key Federal Programs for Senior Mobility	16
Table 3-1: Funding Sources and Target Groups of 15 Key Federal Programs for Senior Mobility (Continued from previous page)	17
Table 3-2: Attributes of Federal Programs for Senior Mobility	20
Table 3-3: Recent Apportionments of FTA Program Funds to California (\$ millions).....	21
Table 3-4: Sample Funding Levels in SLO County (FY 2004/2005)	23
Table 5-1: Distribution of Seniors by Cities in San Luis Obispo County, California (2000)	28
Table 6-1: Percent of Senior Citizens Holding Driver licenses	30
Table 6-2: Seniors Not Holding Driver licenses – Last Time Held License.....	31
Table 6-3: Do Seniors Live With Other Licensed Drivers?.....	31
Table 6-4: Number of Autos Available in Senior Households	31
Table 6-5: Annual Spending on Automobile Maintenance	32
Table 6-6: Difficulty Driving an Automobile	32
Table 6-7: Types of Difficulty for Seniors Who Have Difficulty Driving	32
Table 6-8: Distance of Nearest Transit Stop to Residence	33
Table 6-9: Most Frequently Used Mode of Transportation (All Trips)	34
Table 6-10: Most Frequently Used Mode of Transportation by Gender (All Trips)	35
Table 6-11: Most Frequently Used Mode of Transportation by Age (All Trips).....	36
Table 6-12: How Often Do Auto Users Take Other Modes (Other Than Walking).....	36
Table 6-13: Annual Income of Senior Citizens– San Luis Obispo County, 2009	37
Table 6-14: Housing Types Senior Citizens Live In – San Luis Obispo County, 2009	37
Table 6-15: Housing Tenure of Senior Citizens– San Luis Obispo County, 2009	37
Table 6-16: Relationships of Those Seniors Live With.....	38
Table 6-17: Number of People in Household	38
Table 6-18: Types of Physical Limitations.....	39
Table 6-19: Possession of Disability Placards	39
Table 6-20: Frequency of Shopping Trips	40
Table 6-21: Frequency of Medical Trips	40
Table 6-22: Frequency of Social/Recreational Trips	41
Table 6-23: Frequency of Occupational Trips	41
Table 6-24: Physical Distance of Typical Shopping Trips	42
Table 6-25: Physical Distance of Typical Medical Trips	42
Table 6-26: Physical Distance of Typical Social/Recreational Trips	43
Table 6-27: Physical Distance of Typical Occupational Trips	43
Table 6-28: Travel Times for Typical Shopping Trips	44
Table 6-29: Travel Times for Typical Medical Trips	44
Table 6-30: Travel Times for Typical Social/Recreational Trips	44
Table 6-31: Travel Times for Typical Occupational Trips	44
Table 6-32: Time of Day for Typical Shopping Trips	45
Table 6-33: Time of Day for Typical Medical Trips	45
Table 6-34: Time of Day for Typical Social/Recreational Trips	46
Table 6-35: Time of Day for Typical Occupational Trips	46
Table 7-1: Geographic Distribution of Senior Citizens in San Luis Obispo County	47
Table 7-2: Population Densities and Proportions within Walking Distance to Transit Routes in San Luis Obispo County, California (2000).....	79
Table 8-1: Modal Choices by Trip purpose – Seniors in San Luis Obispo County, California.....	82
Table 8-2: Revealed vs. Stated Modal Preferences of Seniors in San Luis Obispo County, California	83
Table 8-3: Most Frequently Selected Reasons Why Seniors Avoid Public Transportation.....	83
Table 8-4: Most Frequently Selected Reasons Why Seniors Prefer Certain Modes of Transportation	84
Table 8-5: Most Frequently Selected Reasons Why Seniors Prefer the Automobile	85
Table 8-6: Most Frequently Selected Reasons Why Seniors Prefer to Ride as Automobile Passengers	85
Table 8-7: Most Frequently Selected Reasons Why Seniors Prefer Demand-Response Services	86
Table 8-8: Most Frequently Selected Reasons Why Seniors Prefer Fixed Route Transit Service.....	86

Table 8-9: Relative Frequencies of Modes Chosen by Type of Physical Limitation	87
Table 8-10: Relative Frequencies of Modes Preferred by Type of Physical Limitation	88

List of Figures

Figure 1-1: Projected Growth in the Senior Population of California	2
Figure 2-1: Seniors Aged 75+ Who Have Public Transportation Available to Them, by Area Type	4
Figure 3-1: Flow of Transportation Funds from Federal to Senior Mobility Programs.....	19
Figure 7-1: Geographic Distribution of Senior Citizens in San Luis Obispo County.....	48
Figure 7-2: Senior Citizen Population and Proximity to Transit, San Luis Obispo County	50
Figure 7-3: Senior Citizen Population and Proximity to Transit, Central County (City of SLO).....	51
Figure 7-4: Senior Citizen Population and Proximity to Transit, North Coast	52
Figure 7-5: Senior Citizen Population and Proximity to Transit, North County	53
Figure 7-6: Senior Citizen Population and Proximity to Transit, South County (Five Cities)	54
Figure 7-7: Most Common Destinations Reported for Shopping Trips.....	56
Figure 7-8: Most Common Destinations Reported for Shopping Trips, Central County	57
Figure 7-9: Most Common Destinations Reported for Shopping Trips, North Coast	58
Figure 7-10: Most Common Destinations Reported for Shopping Trips, North County	59
Figure 7-11: Most Common Destinations Reported for Shopping Trips, South County	60
Figure 7-12: Most Common Destinations Reported for Medical Trips	62
Figure 7-13: Most Common Destinations Reported for Medical Trips, Central County.....	63
Figure 7-14: Most Common Destinations Reported for Medical Trips, North Coast.....	64
Figure 7-15: Most Common Destinations Reported for Medical Trips, North County	65
Figure 7-16: Most Common Destinations Reported for Medical Trips, South County	66
Figure 7-17: Most Common Destinations Reported for Social/Recreational Trips	68
Figure 7-18: Most Common Destinations Reported for Social/Rec. Trips, Central County	69
Figure 7-19: Most Common Destinations Reported for Social/Rec. Trips, North Coast	70
Figure 7-20: Most Common Destinations Reported for Social/Rec. Trips, North County.....	71
Figure 7-21: Most Common Destinations Reported for Social/Rec. Trips, South County.....	72
Figure 7-22: Most Common Destinations Reported for Occupational Trips.....	74
Figure 7-23: Most Common Destinations Reported for Occupational. Trips, Central County	75
Figure 7-24: Most Common Destinations Reported for Occupational. Trips, North Coast.....	76
Figure 7-25: Most Common Destinations Reported for Occupational. Trips, North County	77
Figure 7-26: Most Common Destinations Reported for Occupational. Trips, South County	78
Figure 7-27: Population Densities and Proportions near Public Transit, SLO County, 2000.....	80

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Cornelius Nuworsoo is the Principal Investigator. He prepared the study proposal, conducted day-to-day project management and coordination of all tasks. He performed the analyses and wrote the study reports.

Key Words

Senior, mobility, dial-a-ride, demand-response, paratransit, on-call service, public transportation, automobile, mobility programs

Summary of Key Findings

The Senior Mobility Study

This final report combines material previously documented in two working papers on a project to investigate ways of providing cost-effective mobility programs for senior citizens at minimum cost to both the public and the beneficiaries. This report therefore includes a synthesis of literature review and other background information gathered to help the analytic process; the analysis of survey data; a gaps analysis; and resulting conclusions.

Problem Statement

The United States is undergoing tremendous change in its demographic composition. Projections indicate that the proportion of seniors will double within the next two decades. The phenomenon is attributable to the aging of the baby-boomer generation within an era of increased longevity. This is true at the national level and within the state of California. The expected increase in the senior population has been recognized for more than a decade and several studies and mobility programs have attempted to address senior needs. Studies found that more and more seniors travel either as drivers or automobile passengers but still face mobility barriers especially as they reach the point of having to give up driving. Studies also found that seniors may suffer from physical or medical problems but still seek active community lives. This demographic trend underscores the need to expand senior services. These services will include assisted transportation for older citizens who would no longer drive.

Senior Locations vs. Public Transit

In the US, more than three quarters of all seniors live in lower density rural and suburban areas. These areas are not served as well by public transportation as urban areas are. There are paratransit services that could fill the gap in mobility needs of seniors, but with the passing of ADA legislation, many of these services became devoted predominantly to disabled passengers. Besides, paratransit has proven to be a very expensive way of providing alternative transportation.

Senior Mobility Options

Over the last decade, many publications have identified a multitude of programs that are operational in the US and abroad to deal with senior mobility needs. The services include public modes that are open to the general public, yet some are private or personal and others are simply programs. Some of the services provide for life-sustaining trips, such as medical services, but life-enhancing trips are often not targeted by specific programs.

A review of the literature reveals that many options are already in existence for senior mobility, but what is lacking is matching them with the true needs of seniors. [Table 2-1 provides a summary of senior mobility options from around the globe].

The delivery of senior mobility services in the US is fragmented. This may be partially attributable to the variety of funding sources and policies as well as legislative requirements available. Both service providers and human services personnel agree that there needs to be better coordination among the varieties of services provided. The public transportation system in Borås, Sweden offers an example of a coordinated system that caters to varying needs of seniors.

Funding for Senior Mobility Programs

Several sources of funding exist at the local, state and federal levels for capital and operating needs in public transportation, particularly public transit. Like other sectors of the economy, needs typically exceed resources. It is arguable that the variety of funding sources and opportunities available for mobility options in general is what has spawned the assortment of services that overlap yet seem inadequate in the US.

Federal Sources – There are funding sources that specifically target or are inclusive of seniors. Among the various Federal funding programs are those that are available through: (a) The Federal Transit Administration (FTA). (b) The Department of Health and Human Services, (c) The Department of Education and (d) The Department of Labor. These agencies together offer fifteen programs targeted at senior mobility. It is interesting to note that even the United States Government Accountability Office was not able to determine the amount spent on transportation services through many of these federal programs. The majority of Federal funds must be channeled through the States; only a few are awarded directly to service providers. [Table 2-2 provides a summary of programs targeted at senior mobility].

The FTA programs, based on gas tax receipts put in the mass transit account of a trust fund, seem to be the most transparent. The Section 5310 Formula Grant: Transportation Funding for Special Needs includes funding for elderly transportation. Each year, qualifying not-for-profit and public agencies can receive up to 80% funding for the purchase of vehicles and related equipment to serve individuals with special needs including seniors. In the 2007/2008 Fiscal Year, for instance, approximately \$12 million in Federal funds were available for the entire state of California. Other programs specifically for seniors include: (a) Grants for Supportive Services and Senior Centers (Title III-B), which enable contracts with existing transportation providers for various trip purposes; and (b) The Program for American Indian, Alaskan Native, and Native Hawaiian Elders (Title VI), which allows for purchasing or operating of vehicles for various trip purposes. Both of these programs are offered by the Administration on Aging of the Department of Health and Human Services.

State and Local Sources – Inadequate Federal funds are supplemented with State and local funding. In California, the principal source of transit operating subsidies is the Transportation Development Act (TDA) fund that derives from a 0.25 cent sales tax that is deposited to a Local Transportation Fund (LTF) to be apportioned to transit operators within counties according to service area population. The second source is the Public Transportation Account (PTA) revenues that accrue from a sales tax on gasoline and diesel fuel. Fifty percent of all PTA revenues go to the State Transit Assistance (STA) Program, which provides funds for public transit operations and for regional transit projects. STA funds support transportation planning and mass transportation only, which includes funding for vehicles and equipment. A growing source of local support for public transportation is the Local sales tax initiative based on California laws that enable counties to enact these limited-term sales tax supplements for transportation improvements. Four Transit Districts and 19 counties out of 58 had these ballot measures in place within California as of 2007.

Equity

A large and growing literature addresses the subject of equity and environmental justice issues in pricing public transportation services. Although Transit fares do not conform strictly to all of the standard economic criteria for pricing, equity remains an important consideration in charging for transit service, particularly as measured by ability to pay. The collection of senior mobility options (shown in Table 2-1) include both public and private providers, some of which rely on government subsidies with fare payments by users while others (like taxi vouchers) may not. There are equity considerations with regard to the way these options are either funded or paid for. Under conventional economic pricing criteria, equity analysis of the impacts of costs on various groups of seniors can help determine the inherent fairness (or lack thereof) among candidate programs. A promising method of paying for senior mobility needs is the use of risk pooling schemes such as group passes. A group pass program provides a group of people with unlimited transit rides in exchange for some contractual payment for or on behalf of pass users by an organizing body. The concept is very similar to an insurance policy: a large group of people contribute an amount of money for a service, and then they agree to share any losses or gains among the group. The larger the participating group, the more the costs are spread, resulting in a lower marginal cost for each additional member. In the case of group passes, a group of people can pay a monthly fare that is a fraction of the cost of buying a pass individually. In group financing schemes, participants inherently cross-subsidize each other. Regardless of the option or group of options chosen to meet senior mobility needs, the group pass program holds high potential as a cost-effective way of financing senior mobility needs.

Study Approach

The study involved the selection of a case study location on the Central Coast of California, where seniors are known to relocate upon retirement. Surveys of senior activities and mobility needs were conducted and combined with census data in the analysis, which employed such tools as GIS for

spatial analysis and SPSS for statistical analysis, in the identification of origins, destinations, routes and gaps in existing services relative to need. From these analyses, conclusions are drawn on senior mobility options that need to be examined for the large influx of senior populations that are imminent in the US. The procedure used in the analysis is anticipated to be transferable for use in other areas.

Senior Mobility Survey

A survey was conducted to find out about the most frequent travel needs and destinations of seniors within the case study area of San Luis Obispo County. Seniors were asked to identify their various travel needs and rank their choices and preferences of transportation options. Locations of the most frequently traveled locations were analyzed spatially with GIS. The data was summarized to guide the identification of appropriate service delivery options for seniors.

Driver Licensing – A large majority of seniors, nearly 85 percent of respondents, report that they hold driver licenses. Of those seniors who report not holding a driver license, slightly more than half said the last time they held a driver license was within 1 to 9 years ago.

Access to Vehicles – A vast majority of seniors (86%) has access to at least one vehicle in the household. For those that own vehicles, over 70 percent report spending less than 2,500 dollars on maintenance, including gas, insurance, repair, registration, etc. per year.

Driving Difficulties – Almost 84 percent of driving seniors report no difficulty in driving an automobile. Out of those seniors that did report driving difficulty, the most common difficulty cited (45%) is cost. Other relatively common complaints include pain or discomfort while driving (32%) and traffic congestion (32%).

Access to Public Transportation – Slightly more than half of seniors report being reasonably close (that is, less than a quarter mile) to a transit stop.

Mode Choice – Consistent with the high proportion of seniors who hold driver licenses and have access to automobiles, more than 83 percent of seniors say they use the automobile most frequently. Transit service (including buses and trains) constitute the second highest used mode (7.5%). Both males and females are similarly dependent on the automobiles for the majority of their travels. Seniors over age 85 use on-call services at a much higher rate than younger seniors, with over one eighth of the 85+ population using on-call services most frequently, which is almost four times as much as the next lower age cohort.

Income – Approximately two out of five seniors surveyed reported annual incomes of \$10,000 to \$25,000, two times the proportion in the next highest income group of \$25,000 to \$40,000. A significant 15 percent of respondents did report earning less than \$10,000 dollars, which is below the U.S. Census definition of poverty for a single-person household.

Housing – The majority (54%) of seniors surveyed live in houses, with another quarter living in apartments or condos and nearly two out of five living in mobile homes.

Physical Limitations – Nearly half of seniors say they are afflicted by some form of physical limitation of which the commonest is walking with difficulty (25%). The various physical limitations that seniors have lead to a significant need for blue disability placards (31%).

Travel Characteristics -- Seniors make shopping trips very frequently, with two thirds reporting making shopping trips a few times per week. This suggests that the routing of transportation services to serve seniors should include access to shopping facilities. Unlike shopping, slightly more than half of seniors make medical trips only a few times per year. Seniors make social and recreational trips nearly as often as shopping trips. Being within retirement age, occupational trips are the least frequent of the four trip purposes, with almost 45 percent of seniors reporting never making an occupational trip.

Trip distances reveal a dichotomy of several short trips (less than five mile) and significant numbers of long trips more than 10 miles for all purposes. For all four trip purposes, the distribution of travel times follows more or less the shape of a bell curve.

Seniors tend to make their trips early in the day. The most common time period for senior travel is between 10 am and noon. The distribution of senior trips in time generally decline as the day progresses.

Mobility Gap Analysis

Shopping trips have consolidated destinations, with common destinations concentrated in certain communities, and relatively few in other communities. On the opposite end of the spectrum are social and recreation trips, which have destinations distributed in most communities across the County. Medical trips appear to have both consolidated and distributed destinations, with agglomeration of medical offices in communities with hospitals, but with other medical offices present in many communities. Occupational trips, as defined in the survey, also appear to be both consolidated and distributed, with employment and some educational trips tending to be consolidated, and other educational and volunteer trips tending to be distributed.

In order to cover trips to both consolidated and distributed destinations, senior transportation service needs to be flexible. It should both have the capacity to carry several passengers over relatively long haul distances to a few set of destinations, but also nimble enough to carry few passengers for short distances to a wide array of destinations. This would suggest some form of van service rather than a large bus or an automobile.

Transportation Choices and Preferences of Seniors

In comparing the mode choices made with mode choices preferred, the following are noteworthy:

1. Twice as many seniors (24%) would prefer public transportation in the form of buses, trains and dial-a-ride as those that actually do use it (11%).
2. Dial-a ride would be particularly preferred as it would quadruple the existing level of choice from 3% to 12% matching the use of conventional fixed route transit. This suggests the need to revamp dial-a-ride service to be more efficient and more available.
3. Half of all seniors would still prefer to drive, a significant reduction, nevertheless, from the existing level of two-thirds. The proportion of seniors who prefer to travel as car passengers remains the same as those who actually choose that means of travel.
4. Non-motorized modes (walking and biking) are only preferred at approximately the same levels as existing. This is not surprising since activity centers are typically spread out because of land development patterns.
5. It is apparent that seniors would prefer motorized wheelchairs over walking or biking as its stated preference gains in rank while the ranks of the non-motorized modes fall from existing choice levels. This suggests a close look at electric wheelchairs with appropriate infrastructure to address this aspect of senior mobility needs.
6. Overall, convenience is by far the most frequently chosen reason for preferring specified modes. Seventy-seven percent of respondents chose convenience, which is two times as frequent as the next highest reason.

Conclusions

The survey of seniors revealed that: (a) seniors in general would prefer dial-a-ride more than any other public transportation mode; and (b) seniors with physical limitations would prefer dial-a-ride as much as, if not more than, any other means of travel. The costs of dial-a-ride service make it imperative to maximize its efficiency and optimize the customer experience. Efficiency is just as important to passengers using the service as it is to the operators. There is a need to rethink and revamp operation of dial-a-ride service, if society is to meet future mobility preferences of very large incoming cohorts of seniors.

Considering the dispersed pattern of land development in metropolitan areas within the US, dial-a-ride seems, in concept, to offer the type of public transport service that is closest to the overwhelmingly chosen form of personal transportation, automobile travel. However, its structure and method of operation has rendered it the least efficient. The very wide range in the costs of providing service suggest that major restructuring may hold promise in turning it into an effective public transportation option.

A promising method of paying for senior use of a revamped, expanded and more efficient dial-a-ride service is the use of risk pooling schemes such as group passes. A group pass program provides a group of people (such as seniors) with unlimited transit rides in exchange for some contractual payment for or on behalf of pass users by an organizing body (which may be an umbrella senior center with or without contributions from individual seniors or the department of human services). This scheme has the potential to minimize costs for both the public and individual seniors in meeting senior mobility needs of the future.

1.0 Introduction

The Senior Mobility Study

This final report combines material previously documented in two working papers on a project to investigate ways of providing cost-effective mobility programs for Senior Citizens at minimum cost to both the public and the beneficiaries. The study was envisioned as: (a) a scan of potentially appropriate mobility solutions from surveys and literature; (b) the development of a transferable procedure for identifying and fulfilling mobility needs; and (c) identification of the most promising programs and innovative ways of financing senior mobility needs at low cost. The study is funded by the Leonard Transportation Center, one of the University Transportation Centers in the State of California. The study is focused on California, but lessons are gleaned from national and international sources. The case study location is San Luis Obispo County, but findings and procedures developed are anticipated to be useable at State and national levels. This final report covers review of the literature, the analysis of survey data and other background information and resulting conclusions.

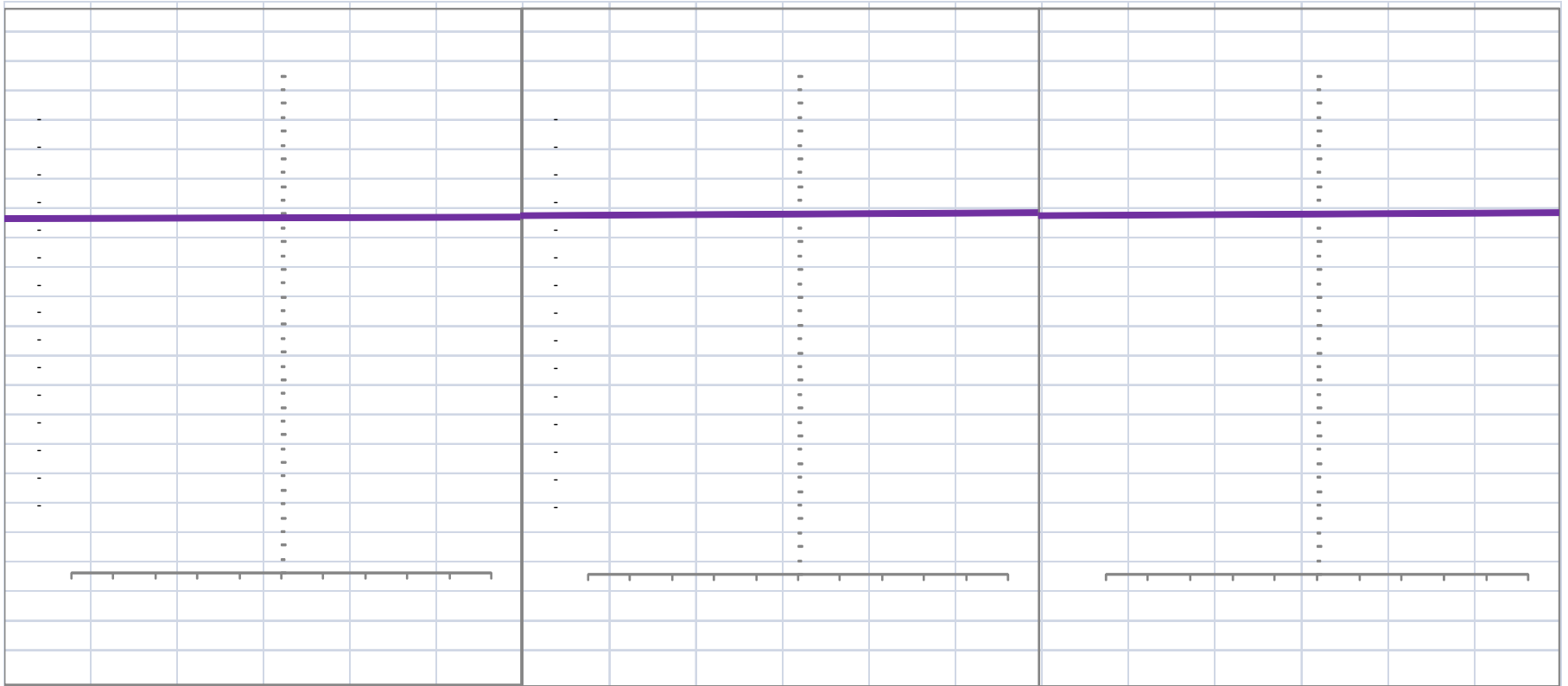
Problem Statement

The United States is undergoing tremendous change in its demographic composition. The State of California, for instance, projects significant increases in both absolute numbers and proportions of seniors (i.e. those aged 65 and more) in the population over the next four decades. (DOF, 2007) The 3.6 million seniors recorded in the 2000 Census constituted 10.6 percent of the state's population. By 2050, this number is projected to triple to 11.6 million seniors and 19.5 percent of the total population. See Figure 1-1. This demographic trend underscores the need to expand senior services. These services will include assisted transportation for older citizens who would no longer drive.

Traditional public transit is not known to be convenient in terms of spatial coverage or service frequency except in selected corridors in a few of the largest cities around the country. A likely option, dial-a-ride service, is not flexible enough to be truly demand-responsive and tends to be very expensive to provide. Transit operators are already plagued with low fare-box recovery ratios thus requiring subsidies. Increases in senior demand for demand-responsive services can aggravate the financial situation of the agencies unless innovative funding mechanisms are adopted.

There is the need therefore to devise and adopt innovative mobility services as well as methods of payment to meet the inevitable increase in the needs of seniors. This study examines ways to accomplish this.

Figure 1-1: Projected Growth in the Senior Population of California



Source of data: State of California, Department of Finance, (DOF) July 2007

For more than a decade, there has been the awareness of the need to gear up for an upsurge in the senior population in the US. The situation is already in existence in parts of Europe. And various studies have been devoted to analyzing the phenomenon. Some of these studies are reviewed in subsequent sections of this document.

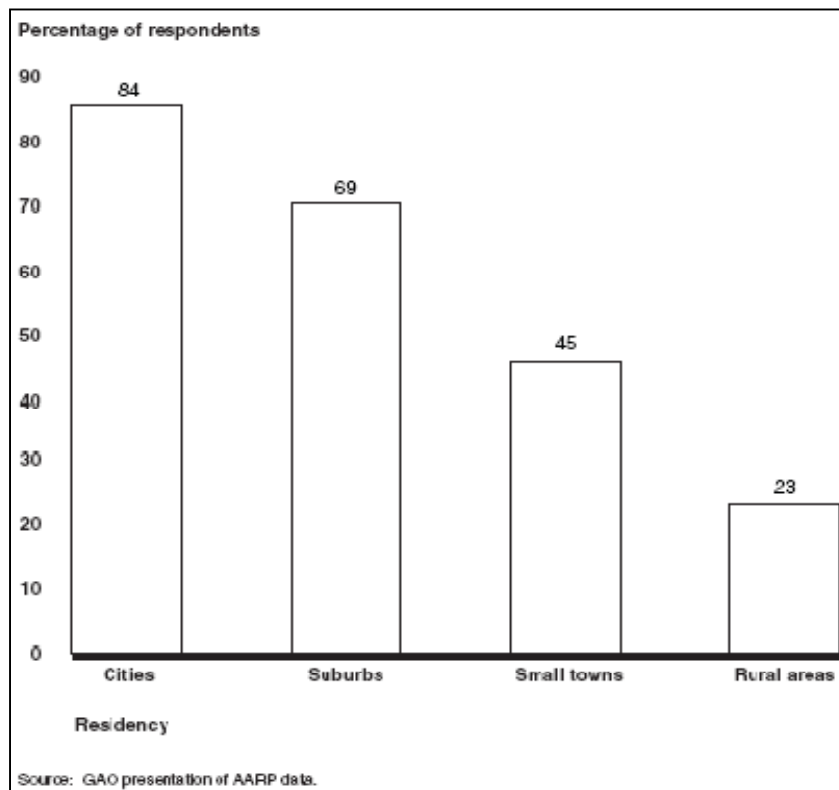
At the national level a Special Committee of the US Senate on Aging was established to look into the issue. The United States Government Accountability Office (GAO) reported to the Chairman of the Senate Committee in 2004 that: “transportation service providers have implemented a variety of practices that enhance transportation-disadvantaged seniors’ mobility and the cost-effective delivery of these services; however, the providers interviewed indicated that implementation of such practices was sometimes impeded by multiple reporting requirements and limited federal guidance”. The study recommended therefore that “Health and Human Services Administration on Aging take several actions to improve guidance and information on transportation-disadvantaged seniors’ mobility, including developing guidance on assessing mobility needs and publicizing available information on alternative transportation services and on practices service providers can implement to enhance senior mobility”. The objectives of this project fall in line with this GAO recommendation.

On the academic front, researchers at the University of Michigan Transportation Research Institute (UMTRI), for instance, have focused on the development and testing of theories on how driving changes relative to declines in cognitive, perceptual, and psychomotor skills; the evaluation of technology for maintaining safe senior mobility; and development of test screening and assessment tools for seniors. UMTRI researchers produced many publications that address strategies and tools to enable safe mobility for older adults, crash trends of older drivers, promising approaches for enhancing elderly mobility and other pertinent topics. Despite the diversity of research topics, the UMTRI publications do not exactly fulfill the objectives of this project as they focus on the ability of seniors to drive as opposed to harnessing the broader transportation options available. This study explores these broader options with a focus on those that can enhance senior mobility.

2.0 Studies and Efforts

A study by Rosenbloom (2003) on the mobility needs of older Americans and implications for transportation addresses the needs of seniors, their environment, potential transit services, potential ticketing methods, issues, methods of evaluating services, policies regarding seniors' transit, and funding sources. The study projects that approximately one in five Americans will be over age 65 by 2030 and noted that more than half of all seniors (56 percent) already live in the suburbs with the remainder shared nearly equally between rural and urban areas. Thus more than three quarters of all seniors live in lower density rural and suburban areas in which Cervero, et al (2002) assert that demand for travel is not served by the traditional bus system as well as in urban areas. The GAO reports survey data from the American Association of Retired Personnel (AARP) that confirms this disparity in accessibility to public transportation by type of development density. Figure 2-1 is a summary of the AARP data.

Figure 2-1: Seniors Aged 75+ Who Have Public Transportation Available to Them, by Area Type



Note: Estimates have sampling errors that do not exceed + or - 4.5 percent at the 95 percent confidence level.

Source: Figure 4, United States Government Accountability Office. (2004), page 27

Though 43 percent of seniors are within a half-mile of a bus stop in suburbs, transit use by the elderly has been falling. Rosenbloom notes that “regardless of where they live, most older people are extremely dependent on the private car, either as a passenger or a driver, and increasingly the latter”. Pucher and Renne (2003) show, for instance, that 46 percent of seniors travelled in single occupancy vehicles (SOV) with no passengers and 43 percent traveled in high occupancy vehicles (HOV) with two or more occupants in 2001. Rosenbloom maintains therefore that “many older people drive but still face

mobility barriers, or they suffer from physical or medical problems but still seek an active community life.” The study continues with the prediction that “the large increase in the sheer number of older drivers, especially women, will cause an absolute increase in crash rates, even if per capita rates continue to drop.” Hence the need to address senior mobility needs as that segment of the population continues to grow. The study therefore recommends that authorities (a) plan explicitly for the mobility needs of the elderly; (b) target public transit services and facilities directly for the elderly; (c) support alternative transport options; and (d) improve the highway and street infrastructure to be more accommodating or the elderly. Consistent with these recommendations, Stutts (2006) proposes that the goals for providing services should include: independence, access to important services, and allowing for social contact. The objectives of this study conform to these sets of recommendations.

Efforts have been afoot within the State of California to address senior mobility issues. Since 2001, for instance, The Orange County Transportation Authority (OCTA) instituted a Senior Mobility Program (SMP). The program’s objective is to fill the gap between local fixed route bus and para-transit services by providing additional local transportation services to seniors in participating cities in the County. It is strictly a funding program to acquire and operate vehicles targeted at seniors and 18 cities participate.

The document, 2003 Senior Mobility Toolkit, of the Metropolitan Transportation Commission is another California effort, which purports “to develop a toolkit with information about successful efforts to promote senior mobility with examples from the San Francisco Bay Area and elsewhere”. The study addresses issues of private funding, volunteering, affordable taxi for seniors (from subsidies by local governments) and safety. It does not, however, address the issue of minimizing cost to both the public and beneficiaries as focused upon in this project.

Issues with Senior Mobility

Many seniors in the US today have used cars, and lived in auto-oriented environments for much of their lives (Molnar, 2005). As they become older, the hours within which they feel comfortable driving often become restricted (Molnar, 2005) and some elderly people will have to stop driving completely. This is because as people age, they will have developed (a) difficulty in “seeing signs or judging distances” (Amparano, 2006), (b) longer reaction time and (c) restricted movements, among other issues.

Besides the difficulties that arise for the elderly in driving, they must also face others in the use of public transit. One issue is how senior mobility needs would be served by an often inadequate public transportation system. Many suburban and rural areas have been unable to provide cost-effective public transportation options. Cervero, et al. (2002) show that with increased suburbanization, the demand for travel between a variety of lower density activity centers is not being served by the traditional bus system. With the majority of seniors living in suburban and rural areas, they are confronted with the challenges associated with public transit in such low density areas just like everyone else. If it is assumed that people will walk approximately a quarter of a mile to a bus stop, it would require a vast expansion

of lines to provide enough bus stops in most suburban communities. This fact combined with an often circuitous, rather than grid-like, road structure, under conditions of perennial shortage of capital and operating funds makes the basic radial bus services unfeasible. There are paratransit services that could fill this gap, but with the passing of ADA legislation, many of these services became devoted predominantly to disabled passengers (Lave and Mathias, 2000). Because paratransit services are required to provide high quality service to the severely disabled, able-bodied elderly do not have priority. It is also documented that paratransit is a very expensive way of providing alternative transportation (Rosenbloom, 2003). Even if a workable public transportation system were developed, many seniors face the issue of being unaccustomed to using public transportation and needing guidance to begin its use (Metropolitan Transportation Commission, 2003).

Senior Mobility Programs

Over the last decade, many publications have identified a multitude of programs that are operational in the US and abroad to deal with senior mobility needs (Simon, 1998; Stahl and Westerlund, 1999; Suen & Mitchell, 2000; Cervero et al, 2002; Molnar et al, 2003; MTC, 2003; Suen & Sen, 2004; Burkhardt, 2006; Kerschner and Hardin, 2006; Beverly Foundation, 2001, 2004, 2007). These services are compiled in summary and listed with additional details in Table 2-1. For ease of organization, the services are grouped into public modes, personal modes, and programs.

Public Services

Public services include all “for-hire” modes that can carry any person or group of people. They may be divided into four groups: fixed routes, deviation routes, tailored routes, and door-to-door services.

Fixed routes refer to the basic public transit bus routes that many cities have in the US. They ply pre-designated routes according to fixed schedules and stop at predetermined stop locations. These routes are open to the public, though they are sometimes made more accessible to the elderly and the disabled with: (a) special equipment such as wheelchair lifts and kneeling buses; (b) priority assigned seats; and (c) discounted fares. These routes are most effective in urban areas. In many places, this is an existing form of transit, but in most suburban or rural areas, people are not within walking distance of bus stops and the services, schedules and times are limited. Services may be extended, as shown in Table 2-1, in some cases to provide transit for groups in need. Service extensions may be in the form of additional stops or hours of operation and depend on densities, proximity to activity centers or identified special need. There are examples of fixed route services in most communities in California. In San Luis Obispo (SLO) County, for instance, **SLO Transit** serves the City of San Luis Obispo while the Regional Transit Authority (**RTA**) provides public transit links between communities in the county.

Table 2-1: Matrix of Senior Mobility Options

Mobility Option	Description	Example	Operation and Funding	Customer	Vehicles	Speed	# of passengers	Street Legal	Requirements (Infrastructure)
Fixed Route									
Basic Bus	Fixed route bus	SLO Transit;	Public-owned Public-operated	Public	Bus or shuttle	13-15 mph urban suburban, rural faster	40-60	Yes	Bus Stops Roads wide enough for buses to turn
Extended Bus Service ¹	Additional stops or extended operating hours	SLO Transit Rt. #3 ¹; Contra Costa County ¹	Public	Public	Bus or shuttle	13-15 mph urban suburban, rural faster	40-60	Yes	Bus Stops Roads wide enough for buses to turn
Deviating Routes									
Route Deviation ²	Fixed route, bus deviates from route within a buffer zone and returns to route	Runabout; Housatonic Area Regional Transit, CT ²	Public	Public and/or target group	Shuttle	13-15 mph urban suburban, rural faster	10-28	Yes	Bus Stops Roads wide enough for buses to turn
Point Deviation ²	Bus stops at specified points, but route is not specific	Hamilton, Ohio ² ; Eagle Transit, MT ⁷	Public	Public and/or target group	Shuttle	13-15 mph urban suburban, rural faster	10-28	Yes	Bus Stops Roads wide enough for buses to turn
Flag Stop Service ²	Fixed route, can be stopped anywhere along route	Merrimack Valley Transit Authority, MA ² ; Madison County Transit, IL ²	Public	Public rural	Shuttle	13-15 mph urban suburban, rural faster	10-28	Yes	Roads wide enough for buses to turn
Request a Stop Service ²	People can request a stop anywhere along route	New Jersey Transit Corporation;	Public	Public rural	Bus or Shuttle	13-15 mph urban suburban, rural faster	10-60	Yes	Bus Stops Roads wide enough for buses to turn
Multi Purpose Services ²	Combined with ambulance vans, post service	New Jersey Transit Authority ² ; UK post bus ²	Various	Various	Various	13-15 mph urban suburban, rural faster	10-60	Yes	Various
Tailored Services									
Tailored Service ¹	Serve specific communities and connects to specific locations	CATA – Community bus ⁴ ; Rossmoor Community Transit Service ⁶	Public or private	Specific group or community	Bus, Shuttle, or Van	13-15 mph urban suburban, rural faster	6-60	Yes	
Service Route ³	Route based on communities and needs	Silver Star- RTC Nevada ⁴ ; Boras Transportation, Sweden ⁵	Public or private	Specific community	Bus, Shuttle, or Van	13-15 mph urban suburban, rural faster	Up to 20	Yes	
Door-to-door Services									
Door to Door Many to Many ²	Shuttles provide pick-up and drop off in user-specified locations within service area	Dial-a-Ride; Santa Cruz County Connections Shuttle ¹	Public or private	Target groups or public	Shuttle or Van	13-15 mph urban suburban, rural faster	8-28	Yes	ITS to increase effectiveness
Door to Bus Stop Feeder Service ²	Pick-up at home with drop-off at transit connection	Santa Cruz County ¹	Public or private	Target groups or public	Shuttle or Van	13-15 mph urban suburban, rural faster	8-28	Yes	ITS to increase effectiveness
Many to One ²	Many origins to provider- specified destination	Transit Windsor ²	Public or private	Seniors Low-income	Shuttle or Van	13-15 mph urban suburban, rural faster	8-28	Yes	ITS to increase effectiveness
Many to Few ²	Many origins to few destinations	Cayucos Senior Center; West Oakland Senior Shuttle ⁶	Public or private	Seniors or Low-income	Shuttle or Van	13-15 mph urban suburban, rural faster	8-28	Yes	ITS to increase effectiveness
Door-through-door ²	Same as door-to-door, Includes assistance to person w/limited mobility	TRIP, Riverside, CA ⁸ ; West Austin Caregivers ⁸	Public or private	Seniors	Shuttle or Van	13-15 mph urban suburban, rural faster	8-28	Yes	
Subscription Bus ²	Designed to meet the needs of a specific community	Worcester Regional Transit Authority ² ; Transit Windsor ²	Public or private	Seniors	Shuttle or Van	13-15 mph urban suburban, rural faster	8-28	Yes	

Taxi Voucher	Coupons that cover the ride of a pre-determined dollar value need	San Francisco Paratransit; Berkeley Paratransit Services	Privately-owned Privately-operated	Seniors Low-income	Car	Car speed	1-8	Yes	Program Coordinator
Taxi Reimbursement	Pay for rides which are later reimbursed	MTA Baltimore ⁷ ;	Privately-owned Private/Public ops	Seniors Low-income	Car	Car speed	1-8	Yes	Program Coordinator
Volunteers	Volunteers drive own cars with or without reimbursement	Friendly Rides for Seniors; ITN Portland, Maine ²	Privately-owned Privately-operated	Seniors Low-income	Car	Car speed	1-8	Yes	Program Coordinator
Programs									
Emergency Ride Home	Various modes can provide needed ride at any time, usually free	CalWORKS ¹	Public or Private	Seniors Low-income	Various	Various	Various	Yes	Program Coordinator
Mobility Club	Organized carpool	Volunteers in Motion- Space Coast Area Transit ⁴ ;	Publicly-operated	Seniors	Car	Car speed	1-8	Yes	Program Coordinator
Personal									
Motorcycle	n/a	UK ²	Privately-owned Privately-operated	Public	n/a	10-60 mph	1-2	Yes	
Scooter	n/a	UK ²	Privately-owned Privately-operated	Public	n/a	4-8 mph	1	Yes	
Powered Wheel Chair	Generally on sidewalks	UK ²	Privately-owned Privately-operated	Disabled in some capacity	n/a	2-3 mph	1	No	Sidewalks or paths that can accommodate chairs
Golf Carts	Restricted to bike paths	Avila Village; Palm Desert, CA	Private	Public	n/a		1-4	No	Paths that can accommodate golf carts
Walking	n/a	UK; Scandinavia	Public	Public	n/a	2-3 mph	n/a	Yes	Pedestrian Infrastructure Activity center
Bicycle	Radius of 15 miles	Portland, OR; Copenhagen, Denmark	Private	Public	Possibly electric	10-15 mph	1	Yes	To make safer, separate bike lanes, etc
Mobility Option	Description	Example	Private or Public	Customer	Vehicles	Speed	# of passengers	Street Legal	Requirements (Infrastructure)

Sources:
1 – Cervero et al, 2002
2 – Suen & Sen, 2004
3 – Suen & Mitchell, 2000
4 – Beverly Foundation, 2004, 2007
5 – Stahl and Westerlund, 1999
6 – MTC, 2003
7 – Simon, 1998
8 – Burkhardt, 2006

Kerschner and Hardin, 2006
Molnar et al, 2003

Deviation services are those that follow a fixed route but are able to either deviate from the route or schedule. Some services will offer pick up in neighborhoods, others will be able to stop at any point along a fixed route. Some are combined with other services, such as the postal service. These routes are advantageous for people who are not physically able to walk far to a bus stop or would live too far from a bus stop to walk. These services are made to address bus access issues in suburban and rural areas and can be operated with buses or shuttles as needed. Because of their nature, the routes may not have consistent schedules. Confusing scheduling or routes may not attract as many riders, especially those who are unaccustomed to using public transit. Request-a-stop and flag-a-stop services are used informally in many countries where bus drivers let passengers on and off at their discretion if the bus stops do not adequately serve riders' needs. In SLO County, for instance, **Runabout**, a service of the RTA is an example of a route deviation service. The **Post Bus** in the United Kingdom is another example.

Tailored services are those routes designed to serve specific needs or communities. It is a public route, where the route is based on creating access to the bus within a community. This is similar to the deviating route, but it has a fixed schedule and route. The difference between this and other fixed route buses is that they are made to serve community needs rather than minimize time between origin and destination. Private routes serve a specific community, such as a senior center, and provide access to places that the owners deem necessary. A private service can be funded by contributions from community members to buy a pass or potentially from government subsidies. **School bus** transportation is the commonest example of tailored service in the US. **Boras Transportation** in Sweden is a European example.

Door-to-door services are generally on-demand services. There is no fixed route, and people call for service. These services are usually in a shuttle or a van and can be operated privately or publicly. There are a few variations of this service. People with limited mobility might need help getting from the doors of their houses to shuttles. Other services are considered curb-to-curb, where customers are able to walk to a curb, perhaps not a bus stop. These services can also be used as a feeder service to larger transportation systems offering pick up at any location and drop off at a transit station. This can be used for those who live too far from a bus stop to walk or bike, but not for those cases where mobility is very limited. Some of these services are made to serve only seniors, low-income groups, or the disabled. For seniors, a "many-to-few" service may pick up at any location, and drop off at a senior center or grocery store. The commonest example of door-to-door service in the US is **Dial-a-Ride**.

Private automobiles provide another form of door-to-door service, though they provide *private* transportation rather than public. Taxi-use is often encouraged for seniors who can no longer drive, but is not feasible for all seniors, especially those with limited incomes. There are two major systems that have been developed to pay for taxis: taxi reimbursement and taxi voucher systems. Though both of these systems allow seniors to use taxis, one enables seniors to pay with a voucher while the other requires seniors to pay out of pocket initially to get reimbursed later. Often there are limits to the number of free rides a person receives within a given period of time. Both of these systems require program coordinators and can be combined with other financial programs offered for seniors. The California cities of **San Francisco** and **Berkeley** offer voucher services. The Maryland Transit Administration in **Baltimore** offers the reimbursement service. One alternative to the taxi system is a

volunteer system, where volunteers such as neighbors drive seniors either for free or for reimbursement. The **Paso Robles Senior Center** in SLO County, for instance, relies heavily on volunteers to transport seniors to various activities.

Personal Services

Personal services are all forms of transportation that seniors can operate on their own and have very limited capacity, such as motorcycles, bicycles, or golf carts. Many of these forms of transportation cannot be driven on streets and, for the purposes of those with limited mobility, would be more effective on bike paths or separated pedestrian areas. Besides wheel chairs, these means are for those seniors who still are relatively mobile. Many American cities do not provide adequate pedestrian or bike infrastructure to encourage walking or biking. The **UK** and **Scandinavian** countries offer examples of how personal modes can be better integrated into the transportation system.

Programs

Programs are operations that facilitate transportation for seniors rather than provide a specific service. There are programs which organize carpools or gather volunteers to drive seniors, sometimes with reimbursement. Emergency ride home is another program that allows people to get a ride home whenever it is needed. This can be provided through various different existing services in a city. For example certain public transportation programs institute emergency ride home alternatives by taxi or rental car under qualifying conditions. Another example is the California Work Opportunity and Responsibility to Kids (CalWORKs), a welfare program for needy families in all 58 counties of the state, which allows emergency ride home for welfare-to-work participants.

Senior Mobility Services in San Luis Obispo County

Documents and interviews with service providers revealed an assortment of services in the County that are available for senior mobility. The services that are provided for both general transit and human services transportation include: fixed-route; point deviation and deviated fixed route; senior dial-a-ride (DAR); special purpose shuttles for recreation, nutrition and shopping; ADA transit; escorts; volunteer drivers; and door-through-door transit.

The 2007 San Luis Obispo County Coordinated Human Services Transportation Plan (SLOCOG, 2007) identifies certain needs for the community and for seniors: (a) Because Runabout provides priority service for the disabled; it does not provide adequate service for the elderly. (b) Greater funding is needed for programs to create “accessible and affordable” options such as subsidized taxis (CHSTP, 2007, p.12). (c) More transportation is needed to get to medical facilities and various specific locations. (d) There also needs to be uniform fares and discounts. (e) A senior mobility training program can be implemented to educate seniors on the transportation choices available and how to use them.

Evaluation

A review of options for senior mobility reveals the same findings as the Government Accountability Office that there are many programs that already exist to help seniors, but what is lacking is a comparison of those programs with the true needs of seniors (GAO, 2004). The Government Accountability Office states further that there are services that provide for life-sustaining trips, such as medical services, but life-enhancing trips are often not provided for. There is also a need to provide transportation that will allow seniors to link trips or services that provide directly for their needs. Some of the mobility options in Table 2-1 address such issues, though trip linkage is not directly addressed. The Beverly Foundation, an independent research organization on senior mobility, identified five attributes, termed “5 A’s”, of senior-friendly transportation services (Beverly Foundation, 2001) The GAO adopted these attributes for evaluating senior mobility programs (GAO, 2004):

1. Availability means service is provided to places seniors want to go at times they want to travel;
2. Accessibility (e.g., door-to-door or door-through-door) means service is provided if needed, vehicles are accessible to people with disabilities and stops are pedestrian-friendly;
3. Acceptability means service is clean, safe, and user-friendly;
4. Affordability means financial assistance is provided to those who need it;
5. Adaptability means service is flexible enough to accommodate multiple trip types or specialized equipment”.

In SLO County specifically, both service providers and human services personnel agree that there needs to be better coordination among the varieties of services provided. This is also true at the national level. The fragmented nature of service delivery may be partially attributable to the variety of funding sources and policies as well as legislative requirements available. The following sections provide a review of these topics.

Systems and Policies

Different cities and countries have different systems and approaches to providing transportation to the various segments of the population. Legislation can have an important impact on creating an accessible transportation system for all constituents.

Service Delivery System –The transportation system in Borås, Sweden (Stahl et al, 1993) is an example of a holistic approach to designing a system. It is a three-level system. The first system is a traditional bus route, but it is also made accessible to those who might have “minor mobility impairments”. Much like the United States, the system provides a special service for those who have severe mobility impairments. Finally, the system also provides a service which falls between the first two to serve those with enough mobility impairment to make fixed route buses difficult to use, but not severe enough to require specialized paratransit services. To serve this latter population, service routes are designed to focus on bringing the bus to the community rather than on the speed of travel and adhering to a fixed timetable. Though this system might not be replicable in many cities, the approach to creating a complete transportation system can be a guide in defining senior mobility options in California.

Legislation & Policy – In the US, policies contained in the Americans with Disabilities Act (ADA) influence the mobility options available to seniors. Because the law requires people who are considered severely disabled to have special transit available to them, those types of trips have the highest priority (Coughlin 1997). Trips considered “life-sustaining” are the next in priority, and “life-enhancing” trips are not a priority (Coughlin 1997). The services provided under ADA and the general transit system are often developed separately, “without regard for each other, resulting in gaps and overlaps” (Coughlin 1997, p. 95). Levine (1997) proposed that there is a need to reduce the number of trips on paratransit services and encourage use of the fixed bus route. These ideas together are reflective of the holistic approach in the Swedish example.

3.0 Key Funding Sources

Introduction

Several sources of funding exist at the local, state and federal levels for capital and operating needs in public transportation, particularly public transit. Like other sectors of the economy, needs typically exceed resources. Appendix 3-1 contains tables that identify these sources in general. Appendix 3-2 is a comprehensive list of specific federal and state programs that provide funding for public transit.

It may be argued that the variety of funding sources and opportunities available for mobility options in general is what has spawned an assortment of services that overlap yet seem inadequate. The following sections provide an overview of Federal, State and Local funding sources.

Federal Sources

Federal Funding is mostly for transit system construction and equipment maintenance. Sources include *Federal Discretionary Funds*, *Surface Transportation Program*, *Fixed Guideway Modernization*, and *Formula Funds*. The following paragraphs give an overview of the legislative and program bases for transportation funding that ultimately affect senior mobility options. For further reading refer to FHWA, 2003 and SACOG, 1999.

The Safe, Accountable, Flexible and Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) of 2003 – This legislation and its predecessors provide that transit spending is guaranteed at fixed amounts that are specified in the legislations to be used only for transit programs. The current reauthorization of the National Transportation bill specifically identifies the following funding areas for public transportation (FHWA, 2003; SACOG, 1999):

- Urbanized Area Formula Program (5307)
- State Managed Programs - Job Access and Reverse Commute (5308)
- Major Capital Investments Program (5309)
- State Managed Programs - Formula Programs for Other Than Urbanized Areas (5311)
- State Managed Programs - New Freedom Initiative (5317)
- Formula Grants for Special Needs of Elderly Individuals and Individuals with Disabilities
- Formula Planning Programs
- Intermodal Passenger Facilities Program

Federal Discretionary Funds – These funds are authorized under the New Starts program. They include Section 5309 discretionary monies for New Rail Starts, buses and Rail Modernization.

Section 5307 Formula Funds – Formula funds are appropriated annually by Congress for transit agencies based on population served and the amount of transit service provided. SAFETEA-LU allows transit agencies to use Section 5307 funds for capital projects and for bus and light rail vehicle maintenance. SAFETEA-LU also allows up to 10 percent of the formula funds to be used to fund paratransit service for persons with disabilities, which includes seniors with severe mobility impairments.

Section 5308 Clean-Fuels Formula Grant Program – This program provides grants to public transit operators to use on clean-fuel technologies for their bus fleets.

Section 5309 Capital Investment Grants & Loans – This program also provides grants as well as loans to public transit operators for acquisition of strictly capital items.

Section 5310 Federal Funds: Transportation Funding for Special Needs – Each year, qualifying not-for-profit and public agencies can receive up to 80% funding for the purchase of vehicles and related equipment to serve individuals with special needs. Approximately \$8 million in Federal funds are available annually. The funding selection process includes the following:

- Regional Evaluation Committees and State Review Committee score applications using established evaluation criteria.
- Project scores are compiled to generate a single statewide list.
- Projects are funded in score order until all available funds are expended.
- California Transportation Commission holds public hearing and adopts a Program of Projects.

Section 5311 Formula Grants for Other than Urbanized Areas – This program is similar to the Section 5307 except that it is directed at transit programs in non-urbanized areas.

Fixed Guideway Modernization – This program, using a formula based on system age, length and level of service, provides annual funding to upgrade and improve light rail vehicles, stations and maintenance equipment.

Congestion Mitigation and Air Quality Program (CMAQ) – CMAQ funds are available to urbanized areas that have not attained the ozone and carbon monoxide air quality standards established in the

federal Clean Air Act or that have been designated as maintenance areas for ozone and carbon monoxide.

The Access-to-Jobs/Reverse Commute Program – This program funds projects designed to provide welfare recipients and low income individuals access to jobs and reverse commute initiatives.

Federal Funding Targets

This section focuses on federal funding programs that can specifically benefit senior mobility options. According to the GAO, there are fifteen major funding sources that can be used for senior transportation, but the sources are associated with programs to serve different target groups. The following is a summary of the programs presented in the GAO Report (GAO-2004). For ease of organization, the sources are grouped under five major target groups: general public, seniors, medical and disabilities, low income persons and other specified target groups. It is worth noting that seniors can qualify under all the target groups. It is also worth noting that even the United States Government Accountability Office was “unable to determine the amount spent on transportation services through many of these federal programs”. Table 3-1 is a summary of key funding sources and targets that directly benefit senior mobility.

General Public

The first group of funding sources includes those that serve the General Public. These include the Nonurbanized Area Formula Program (Section 5311) and the Urbanized Area Formula Program (5307) which can be used for capital and operating assistance for public transportation and any trip purpose. The Capital Investment Grant (Section 5309) is for the public with some elderly and special needs services, offering general trips and assistance for bus and bus-related capital projects. All of these programs are offered through the Federal Transit Administration of the Department of Transportation (DOT-FTA).

Seniors

There are also programs specifically for seniors. Grants for Supportive Services and Senior Centers (Title III-B) enable contracts with existing transportation providers for various trip purposes. There is also the Program for American Indian, Alaskan Native, and Native Hawaiian Elders (Title VI) which allows for purchasing or operating vehicles for various trip purposes. Both of these programs are offered by the Administration on Aging of the Department of Health and Human Services (DHHS-AoA).

Table 3-1: Funding Sources and Target Groups of 15 Key Federal Programs for Senior Mobility

Agency	Program	Target population	Type of trip allowed	Type of service provided
Department of Education, Office of Special Education and Rehabilitative Services	Independent Living Services for Older Individuals Who Are Blind	Persons aged 55 and older who have significant visual impairment	To access program and related services, or for general trips	Referral, assistance, and training in the use of public transportation
Department of Health and Human Services, Administration for Children and Families	Community Services Block Grant Programs	Low-income persons (including seniors)	General trips	Taxicab vouchers, bus tokens
	Social Services Block Grants	Target population identified by states	To access medical or social services	Any transportation-related use
Department of Health and Human Services, Administration on Aging	Grants for Supportive Services and Senior Centers (Title III-B)	Seniors (aged 60 and older)	To access program services or medical services, or for general trips	Contract for service with existing transportation provider, or directly purchase vehicles (such as vans)
	Program for American Indian, Alaskan Native, and Native Hawaiian Elders (Title VI)	American Indian, Alaskan Native, and Native Hawaiian seniors	To access program services or medical services, or for general trips	Purchase and operation of vehicles (such as vans)
Department of Health and Human Services, Centers for Medicare and Medicaid Services	Medicaid	Generally low-income persons (including seniors), although states determine eligibility	Medicaid medical services (emergency and nonemergency)	Reimbursement for services with existing transportation providers (e.g., transit passes)
Department of Health and Human Services, Health Resources and Services Administration	Rural Health Care Services Outreach Program	Medically underserved populations (including seniors) in rural areas	To access healthcare services	Transit passes, purchase vehicles (such as vans)
Department of Labor, Employment and Training Administration	Senior Community Service Employment Program	Low-income seniors (aged 55 and older)	To access employment opportunities	Reimbursement for mileage

Source: Table 1, United States Government Accountability Office. (2004), pages 13-14

Table 3-1: Funding Sources and Target Groups of 15 Key Federal Programs for Senior Mobility
(Continued from previous page)

Agency	Program	Target population	Type of trip allowed	Type of service provided
Department of Transportation, Federal Transit Administration	Capital and Training Assistance Program for Over-the-Road Bus Accessibility	Persons with disabilities (including seniors)	General trips	Assistance in purchasing lift equipment and providing driver training
	Capital Assistance Program for Elderly Persons and Persons with Disabilities (Section 5310)	Seniors and persons with disabilities	General trips	Assistance in purchasing vehicles, contract for services with existing transportation providers
	Capital Investment Grants (Section 5309)	General public, although some projects are for the special needs of elderly persons and persons with disabilities	General trips	Assistance for bus and bus-related capital projects
	Job Access and Reverse Commute	Low-income persons (including seniors)	To access employment and related services	Expansion of existing public transportation or initiation of new service
	Nonurbanized Area Formula Program (Section 5311)	General public in rural areas (including seniors)	General trips	Capital and operating assistance for public transportation
	Urbanized Area Formula Program (Section 5307)	General public in urban areas (including seniors)	General trips	Capital assistance, and some operating assistance, for public transportation
Department of Veterans Affairs, Veterans Health Administration	Veterans Medical Care Benefits	Veterans (including seniors) with disabilities or low incomes	To access healthcare services	Mileage reimbursement or contract for service with existing transportation providers

Source: Table 1, United States Government Accountability Office. (2004), pages 13-14

Medical and Disabilities

Some programs offer funding based on disabilities or medical purposes. Trips for either of these two groups are often the priority for paratransit services. The Capital Assistance Program for Elderly Persons and Persons with Disabilities (Section 5310) (through DOT-FTA) gives assistance to transit providers to purchase vehicles for general trip purposes for the **elderly or disabled**. The Department of Education, Office of Special Education and Rehabilitative Services has the program, Independent Living Services for Older Individuals Who Are Blind. It provides help to blind individuals over 55 with learning to use public transit.

Two programs target the **disabled and medically underserved**. The Rural Health Care Services Outreach Program of the Health Resources and Services Administration of the Department of Health and Human Services (DHHS-HRSA) can issue transit passes or assist in purchasing vehicles to allow for access to healthcare services for medically underserved populations in rural areas. The Capital and Training Assistance Program for Over-the-Road Bus Accessibility (through DOT-FTA), offers assistance in purchasing lift equipment and driver training to allow disabled people a general trip service.

Low-Income Persons

Other funding sources target low-income groups. The Senior Community Service Employment Program from the Department of Labor, Employment and Training Administration (DOL-ETA) gives reimbursement for mileage to low-income seniors over 55 to reach employment opportunities. The Administration for Children and Families of the Department of Health and Human Services (DHHS-ACF) offers the Community Services Block Grant Programs for low-income groups to receive taxi-cab vouchers or bus tokens for various trip purposes. The DOT-FTA offers a Job Access and Reverse Commute Program for low-income people to reach employment by helping to expand services or create new transportation services. The DHHS, Centers for Medicare and Medicaid Services, through Medicaid, give reimbursement for the use of transit to access medical services. States determine eligibility for these programs though they are usually for low-income persons.

Other Specified Target Groups

Two final programs target specific groups. The Veterans Health Administration of the Department of Veterans Affairs (VA-VHA) has a program for Veterans Medical Care Benefits. This gives reimbursement for using transit services to veterans with disabilities or low-incomes to reach healthcare destinations. The Social Services Block Grants, from the DHHS-ACF are for any groups determined by a state to access medical or social services.

Other Funding Sources

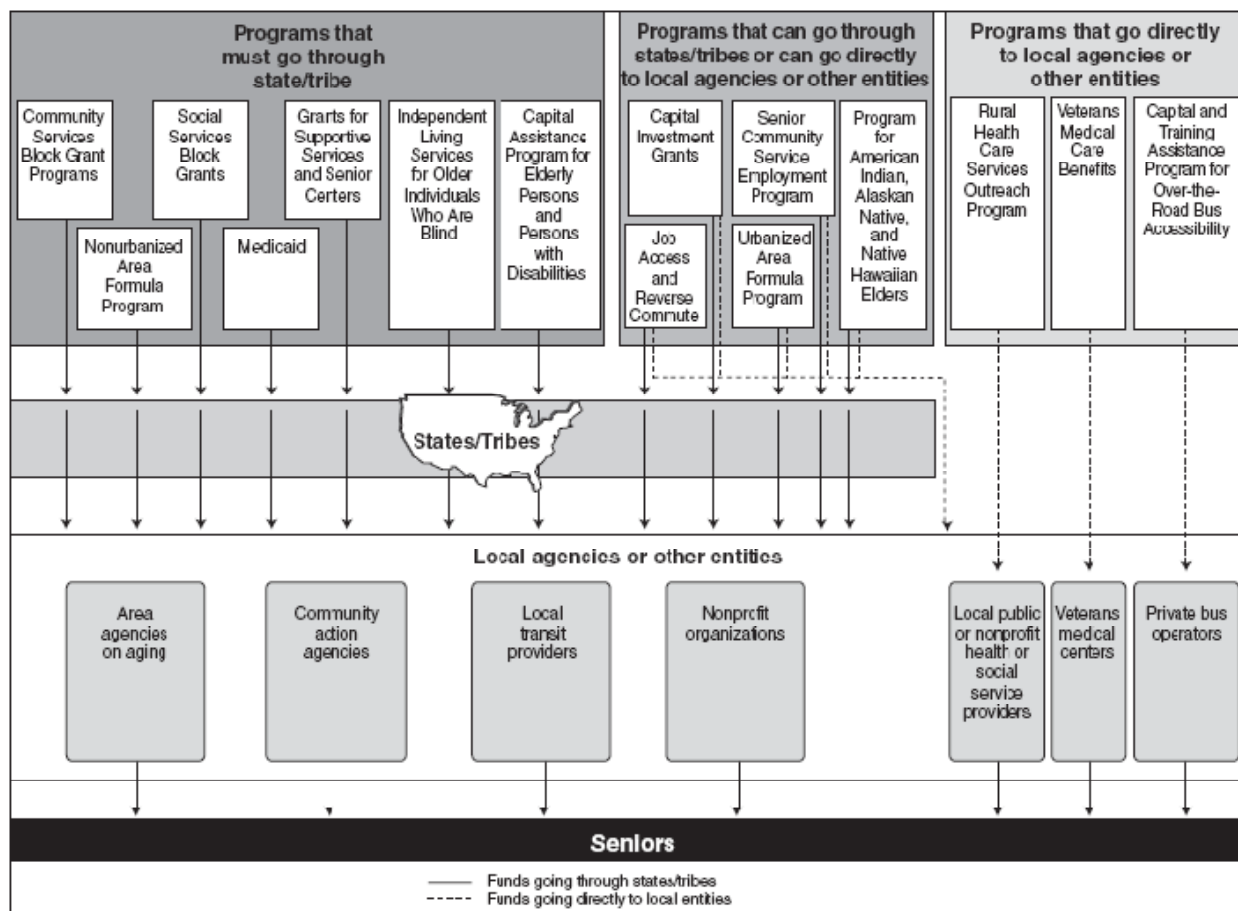
Section 5302(a) offers funds for mobility management activities. Mobility management generally means improving coordination or developing coordination plans for a specified area. Consolidated

Transportation Services Agencies (CTSAs) are examples of agencies that can receive this funding. The State of California mandated each Metropolitan Planning Organization (MPO) to establish CTSAs in their planning areas. In San Luis Obispo County, Ride-On serves as the CTSA providing low-cost transportation services to day programs for clients of social services, coordinating trips for maximum efficiency, and combining resources for economies of scale.

Flow of Federal Funds

The GAO navigated the maze of provisions to provide a streamlined view of the flow of funds from the many Federal programs to senior mobility providers. The illustration in Figure 3-1 shows three tracks in the flow of fund: (a) those programs that must go through the state or tribal entity; (b) those that optionally can go through the states or go directly to providers; and (c) those that go directly to providers.

Figure 3-1: Flow of Transportation Funds from Federal to Senior Mobility Programs



Source: Figure 2, United States Government Accountability Office. (2004), page 16

Attributes of Federal Funding Programs

Applying the “5-As” of the Beverly Foundation, the GAO review of federal programs, authorizing legislation and guidance, as well as interviews with federal program officials, revealed that most of the 15 key federal programs identified in Table 3-2 generally do make transportation more available, accessible, and affordable to transportation-disadvantaged populations, such as seniors (GAO, 2004). Table 3-2 summarizes the findings.

Table 3-2: Attributes of Federal Programs for Senior Mobility

Agency	Program	Attribute				
		Availability	Accessibility	Acceptability	Affordability	Adaptability
Department of Education	Independent Living Services for Older Individuals Who Are Blind		✓	✓		
Department of Health and Human Services	Community Services Block Grant Programs	✓	✓		✓	✓
	Social Services Block Grants	✓	✓		✓	
	Grants for Supportive Services and Senior Centers (Title III-B)	✓	✓		✓	
	Program for American Indian, Alaskan Native, and Native Hawaiian Elders (Title VI)	✓			✓	
	Medicaid				✓	✓
	Rural Health Care Services Outreach Program	✓			✓	
Department of Labor	Senior Community Service Employment Program				✓	
Department of Transportation	Capital and Training Assistance Program for Over-the-Road Bus Accessibility		✓	✓	✓	✓
	Capital Assistance Program for Elderly Persons and Persons with Disabilities (Section 5310)	✓	✓	✓	✓	✓
	Capital Investment Grants (Section 5309)	✓	✓	✓		
	Job Access and Reverse Commute	✓	✓		✓	✓
	Nonurbanized Area Formula Program (Section 5311)	✓	✓			✓
	Urbanized Area Formula Program (Section 5307)	✓	✓		✓	
Department of Veterans Affairs	Veterans Medical Care Benefits	✓	✓		✓	✓

Source: Table 2, United States Government Accountability Office. (2004), page 18

Existing Federal Funding for California

Over the four-year period between 2005 and 2009, the California Department of Transportation (Caltrans) estimated a total apportionment of \$5 billion in Federal Transit Administration (FTA) funds to the State. In the 2007/2008 Fiscal Year, estimated total distribution was \$ 27.8 million to the State of California (Caltrans, 2007 and 2008). Table 3-3 shows the breakdown by different programs.

Table 3-3: Recent Apportionments of FTA Program Funds to California (\$ millions)

Formula Program	Target	4-Year Estimate (2005-2009)	FY 2007/2008
Section 5303	Metropolitan Transportation Planning	\$54	
Section 5307	Public transportation capital investment	\$2,700	
Section 5308	Clean fuel vehicles purchase	\$195	
Section 5309	New Starts Capital Investment program	\$1,900	
Section 5310	Elderly and Disabled Specialized Transit Program	\$52	\$12.10
Section 5311(f)	Non-Urbanized Area Intercity Bus Program	\$85	\$2.90
Section 5313-14	Planning and Research	--	
Section 5316	Job Access and Reverse Commute Program (JARC)	\$86	
	• small-urbanized projects		\$5.60
	• rural projects		\$2.70
Section 5317	New Freedom Program	\$42	
	• small-urbanized projects		\$3.20
	• rural projects		\$1.30
Total		\$5,114.00	\$27.80

Sources: Caltrans, 2007 for 4-year estimate; Caltrans, 2008 for FY 2007/2008

State Sources

General

Transportation Development Act (TDA), 1971 – is the State’s principal source of transit operating subsidies. It derives from a 0.25 cent sales tax that is deposited to a Local Transportation Fund (LTF) to be apportioned to transit operators within counties according to service area population. Largely rural counties, with 1970 populations below half a million people, could use TDA funds for streets and roads if the presiding transportation planning agency determines that there are no “unmet transit needs that are reasonable to meet”. The intent is to “improve public transportation services and encourage regional coordination” (Caltrans, 2005, p.1)

Public Transportation Account (PTA) revenues accrue from a sales tax on gasoline and diesel fuel. Fifty percent of all PTA revenues go to the State Transit Assistance (STA) Program, which provides funds for public transit operations and for regional transit projects. STA funds support transportation planning and mass transportation only, which includes funding for vehicles and equipment. The State Board of Equalization returns the fuel sales tax revenues to regional transportation planning agencies or counties according to the amount of tax collected within the jurisdictions. STA funds are allocated to

operators according to two factors: (1) 50 percent based on population and (2) 50 percent based on fare revenues from the prior fiscal year.

State Transportation Improvement Program (STIP) – Every two years, the California Transportation Commission programs funds for a variety of projects that relieve congestion on state highways and local streets, including transit construction projects. Seventy-five percent of STIP funds are distributed to the counties. The remaining 25 percent is programmed for intercity highway and rail improvements.

Propositions 108 and 116 – In 1990, California voters approved two important bond measures: Propositions 108 and 116. Proposition 108 (*Passenger Rail and Clean Air Act*) provided one billion dollars under the Commuter and Urban rail program. Proposition 116 (*Clean Air and Transportation Improvement Act*) provided almost two billion dollars for transportation.

State Support for San Luis Obispo County

Sources – In accordance with the key State sources, funding for transportation in San Luis Obispo County comes from two main funds: (a) TDA receipts in the Local Transportation Fund (LTF) and (b) gas tax receipts in the State Transit Assistance Fund (STA). To ensure compliance, there are fiscal and performance audits of agencies using the funds. Programs must maintain farebox ratios of 10 percent in non-urbanized areas.

Receipts – During the 2003-2004 Fiscal Year, San Luis Obispo County received \$8,774,778 in LTF funds (Caltrans, 2005). Five percent of receipts can go towards a community transit service, which could provide transportation for the elderly (SLOCOG-CTSA, 2006). This funding can also be used for administrative and operating costs. Ride-On, the CTSA agency, received 4.5 percent of the funds. San Luis Obispo County received \$433,705 in STA funds during the 2003-2004 Fiscal Year (Caltrans, 2005).

Local Sources

Local sales tax initiative – The California Legislature passed laws in the 1980s to enable counties to enact these limited-term sales tax supplements for transportation improvements. According to a compilation in Appendix 3-3 of such measures, 4 Transit Districts and 19 counties out of 58 had these ballot measures in place within the State of California as of 2007; , San Luis Obispo County did not have any (Caltrans, 2007). The county Long Range Transit Plan proposes looking at this option (SLOCOG-LRTP, 2005)

Regional Transportation Impact Fees – Fees levied on new developments can provide additional revenues. These fees are used for capital projects within the districts in which they are collected. The rationale is that through the developer fees, new real estate developments can share the cost of providing public services required to accommodate increased traffic congestion and diminished air quality. While it is intuitively appealing, it does not represent a viable source in the existing state of affairs with the real estate market nationwide.

Sample Level of Transit Funding in SLO County

According to the SLO County Long Range Transit Plan, the County's total receipts for public transit during the 2004/2005 Fiscal Year included nearly \$2 million from Federal sources, \$7 million from State sources and just over \$3 million from passenger fares for a total of \$12 million (SLOCOG-LRTP, 2005). It is worth noting that \$200,000 of these receipts (10 percent of Federal funds) was devoted specifically to senior and disabled transportation. See Table 3-4 for details. Up to 5 percent of LTF funds (or \$328,000) can also be spent on community transit services, which could provide transportation for the elderly. Thus streamlined and consolidated senior mobility programs can benefit from up to half a million dollars a year. These funding levels could change significantly under existing economic conditions.

Table 3-4: Sample Funding Levels in SLO County (FY 2004/2005)

		2004/05
REVENUES		
Local Funding Sources		
1	Passenger Fares	\$ 3,210,600
<i>Total Local Sources</i>		<i>\$ 3,210,600</i>
State Funding Sources		
2	State Transit Assistance (STA)	\$ 449,700
3	Local Transportation Funds (LTF)	\$ 5,563,500
<i>Total State Sources</i>		<i>\$ 7,013,200</i>
Federal Funding Sources		
4	FTA Section 5307 - Urbanized Areas	\$ 1,412,000
5	FTA Section 5310 - Elderly & Disabled Transit Assistance	\$ 200,000
6	FTA Section 5311 - Rural Transit Assistance	\$ 200,000
7	FTA Section 5311f	\$ 50,000
8	FTA Section 5313b - Planning for Small Urban Areas	\$ 50,000
9	FTA Demonstration Projects	\$ -
10	FTA Section 5309 - Earmarked Capital Programs	\$ 50,000
<i>Total Federal Sources</i>		<i>\$ 1,962,000</i>
11	Supplemental Funding	\$ -
TOTAL REVENUES		\$ 11,185,800
EXPENSES		
Operating		
12	Transit Service	\$ 3,505,200
13	Administration	\$ 1,360,800
<i>Total Operating Expenses</i>		<i>\$ 9,866,000</i>
Capital		
14	Vehicle Replacement and/or Expansion	\$ 825,000
15	Technology Enhancement	\$ -
16	Transit Facilities, New/Upgrades	\$ 170,000
17	Other Capital	\$ 1,020,600
<i>Total Capital Expenses</i>		<i>\$ 2,015,600</i>
TOTAL EXPENSES		\$ 11,881,600
NET SURPLUS/DEFICIT		\$ 304,200
Available Carryover		\$ 304,200
18	Ending Fund Balance	\$ 304,200

Source: SLOCOG-LRTP, 2005

4.0 Fare Payment & Equity

Senior Mobility and Cost

One of the objectives of this project is to find the most promising programs and innovative ways of financing senior mobility needs at low cost to both the public and beneficiaries. It is established from the literature, that seniors are not well-served by standard public transit because of the location of seniors in predominantly low density areas. Truly demand-responsive services that can fill the mobility gap are also known to be very expensive to provide. Given the situation that transit operators are already plagued with low fare-box recovery ratios that require operating subsidies, increases in senior demand for demand-responsive services can only aggravate the financial situation of the agencies unless innovative funding mechanisms are adopted.

This section reviews economic and equity issues related to charging for innovative senior mobility services that may be devised or adopted as well as methods of payment to meet the inevitable increase in the mobility needs of seniors. First we discuss pricing and equity then we turn to pooling and group financing schemes.

Standard Pricing Issues

A large and growing literature addresses the subject of equity in transportation; (see Nuworsoo, 2008 for an overview). The Transit Cooperative Highway Research Project Report 94 (TCRP-94, 2003), for instance, provides a digest of observations about equity and environmental justice issues in pricing public transit services. If we define equity as fairness in the distribution of goods and services, then in the context of transit fares, equity may be defined as how just pricing is among various groups of riders. Nuworsoo (2008) outlined three possible criteria for setting fares equitably:

(a) *The benefit criterion* asserts that people should pay for services in proportion to the benefits they receive from them. For example, seniors might pay more for direct, door-to-door services than for slower, multi-stop local services or those requiring a transfer. This would partially explain why dial-a-ride service costs \$2 per trip where regular public transit costs \$1 per trip within a city in SLO County.

(b) *The cost criterion* asserts that people should be charged for the use of the transit services in proportion to the cost of providing service to them. This is complex to determine for individual riders, but could be partially captured through time-of-day, distance and location-based pricing. This is reflected, for instance, in the charge of \$2 per trip on regional transit trips between communities in SLO County while in-town transit trips cost \$1.

(c) *The ability to pay criterion* asserts that people should be charged for the use of transit in proportion to their wealth. While this may be partially achieved by charging lower fares to such groups as the youth, the elderly and the disabled, there is no guarantee that the actual rider in the group is economically disadvantaged. In SLO County, for instance, seniors and disabled riders pay half of the general fare.

Transit fares do not conform strictly to all of these criteria. One reason is that equity is not the only consideration in pricing transit services. The ease of fare collection, for instance, is the reason why many bus services opt to charge flat fares rather than distance and zone based fares even though this might be less equitable as it made long trips (that are often made by more affluent riders) better deals than shorter trips. Nonetheless equity remains an important consideration in charging for transit service, particularly as measured by ability to pay.

Group Pricing

The collection of senior mobility options (shown in Table 2-1) include both public and private providers, some of which rely on government subsidies with fare payments by users while others (like taxi vouchers) may not. There are equity considerations with regard to the way these options are either funded or paid for. Under conventional economic pricing criteria, equity analysis of the impacts of costs on various groups of seniors can help determine the inherent fairness (or lack thereof) among candidate programs. A promising method of paying for senior mobility needs is the use of risk pooling schemes such as group passes. In group financing schemes, participants inherently cross-subsidize each other.

According to Nuworsoo, (2004), “A deep discount group pass is a program that provides a group of people with unlimited transit rides in exchange for some contractual payment for or on behalf of pass users by an organizing body”. The concept is very similar to an insurance policy: a large group of people contribute an amount of money for a service, and then they agree to share any losses or gains among the group. The larger the participating group, the more the costs are spread, resulting in a lower marginal cost for each additional member. In the case of deep discount group passes, a group of people can pay a monthly fare that is a fraction of the cost of buying a pass individually. A deep discount group pass has three features that distinguish it from other methods of transit fare payment:

a) *Universal coverage* of an identified group. The program will cover all members of a particular group that meet a certain criteria. That group may be all employees of a certain company, or all enrolled students at a particular school for a semester or all seniors linked to a community’s senior center. Some

programs allow members to opt out. However, allowing members to opt out reduces the discount for all members and prevents the program from reaching its full potential. When all members of a group pay for coverage, the cost is distributed amongst all members and the cost per member is lowered.

b) *Unlimited rides*. The group is allowed unlimited use of some or all mobility services. In most cases, this allows members to use services within a certain region whenever they want and as many times they want. Members usually show an identification card or they may swipe a card with a magnetic strip to board the vehicle.

c) *Discounted prices*. In return for unlimited coverage and rides, plan participants pay a highly discounted cost when compared to the normal monthly pass or per ride rate. Case studies show that a discounted price can be up to 90% less than the standard rate. This occurs because the non-riders of the group subsidize the riders, but the service is always available to everyone in the group. Despite the large discount among participants, the transit agency realizes a gain in revenue if the price is set so that the total collected for providing a pass for everyone is greater than the revenues that would have been received from individual fares, plus administrative costs.

The potential of the group pass in financing senior mobility options is examined under this project. Indications from the literature are that it holds promise in fulfilling the minimum cost objective of senior mobility.

5.0 Study Approach

Overview

The study involved the selection of a case study location on the Central Coast of California, where seniors are known to relocate upon retirement. Surveys of senior activities and mobility needs were conducted and combined with census data in the analysis, which employed such tools as GIS for spatial analysis and SPSS for statistical analysis, in the identification of origins, destinations, routes and gaps in existing services relative to need. From these analyses, conclusions are drawn on senior mobility options that need to be examined for the large influx of senior population that is imminent in the US. The procedure used in the analysis is anticipated to be transferable for use in other areas.

Synthesis of Senior Mobility Options and Needs

Literature Review

The previous three chapters provide reviews of the state of the knowledge on senior mobility services nationwide and abroad, existing funding sources, the relative costs associated with operating various types of services and a survey of special funding mechanisms that could offer affordable ways of providing timely and efficient mobility to special groups, such as seniors, when compared with existing demand response services which tend to be extremely expensive per use.

Senior Mobility Survey

A survey was conducted to find out about the most frequent travel needs and destinations of seniors within the case study area of San Luis Obispo County. Seniors were asked to identify their various travel needs and rank their choices and preferences of transportation options. Locations of the most frequently traveled locations were analyzed spatially with GIS. The data was summarized to guide the identification of appropriate service delivery options for seniors. The summary is presented in the next chapter (Chapter 6)

Mobility Gap Analysis

Spatial analysis tools helped in matching senior resident from Census data and frequently traveled locations from survey data with available public transportation routes to reveal where there are accessibility gaps in services. The gaps combined with stated preferences of seniors helped to identify service options that should be focused on for the future. The analyses are presented in Chapter 7 and 8.

Case Study Selection

San Luis Obispo County is the case study community. It is located on the Central Coast of California, half way between the two megalopolises of San Francisco and Los Angeles, and offers the advantages of: (i) proximity of investigators to the location; (ii) communities that are relatively small providing manageable sizes for the study – candidate communities have populations of 10,000 to 45,000; and (iii) it is already a favorite relocation area for seniors and retirees, which would facilitate getting a good sample. In 2000, seniors constituted nearly 11 percent of the state’s population and 12 percent of the nation’s population, but 14 percent of the population in San Luis Obispo County. Table 5-1 shows locations targeted within the case study area for the survey, all of which meet or exceed the State and national proportions of seniors.

Table 5-1: Distribution of Seniors by Cities in San Luis Obispo County, California (2000)

	Total Population	Male 65+	Female 65+	Total 65+	Male % 65+	Female % 65+	Total % 65+
Arroyo Grande	15,851	1,299	1,923	3,222	17%	23%	20%
Atascadero	26,411	1,315	1,729	3,044	10%	14%	12%
El Paso de Robles	24,297	1,336	1,926	3,262	11%	16%	13%
Grover Beach	13,067	611	894	1,505	10%	13%	12%
Morro Bay	10,350	1,026	1,480	2,506	21%	27%	24%
Pismo Beach	8,551	938	1,160	2,098	23%	26%	25%
San Luis Obispo	44,174	2,065	3,265	5,330	9%	15%	12%
San Luis Obispo County	246,681	15,438	20,247	35,685	12%	17%	14%
State of California	33,871,648	1,513,874	2,081,784	3,595,658	9%	12%	11%
United States	281,421,906	14,409,625	20,582,128	34,991,753	10%	14%	12%

Source: US Census Bureau, 2000, Total population by Sex and Age, Table P12 and QT-P1

Survey Administration

The survey was administered to senior centers and homes and to seniors who participated in the meals-on-wheels program county-wide. The goal was to ensure that every senior had an equal chance of being surveyed. Some respondents answered and returned questionnaires to surveyors while others mailed them back. 375 completed surveys were returned out of 1500 distributed, representing a 25% response rate. Inferences in general would be accurate to 6% within a 95% confidence interval.

Sample Data and Weighting

A two-stage weighting technique was applied to the sample data. The first stage calculated weights based on the distribution of seniors in the standard 5-year age cohorts of the US Census Bureau

by gender. This is to account for the fact that certain cells in the distribution were over-represented while others were under-represented relative to the same distribution in the census. The 2009 distribution of seniors by age and gender was retrieved from the California Department of Finance and applied. The second stage involved scaling up the survey responses to represent the total number of seniors by gender in 2009. The final weight is the product of the two weights. Appendix 5-1 shows details on the distribution of seniors by age and gender in the sample and census as well as the survey weights and scaled weights

6.0 Overview of Survey Data

Introduction

This chapter presents a general overview of travel and demographic characteristics of seniors as indicated by the case study survey. A subsequent chapter focuses on revealed versus stated travel preferences of seniors. Appendix 6-1 includes a copy of the survey instrument.

Access to Transportation

Driver Licenses

A large majority of seniors, nearly 85 percent of respondents, report that they hold driver licenses (see Table 6-1). Driver license rates remain high throughout five-year age cohorts of seniors, with over 70 percent of respondents age 85 and over reporting that they still hold driver licenses. Comparatively, male seniors marginally hold licenses to a greater degree than female seniors, with almost 86 percent of males and 83 percent of females having licenses.

Table 6-1: Percent of Senior Citizens Holding Driver licenses

Group	Yes, Hold License		No, Do Not Hold License	
	Respondents	Percent	Respondents	Percent
Overall	49,171	84.7%	8,906	15.3%
60-64	12,913	82.3%	2,769	17.7%
65-69	10,027	87.8%	1,390	12.2%
70-74	8,267	88.7%	1,051	11.3%
75-79	6,583	84.2%	1,238	15.8%
80-84	5,919	91.7%	537	8.3%
85+	4,246	70.8%	1,748	29.2%
Female – All Cohorts	25,659	85.9%	4,220	14.1%
Male – All Cohorts	20,504	83.0%	4,207	17.0%

Of those seniors who report not holding a driver license, slightly more than half said the last time they held a driver license was within 1 to 9 years ago (see Table 6-2). 20 percent of these respondents reported last having a license within the past year, with the final approximately 30 percent reporting not having a license in 10 or more years. This finding is consistent with what the literature reports about seniors at the national level.

Table 6-2: Seniors Not Holding Driver licenses – Last Time Held License

Time Since Last License	Respondents	Percent
<1 yr	1,313	19.4%
1-9 yrs	3,468	51.2%
10+ yrs	1,996	29.4%

Residing With Licensed Drivers

While a vast majority of seniors report holding driver licenses, a little less than half of them report living with someone who holds a driver license (see Table 6-3). Out of those who have driver licenses, slightly more than half of them report also living with someone who holds a driver license. The relatively low rate of people living with licensed drivers reinforces what is seen with the high individual driver's license rates, suggesting people drive themselves around.

Table 6-3: Do Seniors Live With Other Licensed Drivers?

Personal Driver license Status	Yes, Live With Someone With License		No, Do Not Live With Someone With License	
	Respondents	Percent	Respondents	Percent
All Respondents	26,669	46.9%	30,155	53.1%
Personally Have Driver's License	24,449	51.1%	23,425	48.9%
Do Not Personally Have Driver's License	2,220	25.4%	6,507	74.6%

Out of those individuals who do not hold a driver license, only one quarter report living with a licensed driver. This suggests that those who do not drive themselves, nor live with someone who does, must rely on people they do not live with for auto trips or are highly dependent on other modes than the private automobile for transportation.

Access to Vehicles

A vast majority of seniors have access to at least one vehicle in the household (see Table 6-4). 86.3 percent of respondents report having access to at least one vehicle; this includes over 45 percent reporting access to one vehicle, over 31 percent reporting access to two vehicles, and just under 10 percent reporting access to three or more vehicles. Consistent with driver licensing rates, slightly less than 14 percent of respondents reported not having access to any vehicles.

Table 6-4: Number of Autos Available in Senior Households

Number of Autos Available	Respondents	Percent
0	7,973	13.7%
1	26,270	45.2%
2	18,474	31.8%
3+	5,413	9.3%

Vehicle Maintenance Costs

For those that own vehicles, over 70 percent report spending less than 2,500 dollars on maintenance, including gas, insurance, repair, registration, etc. per year (see Table 6-5). 50 percent of seniors report spending 1,000 to 2,500 dollars, with the remaining 21.4 percent spending less than 1,000 dollars. Less than 10 percent report spending 2,500 dollars or more. A sizeable segment of respondents, nearly 20 percent, were unsure on their vehicle maintenance spending.

Table 6-5: Annual Spending on Automobile Maintenance

Spending	Respondents	Percent
<\$1,000	10,300	21.4%
\$1,000 - <\$2,500	23,990	50.0%
\$2,500 - <\$5,000	2,781	5.8%
\$5,000+	1,579	3.3%
Don't know	9,375	19.5%

Driving Difficulties

Driving is not difficult for most seniors who do drive. Almost 84 percent of driving seniors report no difficult in driving an automobile (see Table 6-6).

Table 6-6: Difficulty Driving an Automobile

Have difficulty driving	Respondents	Percent
Yes	7,890	16.2%
No	40,835	83.8%

Out of those seniors that did report driving difficulty, the most common difficulty is cost, with over 45 percent saying that was an issue for them (see Table 6-7). Pain or discomfort while driving, and traffic congestion were also relatively common complaints, as approximately one third of seniors having driving difficulty mentioned this as an issue. Parking, fast highway speeds, and threat of accidents were identified as issues for approximately one quarter of seniors with driving difficulties.

Table 6-7: Types of Difficulty for Seniors Who Have Difficulty Driving

Type of Difficulty	Yes		No	
	Respondents	Percent	Respondents	Percent
Cost	3,582	45.40%	4,307	54.60%
Pain or discomfort	2,548	32.30%	5,341	67.70%
Traffic congestion	2,511	31.80%	5,378	68.20%
Parking	2,013	25.50%	5,876	74.50%
Highway speeds too fast	1,872	23.70%	6,018	76.30%
Threat of accidents	1,738	22.00%	6,152	78.00%
Signs difficult to read	1,520	19.30%	6,369	80.70%
Roads difficult to navigate	1,360	17.20%	6,529	82.80%
Other	1,164	16.00%	6,091	84.00%

Access to Public Transportation

Slightly more than half of seniors report being reasonably close to a transit stop; this includes slightly less than one quarter who reported living within 500 feet of a stop, and slightly under one third who reported living between 500 feet and one quarter mile from a stop (see Table 6-8). A little more than one tenth of seniors reported living between one quarter and one half mile away from a transit stop. Approximately five percent reported living between one half mile and one mile away, and approximately 11 percent reported living one mile or further away from a transit stop. Similar to vehicle spending, a sizeable portion of respondents, 16.3 percent were unsure of how far the closest transit stop to them was located.

Table 6-8: Distance of Nearest Transit Stop to Residence

Distance	Respondents	Percent
<500 ft	12,517	22.3%
500 ft - <1/4 mile	18,232	32.5%
1/4 mile - <1/2 mile	6,900	12.3%
1/2 mile - < 1 mile	3,014	5.4%
1+ miles	6,233	11.1%
Don't know	9,130	16.3%

The spatial distribution of senior citizens and their relation to transit routes will be analyzed further in the next chapter.

Mode Choice

Consistent with the high proportions of seniors who hold driver licenses and have access to automobiles, it is not surprising that automobile travel is the most frequently used mode of transportation for seniors. For all trips in general, over 83 percent of seniors say they use an automobile most frequently (see Table 6-9). Over two thirds report driving alone and just over 15 percent report being car passengers most frequently. This is again not surprising after seeing the relative difference in rates of individuals holding driver licenses and those living with people who hold driver licenses.

Transit service (including buses and trains) is the highest used alternative mode at seven and a half percent. Just fewer than four percent report walking as their most frequently used mode, and just fewer than three percent reported using on-call services or bicycles most frequently. No one reported using taxis or another mode most frequently.

Table 6-9: Most Frequently Used Mode of Transportation (All Trips)

Mode	Respondents	Percent
Drive Alone	38,273	67.6%
Car Passenger	8,857	15.7%
Bus/train	4,253	7.5%
Walking	2,091	3.7%
On-call service	1,604	2.8%
Bicycle	1,509	2.7%
Taxi	0	0.0%
Other	0	0.0%

Further discussion of mode choice in terms of population sub-groups is shown in the following sections of this chapter. Additional discussion in the context of modes used versus modes preferred, and mode choice by different types of trips are presented in the chapter after the next.

Mode Choice by Gender

Both males and females are similarly most dependent on automobiles for the majority of their travel; however, there is some variation in how the different genders use modes. While about two thirds of both males and females report that they drive alone most frequently, males do so slightly more than females. Just over 70 percent of males drive alone compared to just under two thirds for females (see Table 6-10). Females are twice as likely though to be car passengers, with almost 20 percent of females reporting being car passengers most frequently. The large number of females who are car passengers compared to males makes females heavier user automobiles in general than males.

Many more males report walking and bicycling as their most frequent mode compared to females. 6.4 percent of males say they walk most frequently, compared to only 1.7 percent for females. 6.1 percent of males say they bicycle most frequently, compared to zero respondents for females.

Conversely, females are more than four times more likely than males to report using an on-call service most frequently. 3.8 percent of females use on-call services most frequently, compared to one percent for males. Females also use conventional public transportation more than males, although only marginally so. Males and females use them at approximately the same rate, almost 8.5 percent of females and 7.5 percent of males report using buses and trains most frequently.

Table 6-10: Most Frequently Used Mode of Transportation by Gender (All Trips)

Mode	All Seniors		Females		Males	
	Respondents	Percent	Respondents	Percent	Respondents	Percent
Drive Alone	38,273	67.6%	18,806	66.2%	17,267	69.4%
Car Passenger	8,857	15.7%	5,656	19.9%	2,393	9.6%
Bus/train	4,253	7.5%	2,378	8.4%	1,875	7.5%
Walking	2,091	3.7%	496	1.7%	1,596	6.4%
On-call service	1,604	2.8%	1,071	3.8%	237	1.0%
Bicycle	1,509	2.7%	0	0.0%	1,509	6.1%
Taxi	0	0.0%	0	0.0%	0	0.0%
Other	0	0.0%	0	0.0%	0	0.0%

Mode Choice by Age

Breaking down mode choice by age, it appears there are some trends that may be occurring in some modes decreasing in use with age, and other modes increasing in use with age. For the oldest seniors, age 85 and over, it appears that they use modes where someone else transports them more compared to younger seniors. Seniors 85 and over have clearly the lowest rates of driving alone, tie for the lowest rate of bicycling, and have relatively low rates of bicycling. The data seems to show that bicycling drops sharply around age 80 and walking drops sharply around age 70 (see Table 6-11).

Conversely, seniors over age 85 use on-call services at a much higher rate than younger seniors, with over one eighth of the 85+ population using on-call services most frequently. This is almost four times as much as the next greatest age cohort using on-call services. The trend of seniors 85 and over being transported more does not hold for bus and train ridership however. For transit, the youngest seniors included in this survey ride the most, with over 15 percent saying they ride buses and train most frequently. Among the senior citizen cohorts, aged 65 and over, bus and train use drops sharply to less than six percent.

The breakdown of the survey data into too many categories as could result in sample sizes that are too small to make definitive determinations about age trends. However, the available data signals at least that the differences in service use and needs of seniors of different ages may merit further study.

Table 6-11: Most Frequently Used Mode of Transportation by Age (All Trips)

Age	Bicycle	Bus/train	Car passenger	Drive alone	On-call service	Walking
60-64	5.0%	16.3%	6.3%	67.3%	0.0%	5.0%
65-69	2.7%	5.1%	13.9%	69.6%	3.4%	5.3%
70-74	4.3%	5.7%	25.7%	60.4%	1.9%	1.9%
75-79	5.0%	0.0%	20.4%	69.7%	2.2%	2.8%
80-84	1.1%	0.0%	19.8%	76.4%	2.7%	0.0%
85+	1.1%	4.0%	21.3%	57.9%	12.8%	2.8%

Use of Other Modes by Auto Users

While a vast majority of seniors use automobiles most frequently, some but not most use other modes occasionally. Just under 40 percent of seniors report using modes other than automobiles (excluding walking) at least a few times a month (see Table 6-12). Slightly less than 15 percent of auto users take alternative modes a few times a week and almost five percent use alternatives daily.

Table 6-12: How Often Do Auto Users Take Other Modes (Other Than Walking)

How Often Use Other Modes	Respondents	Percent
Every day	2,244	4.8%
Few Times a week	6,627	14.3%
Few times a month	9,133	19.7%
Never	28,472	61.3%

Economic and Housing Profile

Income

A plurality of seniors surveyed, 38.3 percent, reported having an annual income of 10,000 dollars to 25,000 dollars (see Table 6-13). The next highest reported annual income was from 25,000 to 40,000 dollars. No seniors survey reported an income of 100,000 dollars or greater. Just over 15 percent of respondents did report earning less than 10,000 dollars however, which is below the U.S. Census definition of poverty. For a single person, age 65 and over, the 2008 poverty threshold was 10,326 dollars. For a household of two people age 65 and over, the threshold was 13,014 dollars (US Census, 2008).

Table 6-13: Annual Income of Senior Citizens– San Luis Obispo County, 2009

	Respondents	Percent
<\$10,000	7,813	15.3%
\$10,000 - <\$25,000	19,519	38.3%
\$25,000 - <\$40,000	9,696	19.0%
\$40,000 - <\$60,000	5,679	11.1%
\$60,000 - <\$80,000	5,518	10.8%
\$80,000 - <\$100,000	2,717	5.3%
\$100,000+	0	0.0%

Poverty Threshold for Households Age 65+: 1 Person - \$10,326, 2 Persons - \$13,014
(from <http://www.census.gov/hhes/www/poverty/threshld/thresh08.html>)

Housing Type

A majority of seniors surveyed live in houses, with a quarter of seniors living in apartments or condos. A fairly significant proportion of seniors, nearly 20 percent, report living in mobile homes. Less than one percent of seniors surveyed reported living in an assisted living facility (see Table 6-14).

Table 6-14: Housing Types Senior Citizens Live In – San Luis Obispo County, 2009

Housing Type	Respondents	Percent
House	29,892	53.9%
Apartment/Condo	13,356	24.1%
Mobile Home	10,260	18.5%
Duplex/Townhouse	1,556	2.8%
Assisted Living	435	0.8%

It appears senior citizens are secure in their housing situations, with nearly two thirds of seniors owning their housing units. Just under 30 percent of seniors report renting, while just over five percent report neither owning or renting (see Table 6-15). A plausible situation where a senior would neither rent nor own is where they lived in the home of a relative or friend and did not pay rent.

Table 6-15: Housing Tenure of Senior Citizens– San Luis Obispo County, 2009

Housing Tenure	Respondents	Percent
Rent	17,231	29.8%
Own	37,526	64.8%
Neither	3,154	5.4%

A little more than half of all seniors surveyed report living alone. This can have ramifications on the transportation services that these individuals seek. For example, if these individuals are primarily car passengers, they are dependent on people they do not live with. Non-driver license holders out of this group also by default do not live with a license driver.

Just under half of all respondents report living with family of some kind. Approximately 40 percent of seniors live with their spouse and approximately seven percent live with other family members. Only two percent of seniors report living with people who are not relatives, such as non-married companions, friends, or unaffiliated acquaintances like in an assisted living or group care facility (see Table 6-16).

Table 6-16: Relationships of Those Seniors Live With

Type of co-habitants	Respondents	Percent
Live Alone	29,070	51.3%
With Spouse	22,402	39.5%
With Family	4,128	7.3%
Other	1,108	2.0%

The survey separately asked for number of persons in the household, which also captured the number of others seniors live with. In this question, a little less than half of seniors report having only one person living in their households, thus, they live alone. This is slightly lower than the responses to the relationship question for which slightly more than half of seniors reported living alone.

While there is this slight variation, the results from the two questions are consistent in that most seniors fall in the live alone/one person in household categories. Over 40 percent of seniors reported having two people in their households, the next largest group. This matches with the results in the relationship question, where just less than 40 percent of seniors reported living with their spouse. All these respondents could conceivably be among the households with two persons (the size question) with people who live with individual non-spouse family members making up the difference.

6.6 percent of seniors reported living in a household with three or four persons, and 3.5 percent of seniors reported living in a household with five or more people (see Table 6-17).

Table 6-17: Number of People in Household

Number of People in Household	Respondents	Percent
1	27,266	47.5%
2	24,348	42.4%
3-4	3,760	6.6%
5+	2,009	3.5%

Physical Limitations

Types of Physical Limitations

A little less than half of seniors say they are afflicted by some form of physical limitation (see Table 6-18). Of the limitations reported, the most common was walking with difficulty, which one quarter of seniors said they had. Slightly more than one quarter of these individuals or just fewer than seven percent of all seniors reported needing a walker because of this difficulty. Just over five percent of seniors reported needing a wheelchair for mobility.

Slightly more than 13 percent of seniors reported being hard of hearing, and nine percent reported having vision impairment. Five percent of respondents indicated they had a physical limitation other than the five specifically listed in the survey.

Table 6-18: Types of Physical Limitations

Type of Limitation	Yes		No	
	Respondents	Percent	Respondents	Percent
Any Limitation	26,972	46.2%	31,389	53.8%
Need wheelchair	3,137	5.4%	55,224	94.6%
Need walker	3,948	6.8%	54,413	93.2%
Walk with difficulty	14,595	25.0%	43,766	75.0%
Vision impairment	5,254	9.0%	53,107	91.0%
Hard of hearing	7,799	13.4%	50,562	86.6%
Other Physical Limitation	2,910	5.0%	55,451	95.0%

Disability Placards

The various physical limitations that seniors have lead to a significant need for blue disability placards. Slightly more than 30 percent of respondents report possessing a disability placard (see Table 6-19). Assuming that people who do not have physical limitations do not have placards, approximately half of those who have some type of limitation need a placard.

Table 6-19: Possession of Disability Placards

Have Placard	Respondents	Percent
Yes	11,375	30.7%
No	25,709	69.3%

Characteristics of Trips by Purpose

In addition to asking questions about seniors' general transportation behavior and preferences, the survey asked seniors about trips they make of different types. Specifically, the survey asked about four trip types, shopping trips, medical trips, social and recreational trips, and occupational trips. For the

purposes of this survey, occupational trips are defined as employment, educational, or volunteering trips.

How Often Trips Are Made

The frequencies with which seniors make shopping trips are shown in Table 6-20. Seniors make shopping trips very frequently, with two thirds reporting making shopping trips a few times per week. Approximately six percent report making shopping trips daily. Only 0.3 percent of seniors report never making shopping trips, the lowest rate of seniors never making trips out of the four trip types. This suggests that the routing of transportation services to serve seniors should include access to shopping facilities.

Table 6-20: Frequency of Shopping Trips

Frequency of Trips	Overall		Female		Male	
	Respondents	Percent	Respondents	Percent	Respondents	Percent
Daily	3,321	5.9%	1,715	5.9%	1,606	6.5%
Few times per week	37,824	66.7%	18,290	62.6%	18,129	73.6%
Few times per month	12,950	22.8%	7,428	25.4%	4,359	17.7%
Once a month	1,449	2.6%	626	2.1%	537	2.2%
Few times per year	993	1.8%	993	3.4%	0	0.0%
Never	172	0.3%	172	0.6%	0	0.0%

Unlike shopping, slightly more than half of seniors make medical trips only a few times per year, with 14.6 percent making these trips once a month (see Table 6-21). Nearly a third of seniors make medical trips frequently with 27 percent needing to make medical trips a few times per month, 5.6 percent making these trips a few times per week, and only 0.2 percent needing to make a medical trip daily.

Table 6-21: Frequency of Medical Trips

Frequency of Trips	Overall		Female		Male	
	Respondents	Percent	Respondents	Percent	Respondents	Percent
Daily	88	0.2%	88	0.3%	0	0.0%
Few times per week	3,102	5.6%	1,717	6.0%	1,341	5.6%
Few times per month	14,926	27.0%	6,817	23.9%	6,904	29.0%
Once a month	8,041	14.6%	3,198	11.2%	4,408	18.5%
Few times per year	28,102	50.9%	15,991	56.0%	10,941	45.9%
Never	961	1.7%	726	2.5%	235	1.0%

Seniors make social and recreational trips nearly as often as shopping trips (see Table 6-22). More than 10 percent of seniors make social and recreational trips daily, the most daily trips out of the four trip types. This should not be too surprising as seniors are at the retirement age and recreational/social trips may be the primary means of interacting with others. Another 49 percent of

seniors make social and recreational trips a few times per week. Adding daily and few times per week trips, social and recreational trips are second only to shopping trips in frequency. Curiously, over eight percent of seniors report never making a social or recreational trip.

Table 6-22: Frequency of Social/Recreational Trips

Frequency of Trips	Overall		Female		Male	
	Respondents	Percent	Respondents	Percent	Respondents	Percent
Daily	5,885	10.9%	2,143	7.8%	3,480	14.5%
Few times per week	26,405	49.0%	13,364	48.7%	12,353	51.5%
Few times per month	10,583	19.6%	6,194	22.6%	3,387	14.1%
Once a month	2,992	5.6%	1,395	5.1%	1,597	6.7%
Few times per year	3,414	6.3%	1,974	7.2%	1,202	5.0%
Never	4,615	8.6%	2,356	8.6%	1,968	8.2%

Seniors make occupational trips at the lowest frequency of the four trip types, with almost 45 percent of seniors reporting never making an occupational trip (see Table 6-23). Out of those who do make occupational trips, a majority make them at least a few times per week. Approximately 23 percent of seniors make occupational trips a few times per week, and approximately 11 percent make them daily. This makes sense because work related occupational trips could typically be daily, if a full-time job, or at least a few days a week, if a part-time job. Educational and volunteering trips would also conceivably follow a regular, repetitive schedule.

Table 6-23: Frequency of Occupational Trips

Frequency of Trips	Overall		Female		Male	
	Respondents	Percent	Respondents	Percent	Respondents	Percent
Daily	5,272	11.2%	2,406	10.1%	2,822	13.2%
Few times per week	11,002	23.3%	4,912	20.6%	5,413	25.4%
Few times per month	5,408	11.5%	2,565	10.8%	2,514	11.8%
Once a month	2,150	4.6%	1,466	6.2%	684	3.2%
Few times per year	2,162	4.6%	1,197	5.0%	675	3.2%
Never	21,224	44.9%	11,277	47.3%	9,243	43.3%

Tables 6-20 to 6-23 also show how trip frequencies vary by gender. Note that the overall number of respondents in each category might not match the sum of female and male respondents exactly because some respondents did not indicate their gender on the survey. For all four trip types in general, it appears that males make trips more frequently than females. For all four trip types, males have a higher share of respondents making trips daily compared to females. This is also true for three of the four trip types for a frequency of a few times per week. Females include higher numbers of respondents who reported never making certain trips or making trips only a few times per year for all four trip types.

Length of Trips

The survey inquired about the length of trips for the four different trip purposes in two different ways: (a) by physical distance and (b) by travel time. In terms of physical distance, a dichotomy appeared, with significant proportions of both short and long distances reported for all four trip purposes.

Table 6-24 shows the distribution of physical distances of shopping trips. Slightly less than one third of respondents indicated their shopping trips were from between one and three miles. Approximately two thirds were less than five miles. Shopping trips are generally thus the shortest out of the four trip types. However, almost 22 percent of respondents indicated their shopping trips were 10 miles or more, with only less than nine percent reporting trip lengths of five to 10 miles.

Medical trip distances perhaps show the strongest example of the mileage dichotomy (see Table 6-25). A plurality, 42.3 percent of respondents, reported that their medical trips were over 10 miles. A similar number of respondents however, reported much shorter trip. 38.3 percent reported that their medical trips were from one to five miles. Expanding out to all trips shorter than five miles encompasses 46 percent of seniors.

Table 6-24: Physical Distance of
Typical Shopping Trips

Distance	Respondents	Percent
Less than 1 mile	8,379	15.3%
1 - <3 miles	17,720	32.3%
3 - <5 miles	12,079	22.0%
5 - <7 miles	4,783	8.7%
7 - <10 miles	0	0.0%
10 or more miles	11,908	21.7%

Table 6-25: Physical Distance of
Typical Medical Trips

Distance	Respondents	Percent
Less than 1 mile	4,018	7.7%
1 - <3 miles	10,113	19.4%
3 - <5 miles	9,858	18.9%
5 - <7 miles	6,040	11.6%
7 - <10 miles	0	0.0%
10 or more miles	22,056	42.3%

Social and recreational trips also show a split with many short and long distances (see Table 6-26). However, it is not as extreme as what is seen in medical trips. A plurality of respondents, 36.9 percent report having long trips, 10 miles or longer. A marginally lower percentage, 36.1 percent, report having short trips less than 3 miles long. In between are 27.1 percent of respondents who report typical trips from three to seven miles. Compared to medical trips, the short and long trips have smaller shares and the middle has a greater share of respondents. While more evenly distributed, there are still two peaks.

Occupational trips are mostly short; however, like shopping trips, there are a significant portion of seniors who have long trips (see Table 6-27). Slightly more than half of seniors that make occupational trips report that they are less than five miles long. However, a little more than one third of seniors making occupational trips, a plurality out of the answer choices on the survey, report that their trips are 10 miles or greater. This is a greater share of long trips than for shopping trips, so it could be generalized that occupational trips are longer than shopping trips.

Table 6-26: Physical Distance of Typical Social/Recreational Trips

Distance	Respondents	Percent
Less than 1 mile	4,362	10.3%
1 - <3 miles	10,946	25.8%
3 - <5 miles	6,930	16.4%
5 - <7 miles	4,521	10.7%
7 - <10 miles	0	0.0%
10 or more miles	15,617	36.9%

Table 6-27: Physical Distance of Typical Occupational Trips

Distance	Respondents	Percent
Less than 1 mile	3,235	13.8%
1 - <3 miles	4,839	20.7%
3 - <5 miles	5,111	21.9%
5 - <7 miles	2,299	9.8%
7 - <10 miles	0	0.0%
10 or more miles	7,891	33.8%

The dichotomy of short and long trips could potentially be a result of a non-uniform distribution of destinations. For each trip type, major destinations may be clustered in some communities such that the seniors living in those communities have short trips, and people not in those communities have long trips. The spatial distribution of destinations will be discussed further in Chapter 6. This situation may also be a result of a clustering of destinations specifically in the City of San Luis Obispo.

It is noteworthy that for all four trip purposes, no respondent indicated a typical trip of seven to 10 miles. Because of the generally small size of communities in the County, if making a trip within one's community or to a directly adjacent neighboring community, it is unlikely a traveler would go seven miles or further. The City of San Luis Obispo, the main regional center, has no directly adjacent neighbors. The City is isolated with ridges on three sides, and an unincorporated, mostly agricultural, and institutional, valley on the fourth side. Traveling from most other communities to the City of San Luis Obispo would likely necessitate the traveler going 10 miles or more.

While a dichotomy between long trips and short trips is seen when looking at trip length in terms of physical distance, it does not appear when looking at travel time. For all four trip purposes, the distribution of travel times follows more or less the shape of a bell curve. For three out of four trip types, the plurality of respondents indicated their typical travel times were 10 to 19 minutes, the middle choice given in the survey. In the fourth trip type, this middle choice is only barely the second most common response.

For shopping trips, a plurality of seniors, just under one third, report their typical shopping trips to be five to nine minutes (see Table 6-28). Just over 30 percent do report trip lengths between 10 and 19 minutes. In general, shopping trips skew slightly toward the shorter travel times, with approximately 16 percent of seniors reporting very short trips less than five minutes, and only seven percent reporting very long trips of 30 minutes or longer.

A plurality of over one third of respondents indicated their medical trips were typically 10 to 19 minutes long (see Table 6-29). In general, medical trips skew slightly toward the longer travel times, with 34.8 percent of respondents reporting trips 20 minutes or longer, compared to 27.2 percent of respondents reporting trips shorter than 10 minutes.

Table 6-28: Travel Times for
Typical Shopping Trips

Travel Time	Respondents	Percent
Less than 5 minutes	9,161	15.9%
5-9 minutes	18,933	32.8%
10-19 minutes	17,489	30.3%
20-29 minutes	8,166	14.1%
30 minutes or more	4,018	7.0%

Table 6-29: Travel Times for
Typical Medical Trips

Travel Time	Respondents	Percent
Less than 5 minutes	3,134	5.4%
5-9 minutes	12,570	21.8%
10-19 minutes	19,784	34.3%
20-29 minutes	14,098	24.4%
30 minutes or more	8,078	14.0%

As seen with physical distances, social and recreational trips have a relatively even distribution of travel times over short to medium to long (see Table 6-30). While the data still is in the shape of a bell, with a plurality of 28.1 percent of respondents reporting travel times of 10 to 19 minutes, about 23 percent of respondents each report travel times of 5 to 9 minutes, and 20 to 29 minutes. In general however, social and recreational trips skew slightly toward longer travel times with almost 18 percent of respondents reporting trips 30 minutes or longer. The share of respondents reporting trips of this length is more than double the number of seniors reporting very short trips of less than five minutes for social and recreational trips. This could reflect the fact that senior centers periodically organize excursion trips for seniors to such activities as operas and casinos out of town.

Occupational trips continue the trend of having a plurality (34.4 percent) of travel times in the 10 to 19 minutes range (see Table 6-31). In general, occupational trips skew slightly toward longer travel times with 36.1 percent of respondents reporting trips 20 minutes or longer compared to 32 percent reporting trips less than 10 minutes. However, more seniors who make occupational trips report more travel times of 5 to 9 minutes than 20 to 29 minutes.

Table 6-30: Travel Times for
Typical Social/Recreational Trips

Travel Time	Respondents	Percent
Less than 5 minutes	3,866	8.0%
5-9 minutes	11,028	22.9%
10-19 minutes	13,536	28.1%
20-29 minutes	11,088	23.0%
30 minutes or more	8,609	17.9%

Table 6-31: Travel Times for
Typical Occupational Trips

Travel Time	Respondents	Percent
Less than 5 minutes	2,509	9.6%
5-9 minutes	5,854	22.4%
10-19 minutes	8,315	31.9%
20-29 minutes	4,520	17.3%
30 minutes or more	4,897	18.8%

The dichotomy seen in physical distances is not necessarily incompatible with the bell curve travel times indicated. If the dichotomy in physical distances is a function of some people making trips within their own community, and others traveling to other communities, it is plausible that they could have similar travel times. Those traveling within their own community would conceivably be traveling on local roads, while those traveling to other communities would conceivably spend a large portion of their trip traveling at highway speed. It may occur where one traveler crossing an entire community on local roads and another traveler crossing a short stretch of local road close to the origin, a highway, and

another short stretch of local road close to the destination could in the end have a similar average travel times.

Time of Day of Trips

Seniors tend to make their shopping trips early in the day, with a plurality, 37.1 percent of seniors typically making their shopping trips between 10am and noon (see Table 6-32). Three quarters of seniors make their shopping trips before 2 pm. The share of respondents reporting their most typical shopping trips declines in each time period after noon.

Medical trips tend to be very early, even earlier than shopping trips (see Table 6-33). Like shopping trips, a plurality of seniors report their typical medical trips are between 10am and noon. Approximately an additional third of seniors report their typical medical trips between 8am and 10am. Thus more than two thirds of medical trips are in the morning. Unlike shopping trips, slightly more respondents report typical trips between 2pm and 4pm than noon to 2pm. The mild dip in trips at this time could possibly coincide with medical facilities lunch breaks. Very few trips are made after 4pm, with only 0.1 percent of respondents reporting typical medical trips after 6pm.

Table 6-32: Time of Day for
Typical Shopping Trips

Time of Day	Respondents	Percent
8 - 10am	12,266	21.2%
10a - 12pm	21,467	37.1%
12 - 2pm	10,269	17.8%
2 - 4pm	7,316	12.7%
4 - 6pm	4,084	7.1%
After 6pm	2,386	4.1%

Table 6-33: Time of Day for
Typical Medical Trips

Time of Day	Respondents	Percent
8 - 10am	19,126	33.7%
10a - 12pm	20,935	36.9%
12 - 2pm	7,014	12.3%
2 - 4pm	8,771	15.4%
4 - 6pm	901	1.6%
After 6pm	52	0.1%

Social and recreational trips tend to be early, but not as early as medical trips (see Table 6-34). As for shopping and medical trips, a plurality of seniors, 34.8 percent, report typical social and recreational trips between 10am and noon. In addition, more than one quarter of seniors report making social and recreational trips between 8am and 10am. Overall, more than three quarters of social and recreational trips are made before 2pm.

Respondents report that typical occupational trips are the earliest out of the four trip types inquired (see Table 6-35). More than half of those who make occupational trips report making them between 8 and 10am. In addition, more than one quarter of seniors report making occupational trips between 10am and noon. The survey was not explicit about whether these are the times of day of the outbound or return trips. This is somewhat of an issue for occupational trips, which can last all day, and less of an issue for the other trip types where many trips could conceivably fit into one of the survey time periods. Approximately six percent of seniors making occupational trips report their typical trips are after 6pm, the largest share out of the four trip types. This could potentially be a result of some

respondents identifying their return occupational trips, or it could plausibly be outbound trip to part-time jobs in the evening, or educational and volunteering trips that could also very plausibly occur in the evening.

Table 6-34: Time of Day for
Typical Social/Recreational Trips

Time of Day	Respondents	Percent
8 - 10am	10,967	25.6%
10a - 12pm	14,897	34.8%
12 - 2pm	7,932	18.5%
2 - 4pm	4,606	10.8%
4 - 6pm	2,913	6.8%
After 6pm	1,468	3.4%

Table 6-35: Time of Day for
Typical Occupational Trips

Time of Day	Respondents	Percent
8 - 10am	11,186	50.8%
10a - 12pm	6,154	27.9%
12 - 2pm	1,707	7.7%
2 - 4pm	629	2.9%
4 - 6pm	1,052	4.8%
After 6pm	1,311	5.9%

7.0 Origins, Destinations and Public Transportation Routes

Introduction

This chapter presents where seniors live spatially, and thus where most of their trips originate, and locations they identify in the senior mobility survey as their most common destinations for four different trip purposes within the case study area of San Luis Obispo County. These locations are also shown in the context of their proximity to public transportation routes, and the transportation network in general. Geographic information systems (GIS) tools are used in the analysis and display of origins, destinations and proximity to public transit.

Origins: Spatial Distribution of Senior Citizen Population

Except for non-home based trips, where people live constitute the origins of many of their trips. Travel survey data shows that in general, approximately four out of five trips either originate or end at the home. Thus, in order to provide useful and efficient transportation to senior citizens, it is important to consider where they live, and thus where service generally must access.

Like the general population of San Luis Obispo County, senior citizens in the County live mainly in four geographic subareas, the North Coast, North County, Central County, and South County. All four of these regions are actually in the Western part of the County, along the coast, or first valleys inland from the coast. Of the 35,685 seniors age 65 and older in the County, slightly over one quarter of them live in North Coast communities (Census, 2000). Just over 20 percent live in North County communities and just under 20 percent live in South County communities, and other areas of the county. Almost 15 percent of seniors live in the Central County, which for this analysis is defined as the area within the boundaries of the City of San Luis Obispo (see Table 7-1).

Table 7-1: Geographic Distribution of Senior Citizens in San Luis Obispo County

Subarea	Population 65+	Share of 65+ Population
North Coast	9,110	25.5%
North County	7,586	21.3%
Central County (City of San Luis Obispo)	5,330	14.9%
South County	6,933	19.4%
Other	6,726	18.8%
Total	35,685	100.0%

Source: U.S. Census, 2000)

Notes:

North Coast: Morro Bay City, Baywood/Los Osos, Cambria, Cayucos

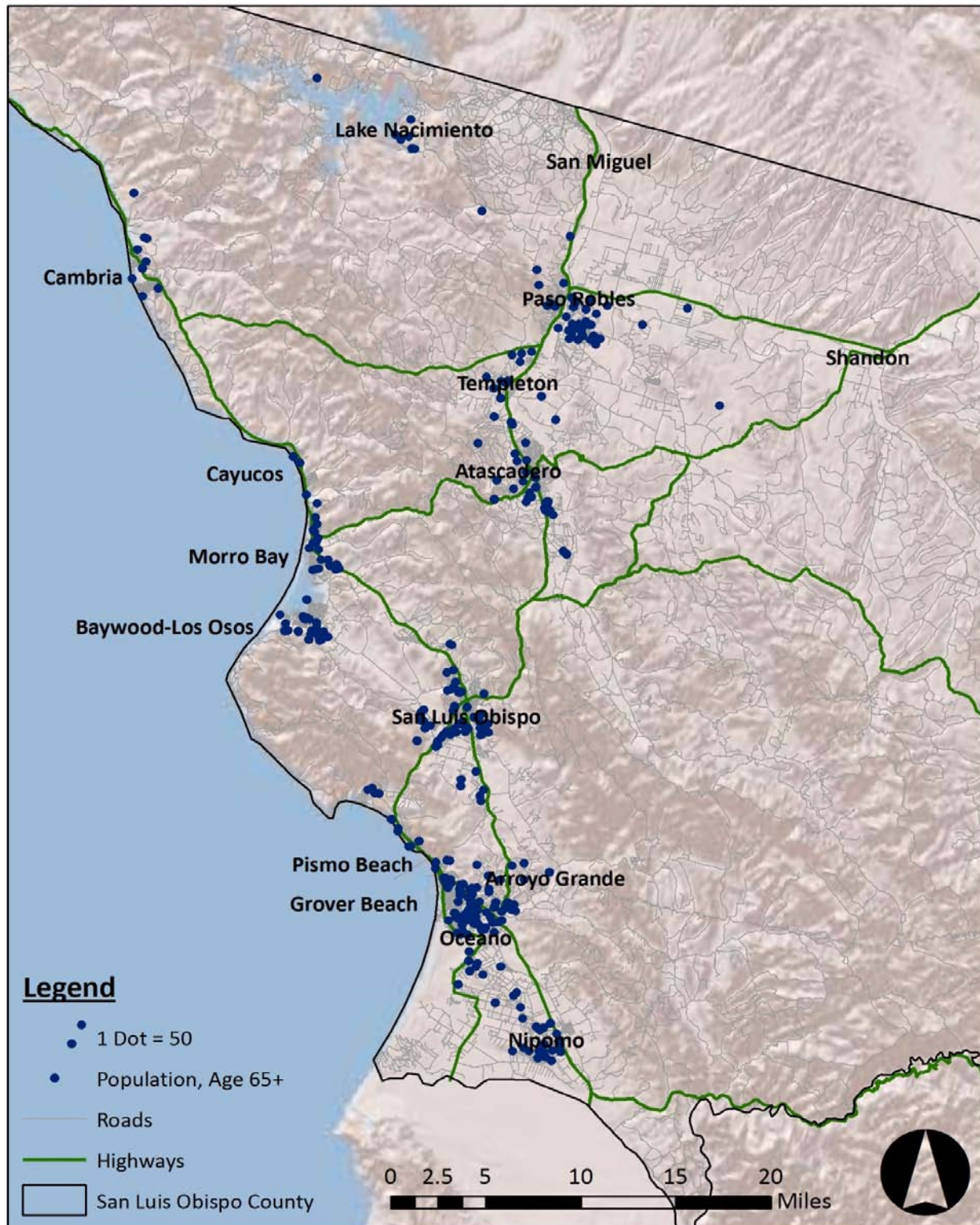
North County: Atascadero City, Paso Robles City, San Miguel, Templeton

Central County: San Luis Obispo City

South County: Arroyo Grande City, Grover Beach City, Pismo Beach City, Nipomo, Oceano

The geographic distribution of the senior citizen population is shown graphically in Figure 7-1. The dot density map shown represents 50 seniors per dot distributed to a random location in the citizen's census block. The communities identified by name on the map are all of the County's Census Designated Places.

Figure 7-1: Geographic Distribution of Senior Citizens in San Luis Obispo County



Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Proximity of Senior Citizen Population to Transit

This section examines the proximity of where senior citizens live to transit routes. Additionally, assuming that transit routes generally follow major or prominent routes in the region, senior citizens proximity to transit can also be used as a surrogate for senior citizens general proximity to major transportation infrastructure.

The proximity of senior citizens to transit is fairly inconsistent across San Luis Obispo County. Seniors in some areas have potentially good or reasonable access to transit, while in other areas seniors have relatively poor access to transit. The geographic distribution of senior citizens countywide is shown with transit routes in Figure 7-2. Figure 7-3 through Figure 7-6 shows the distribution of senior citizens and their relationship to transit zoomed in to the four sub-areas mentioned in Table 7-1. The maps show five buffers that extend in 1,000 foot increments from fixed-route transit lines.

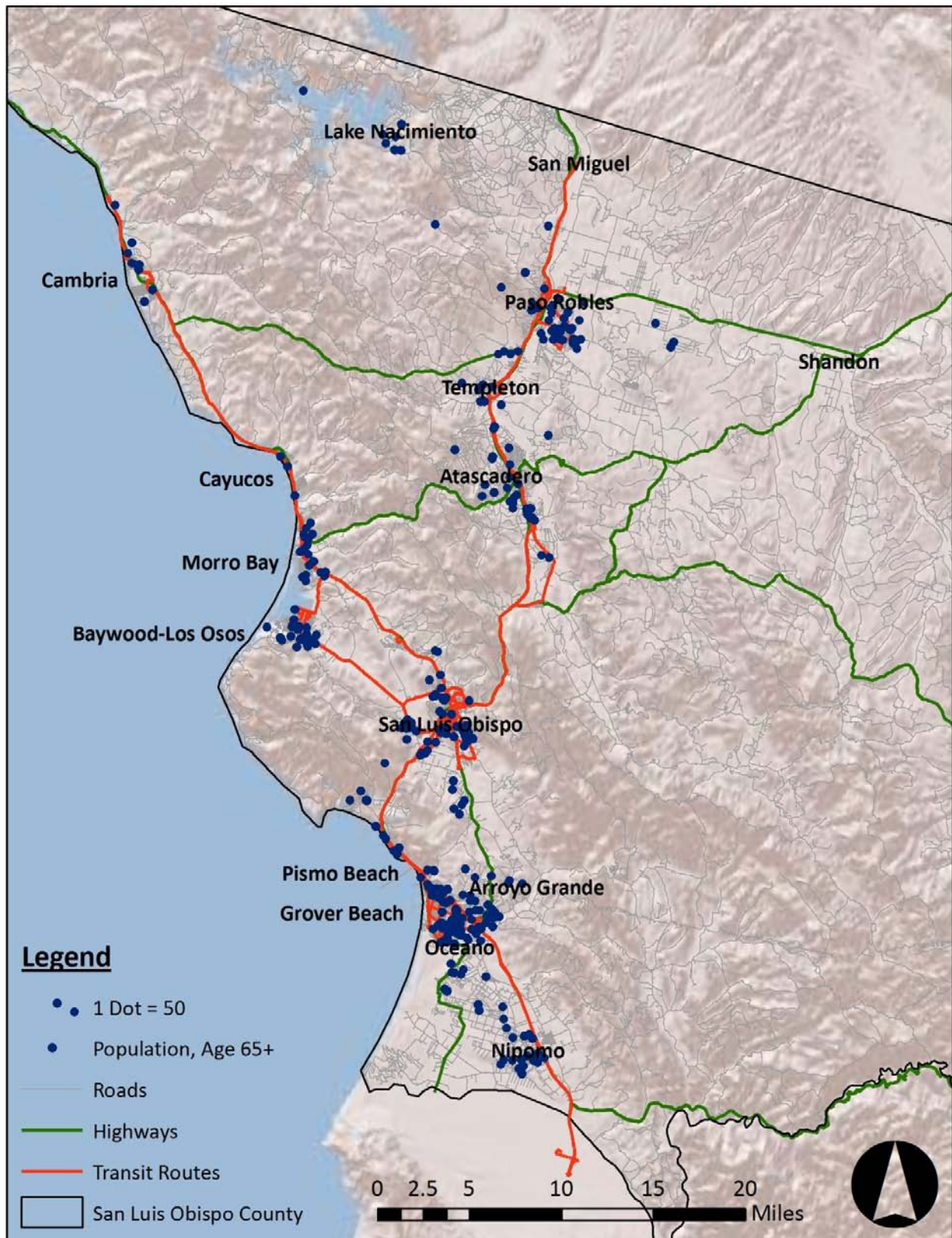
The City of San Luis Obispo (see Figure 7-3), being the largest city and main economic center of the County, has the most extensive coverage of transit in the County. As such, senior citizens there appear to have good transit access, with most of the senior citizen population falling in the green colored buffers on the map, which are within 1,000 feet and 2,000 feet of transit routes.

The more inconsistent nature of transit access in the County can be seen in the other zoomed in maps, particularly in the North County map (see Figure 7-5). This map shows Paso Robles, Templeton, and Atascadero. While not having the transit coverage of San Luis Obispo, Paso Robles has relatively extensive transit coverage, while Templeton and Atascadero have single lines passing through them. Paso Robles, like San Luis Obispo, has most of its senior citizen population within the 1,000 and 2,000 foot buffers from transit routes. Although, it has more citizens in the yellow, 2,000-3,000 foot buffer compared to San Luis Obispo City. Templeton and Atascadero, however, have very few seniors on the green buffers, within 2,000 feet. Large segments of their senior populations reside in the yellow and red buffers, which are 2,000 to 5,000 feet away from transit routes or beyond the five buffers entirely.

1,000 feet from a transit route is closer than one quarter mile, and 2,000 feet is closer than one half mile. For the population at-large, this can generally be considered walking distance. Possible mobility, disability, or stamina issues with senior citizens however may make 1,000 or 2,000 feet too far for some seniors. Going half a mile and beyond pushes the limit on how far younger citizens may be willing to walk, making the longer Templeton and Atascadero distances potentially extreme for seniors.

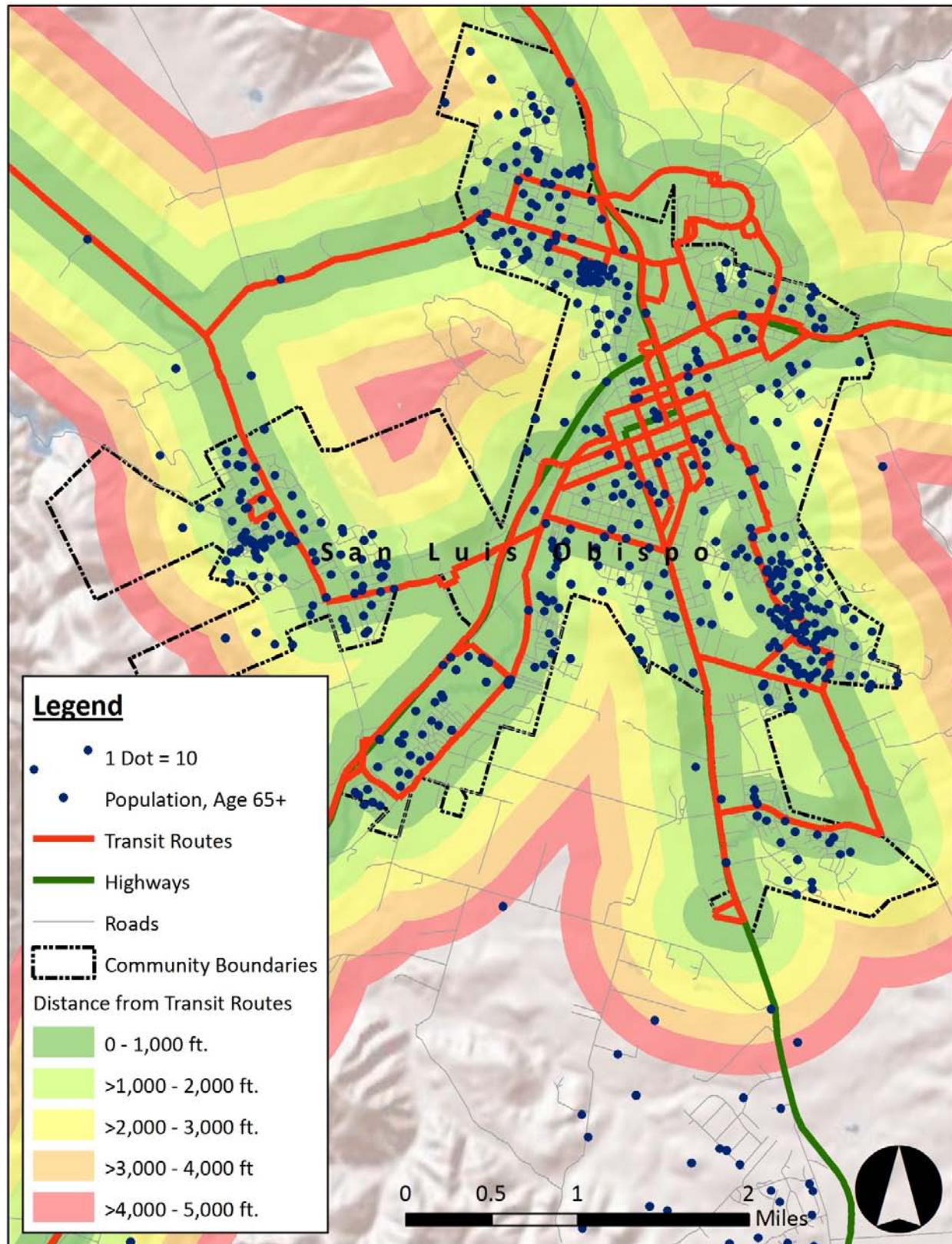
While the City of San Luis Obispo houses more seniors than any other individual city in the County, it accounts for only 15 percent of the total. For significant parts of the other 85 percent of the senior citizen population, transit access can be quite poor, except for those who live in other moderately transit accessible areas in Paso Robles and parts of South County, or those who live along the single routes that branch through other areas. Also, with most transit routes passing on highways and major roads, those seniors distant from transit are often also distant from arterial roads, thus requiring more effort to serve these seniors on other modes as well, like carpools and on-demand service.

Figure 7-2: Senior Citizen Population and Proximity to Transit, San Luis Obispo County



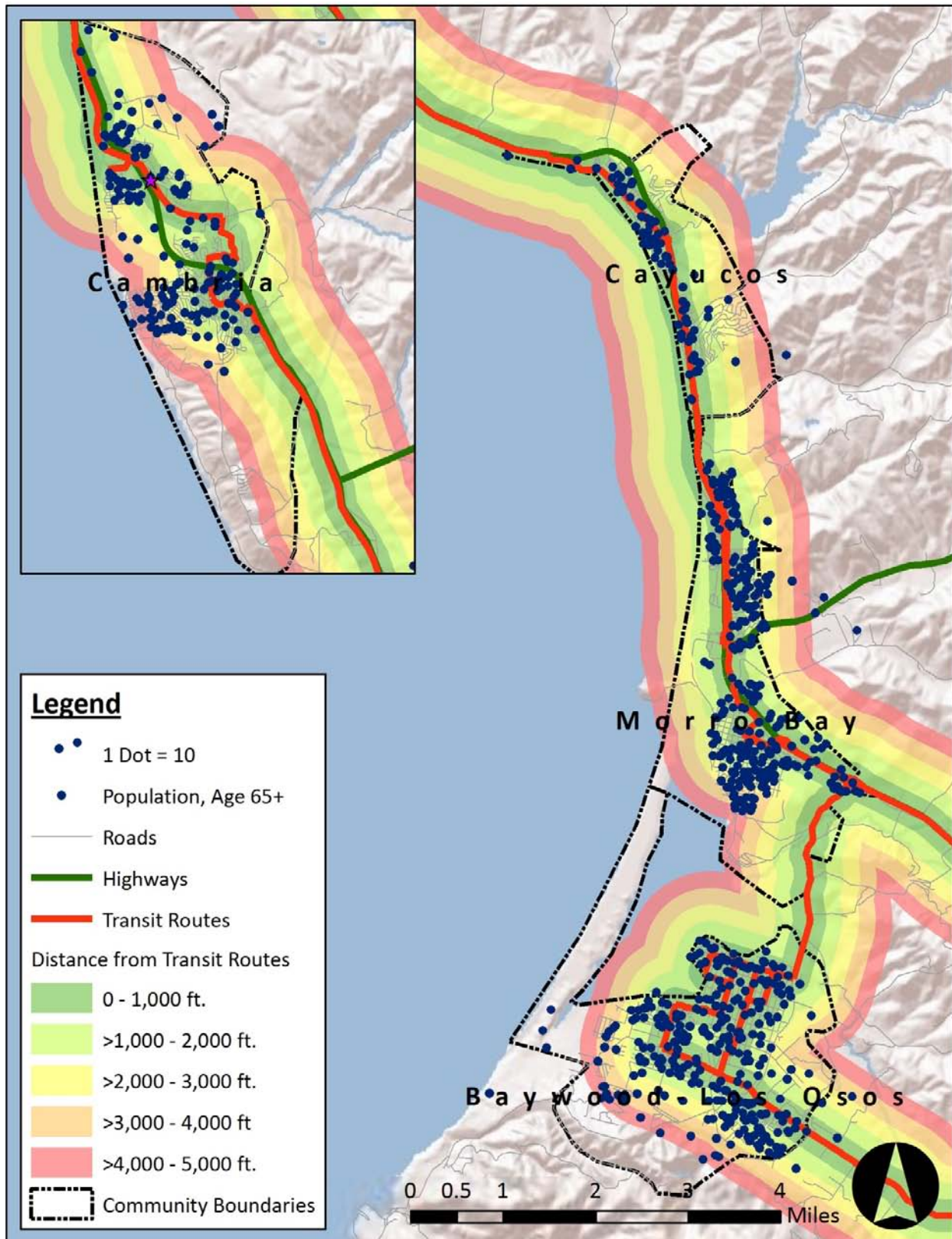
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-3: Senior Citizen Population and Proximity to Transit, Central County (City of SLO)



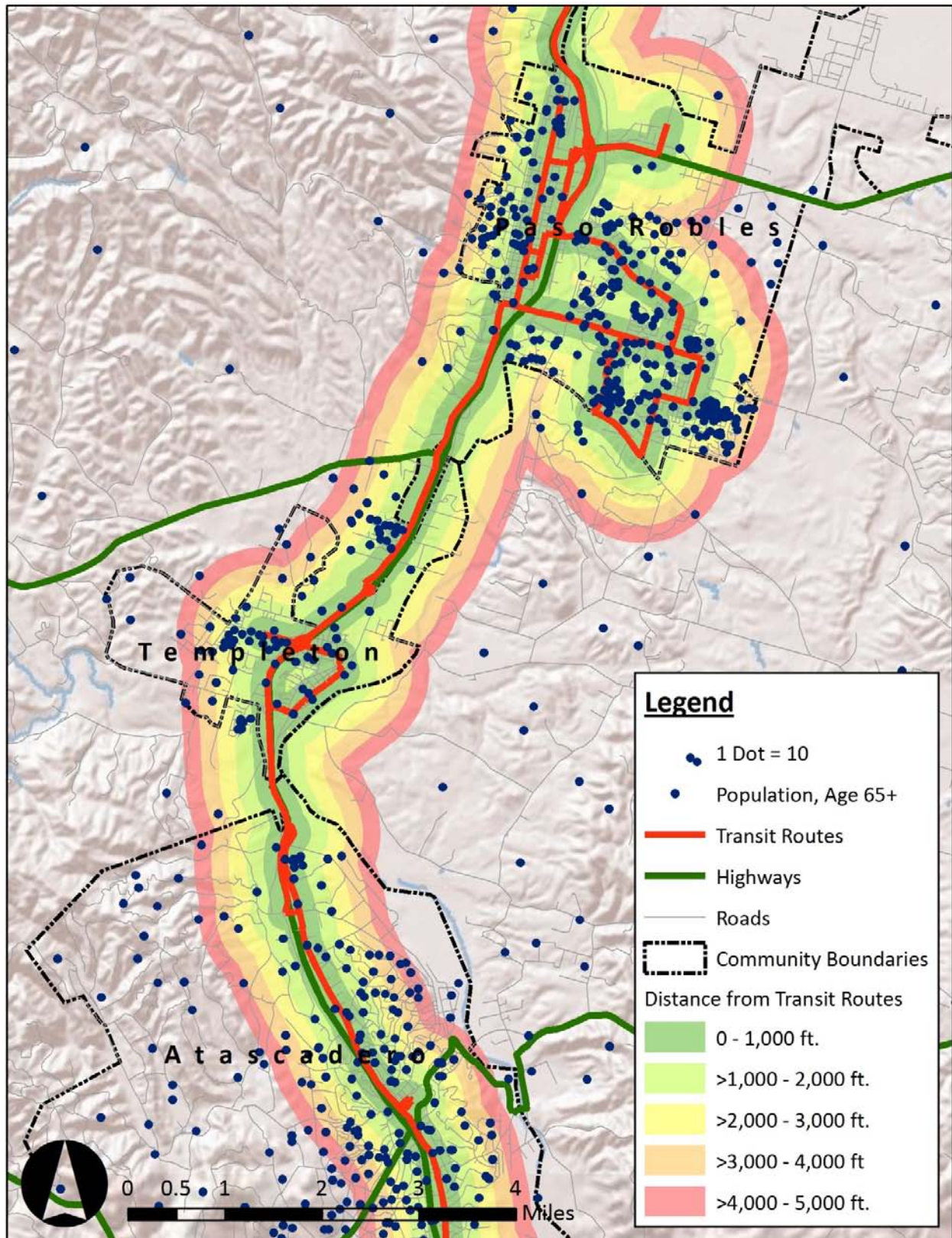
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-4: Senior Citizen Population and Proximity to Transit, North Coast



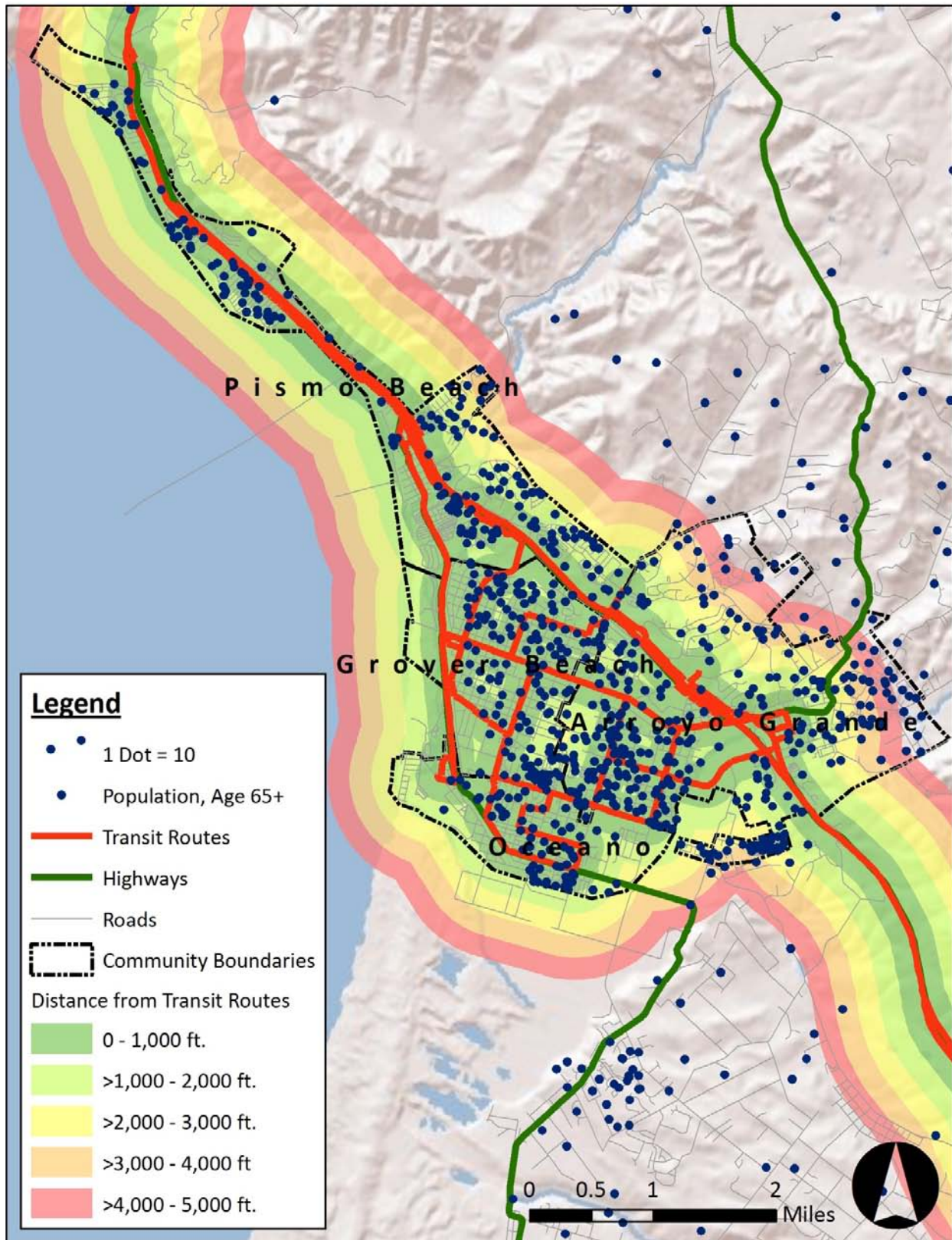
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-5: Senior Citizen Population and Proximity to Transit, North County



Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-6: Senior Citizen Population and Proximity to Transit, South County (Five Cities)



Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Destinations of Most Common Trips by Purpose

The following sub-sections display where survey respondents report as their most common trip destinations for four types of trips: (a) shopping, (b) medical, (c) social and recreational, and (d) occupational. This is not an exhaustive list of destinations for all seniors or for any given individual, but rather a broad review of locations where common destinations occur.

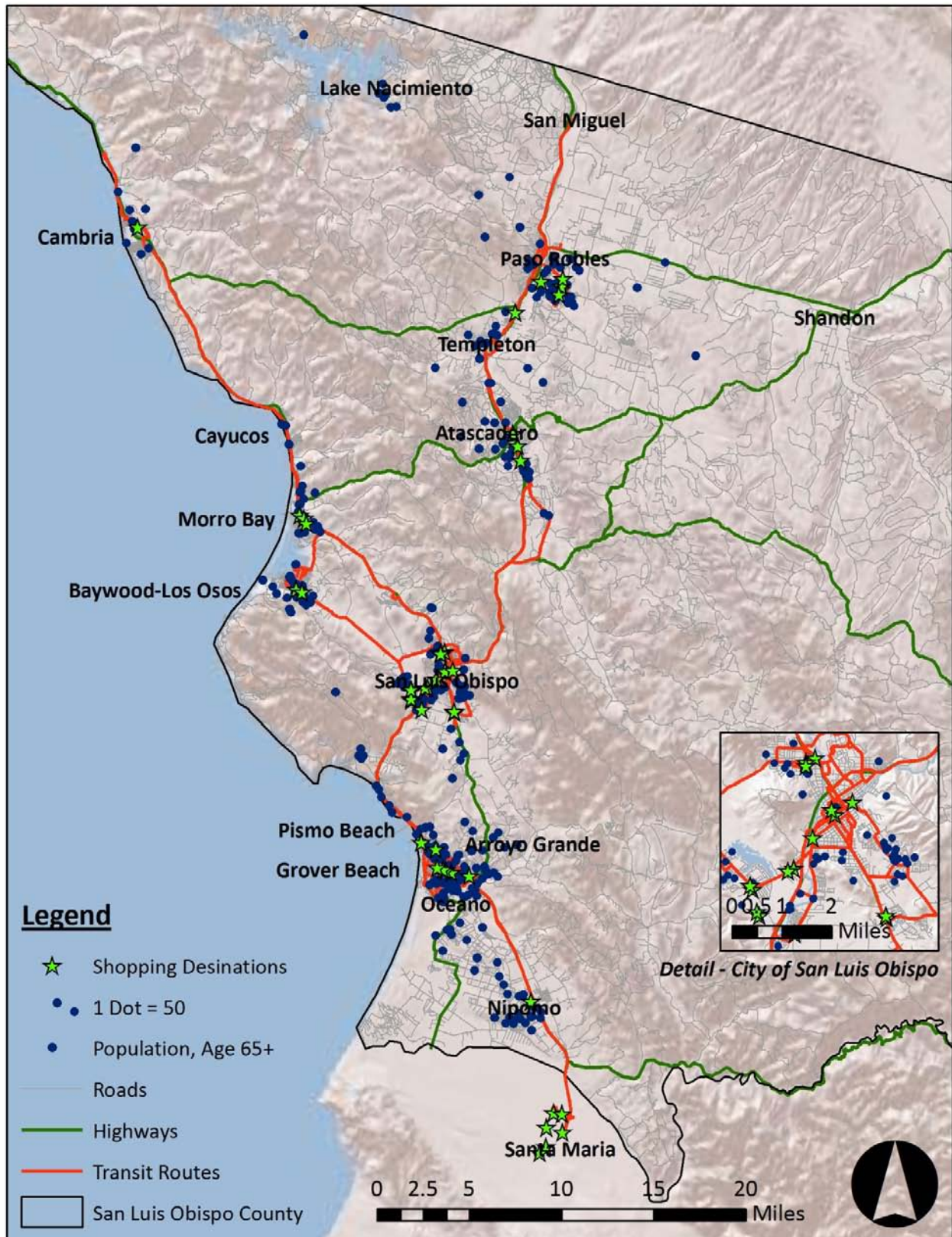
Shopping Trips

The most common shopping trip destinations of survey respondents are shown in **Figure 7-7**. Further detail for the four main geographic subareas of the County can be found in **Figures 7-8 to 7-11**. The most common shopping destinations are concentrated primarily in the City of San Luis Obispo. Relatively numerous destinations are also seen in South County in the Pismo Beach/Arroyo Grande/Grover Beach area, and also in Santa Maria, in neighboring Santa Barbara County to the south.

Out of the four trip types asked in the survey, shopping trips appear to have the most lopsidedly distributed set of common destinations. Relative to the other trip types, common shopping trip destinations do not tend to follow the population distribution of senior citizens. Thus, seniors in the southern communities have disproportionately numerous prime shopping destinations, while seniors in other communities have disproportionately few destinations. Some of the smaller communities in the County had no reported common shopping destinations.

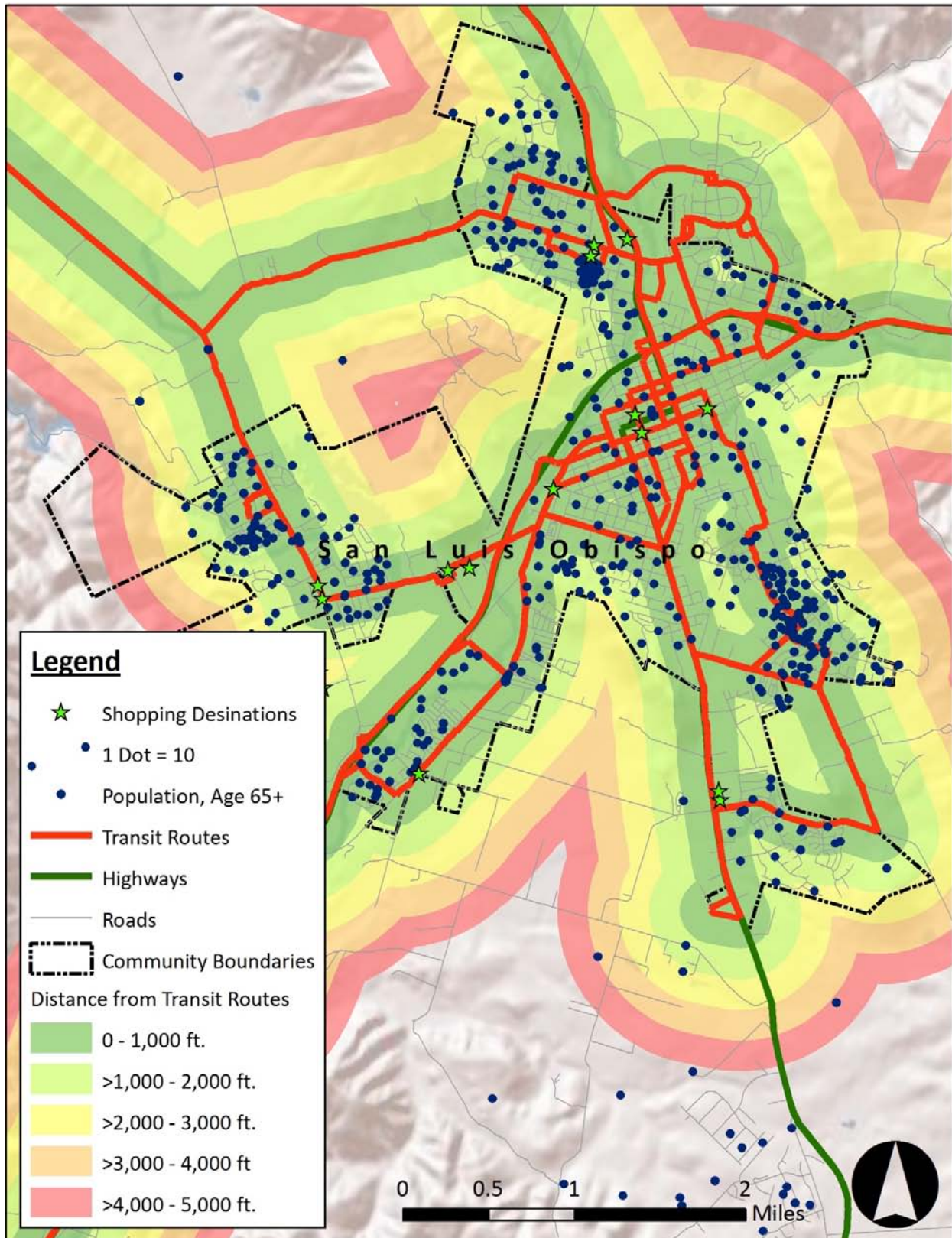
The concentration of shopping destinations in the City of San Luis Obispo indicates a need for transportation services from all other communities to access the City. The geography of the County makes such service necessarily long as the boundaries of the City of San Luis Obispo do not touch those of any other community. The nearest communities to the City of San Luis Obispo are approximately eight miles to the North and West, and approximately ten miles to the South. Similar long distance service is required to reach the shopping destinations in Santa Maria, which is approximately nine miles south of the nearest San Luis Obispo County community of Nipomo, which itself is approximately nine miles south of the Five Cities cluster.

Figure 7-7: Most Common Destinations Reported for Shopping Trips



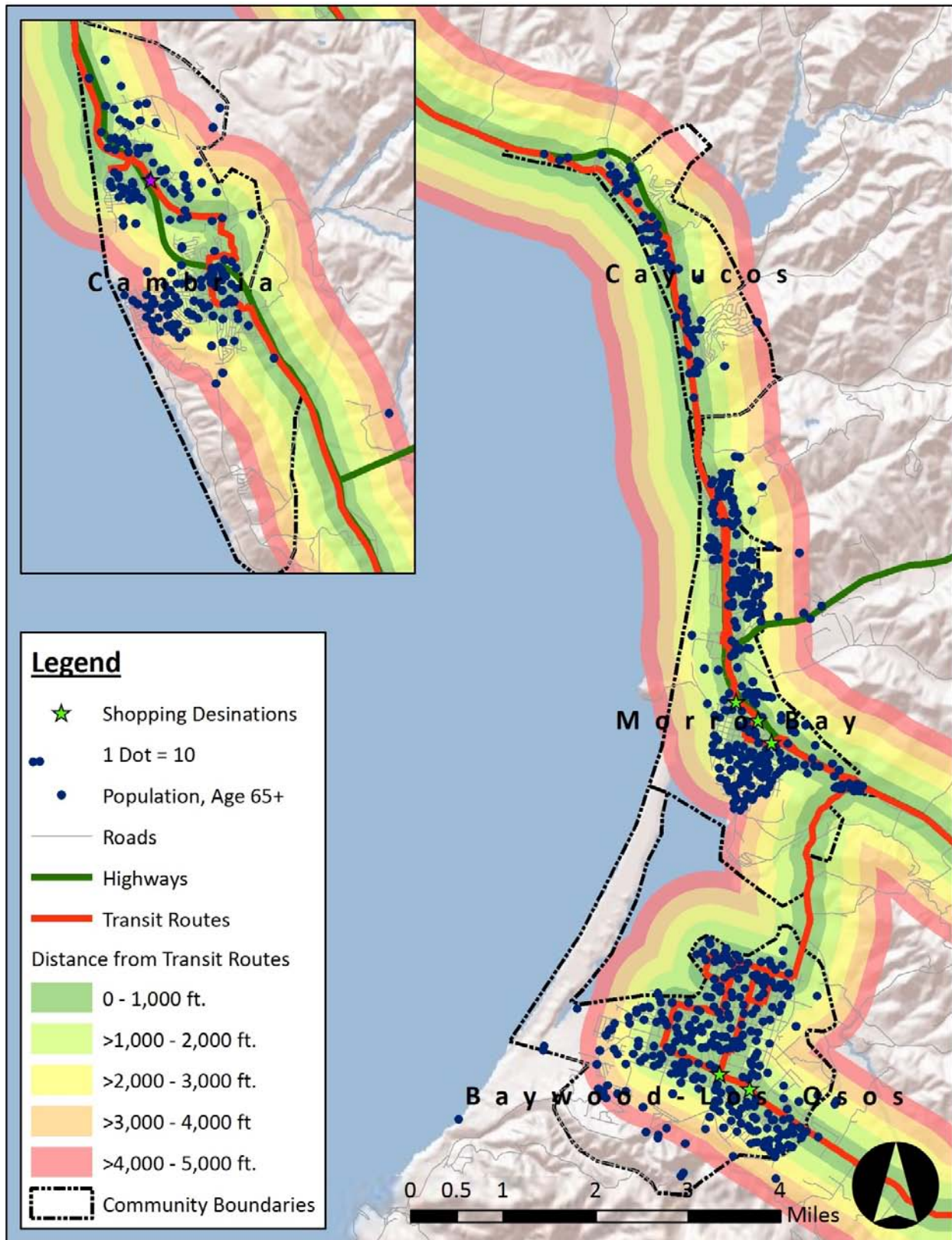
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-8: Most Common Destinations Reported for Shopping Trips, Central County



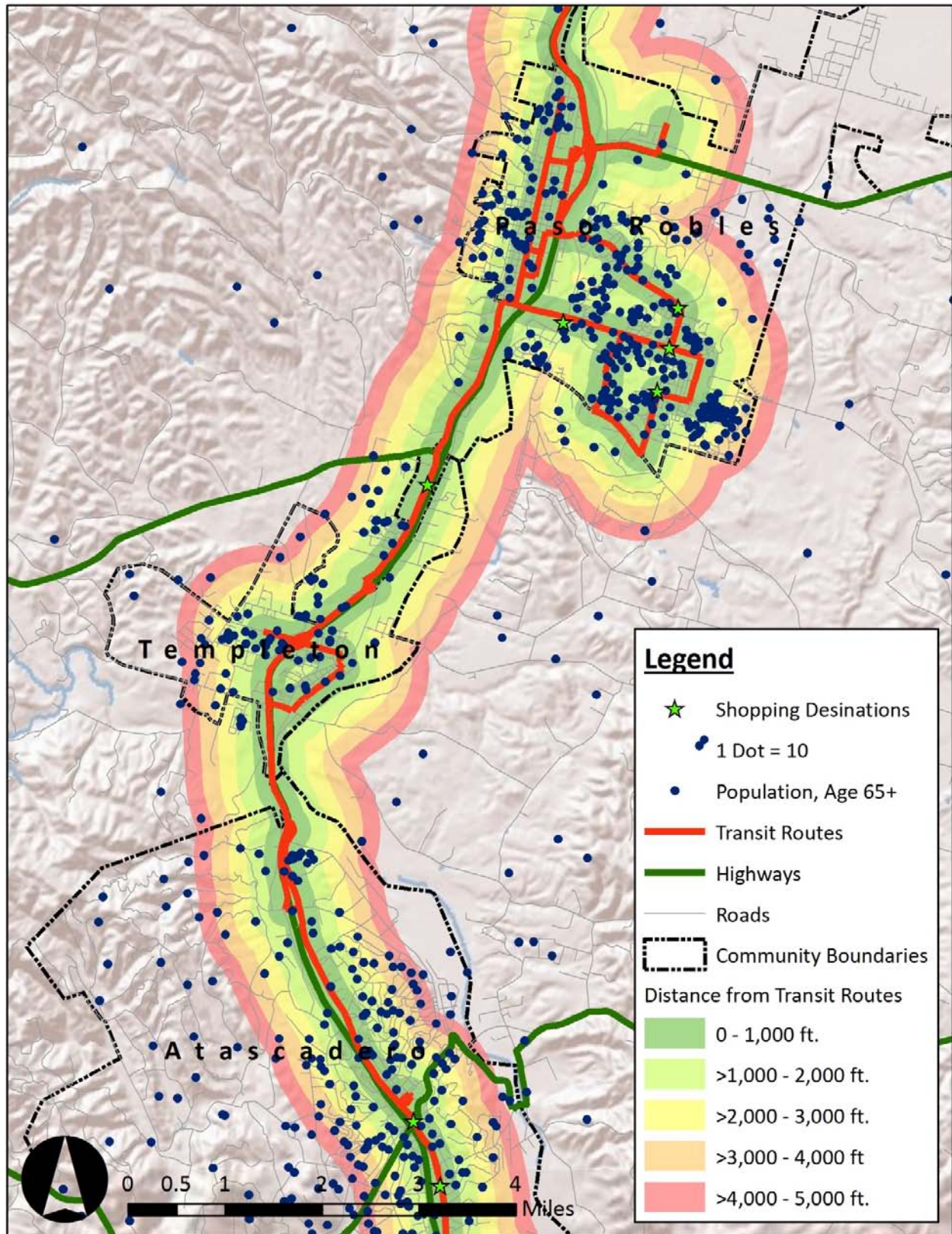
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-9: Most Common Destinations Reported for Shopping Trips, North Coast



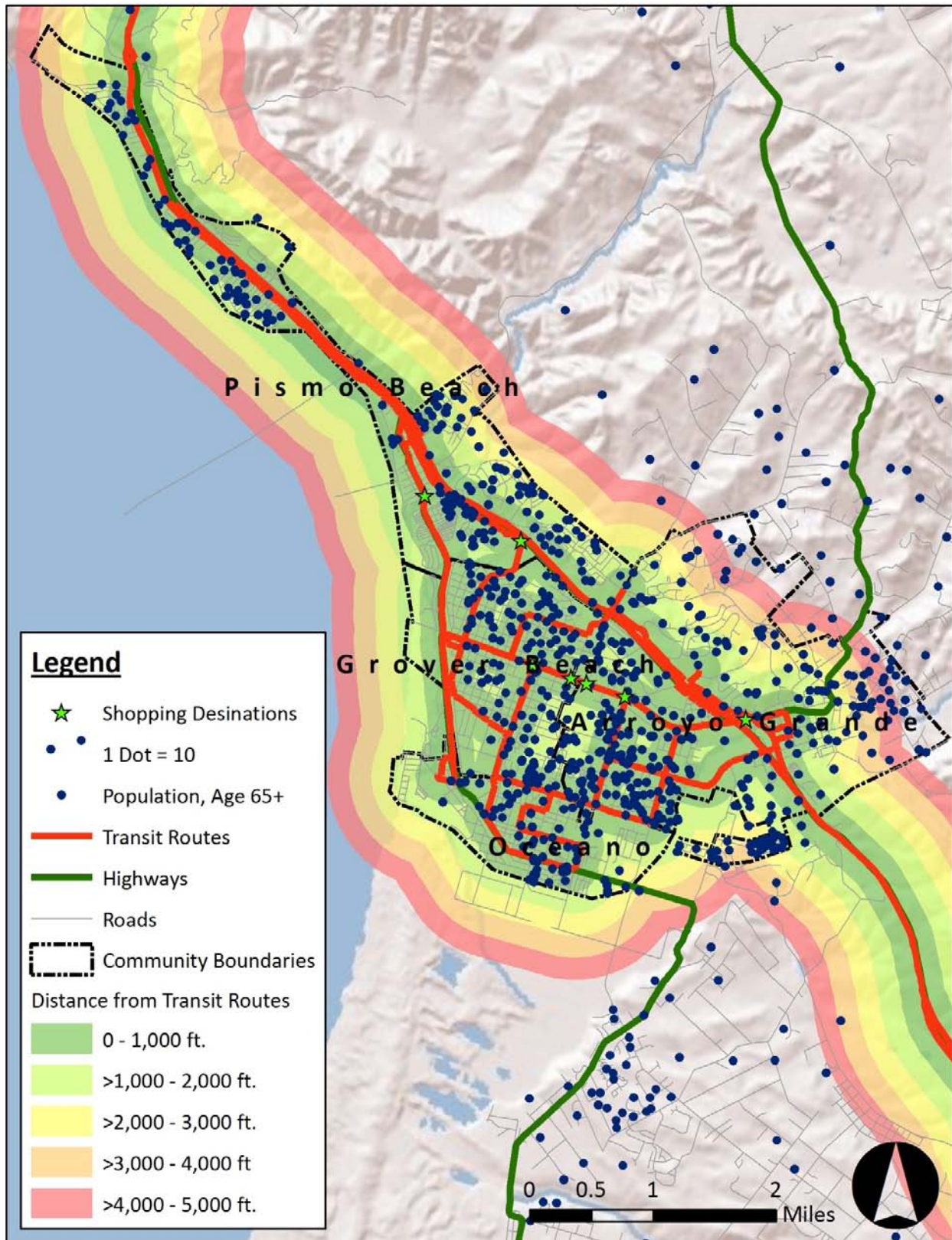
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-10: Most Common Destinations Reported for Shopping Trips, North County



Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-11: Most Common Destinations Reported for Shopping Trips, South County



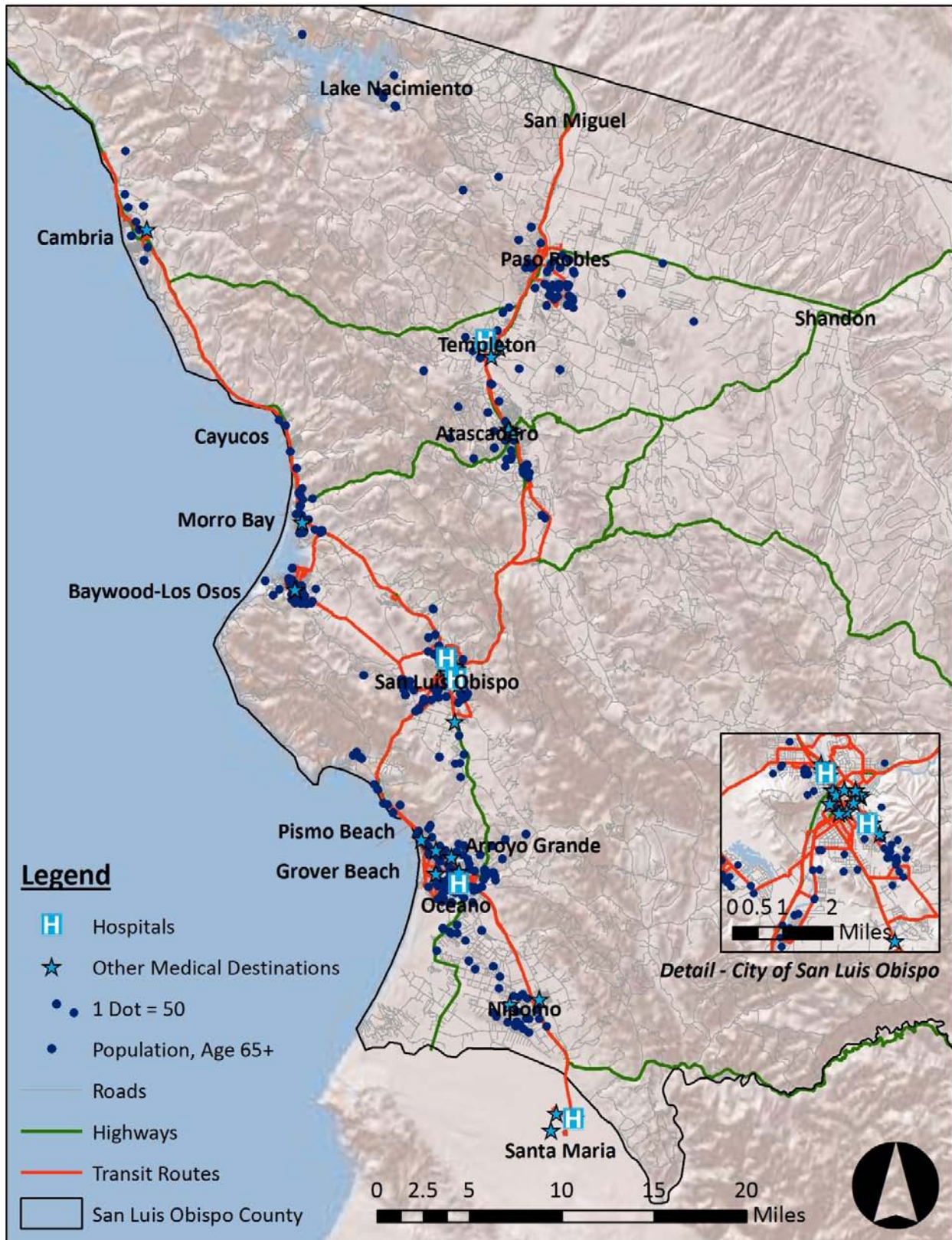
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Medical Trips

The most common medical trip destinations of survey respondents are shown in **Figure 7-12**. Further detail for the four main geographic subareas of the County can be found in **Figures 7-13 to 7-16**. These maps separately identify hospitals and other, non-hospital medical destinations like individual doctor's offices or community clinics. The County is served by five hospitals, one in North County in Templeton, two in the City of San Luis Obispo, one in South County in Arroyo Grande, and one outside the county in Santa Maria. The most common, non-hospital medical destinations are located in most of the medium to larger sized communities in the county, although like shopping destinations, they are not located in several of the smaller communities. While there is this presence of medical destinations in the medium to larger communities, they are disproportionately concentrated in what in essence are medical office districts surrounding hospitals. There is an additional apparent quasi-medical district in Central San Luis Obispo city.

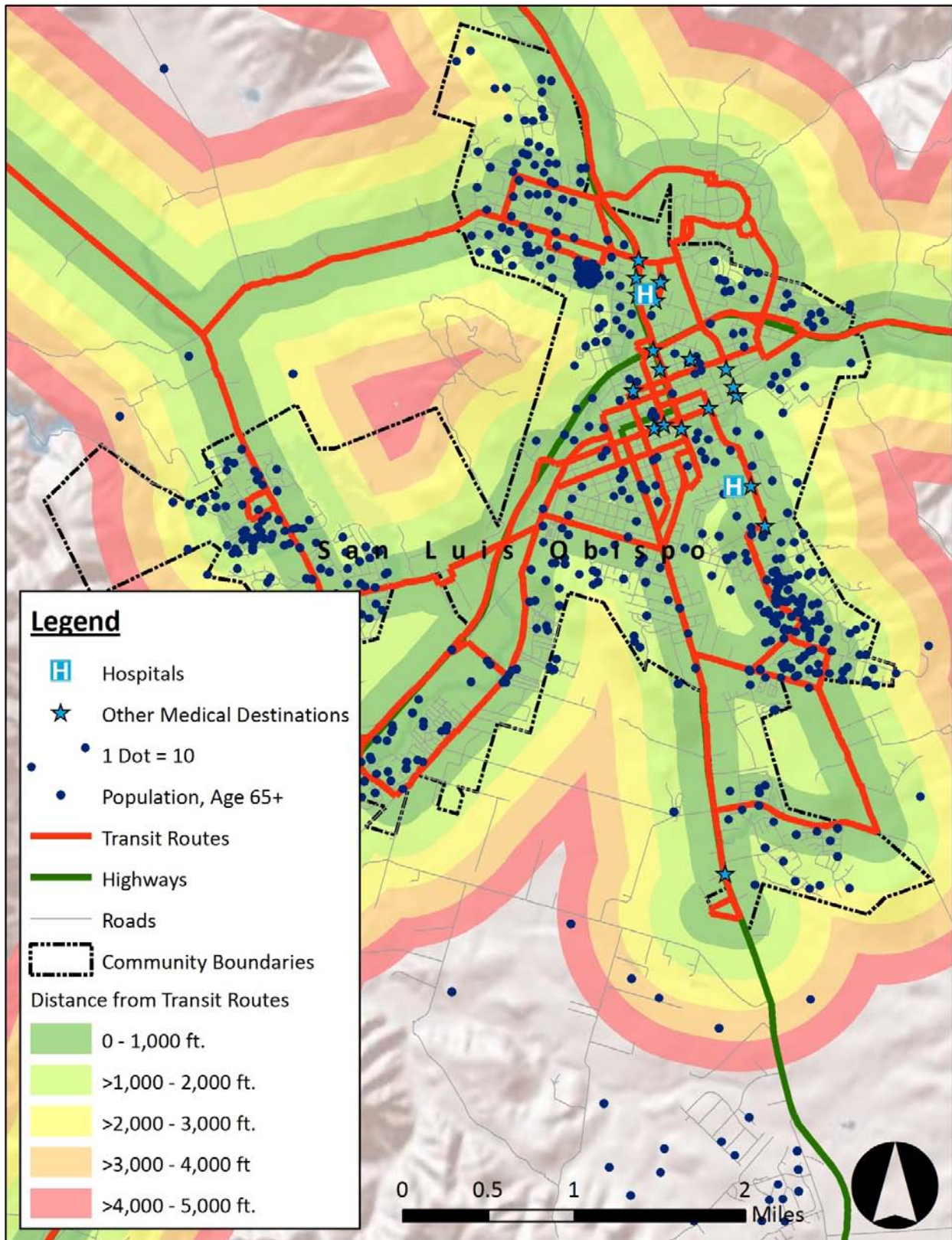
With four of the five hospitals in three communities within San Luis Obispo County and the fifth outside the County, there are moderate to large distances to be covered by seniors in the County who do not live in Templeton, San Luis Obispo city, and Arroyo Grande. This will likely have ramifications on the difficulty and or efficiency of providing transportation service for senior citizens' medical trips. The presence of the fifth hospital in Santa Maria also means service should have good connectivity across the county line, and not just inside San Luis Obispo County. The countywide map does show that San Luis Obispo County transit service crosses into Santa Maria, which does reach Marian Hospital in Santa Maria.

Figure 7-12: Most Common Destinations Reported for Medical Trips



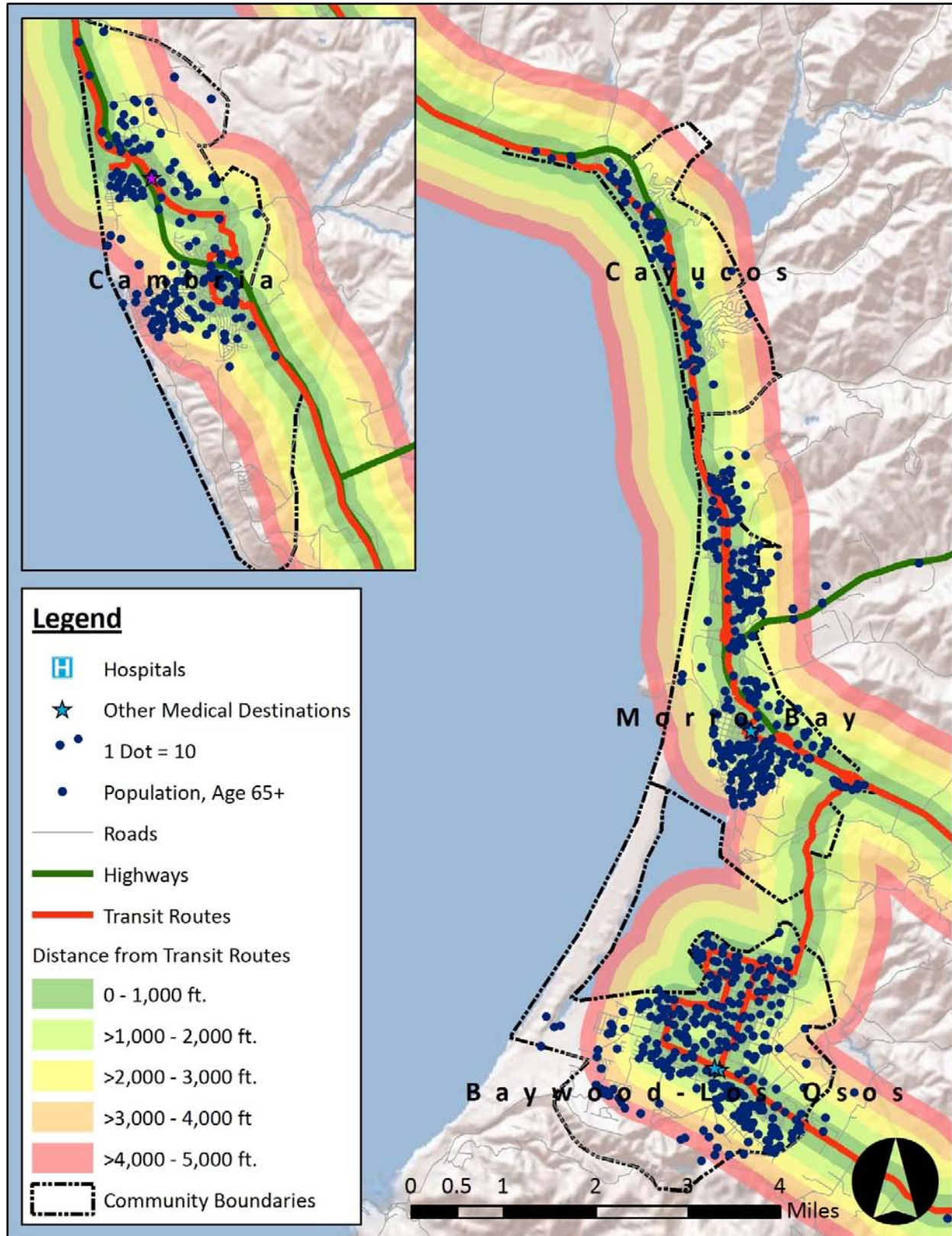
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-13: Most Common Destinations Reported for Medical Trips, Central County



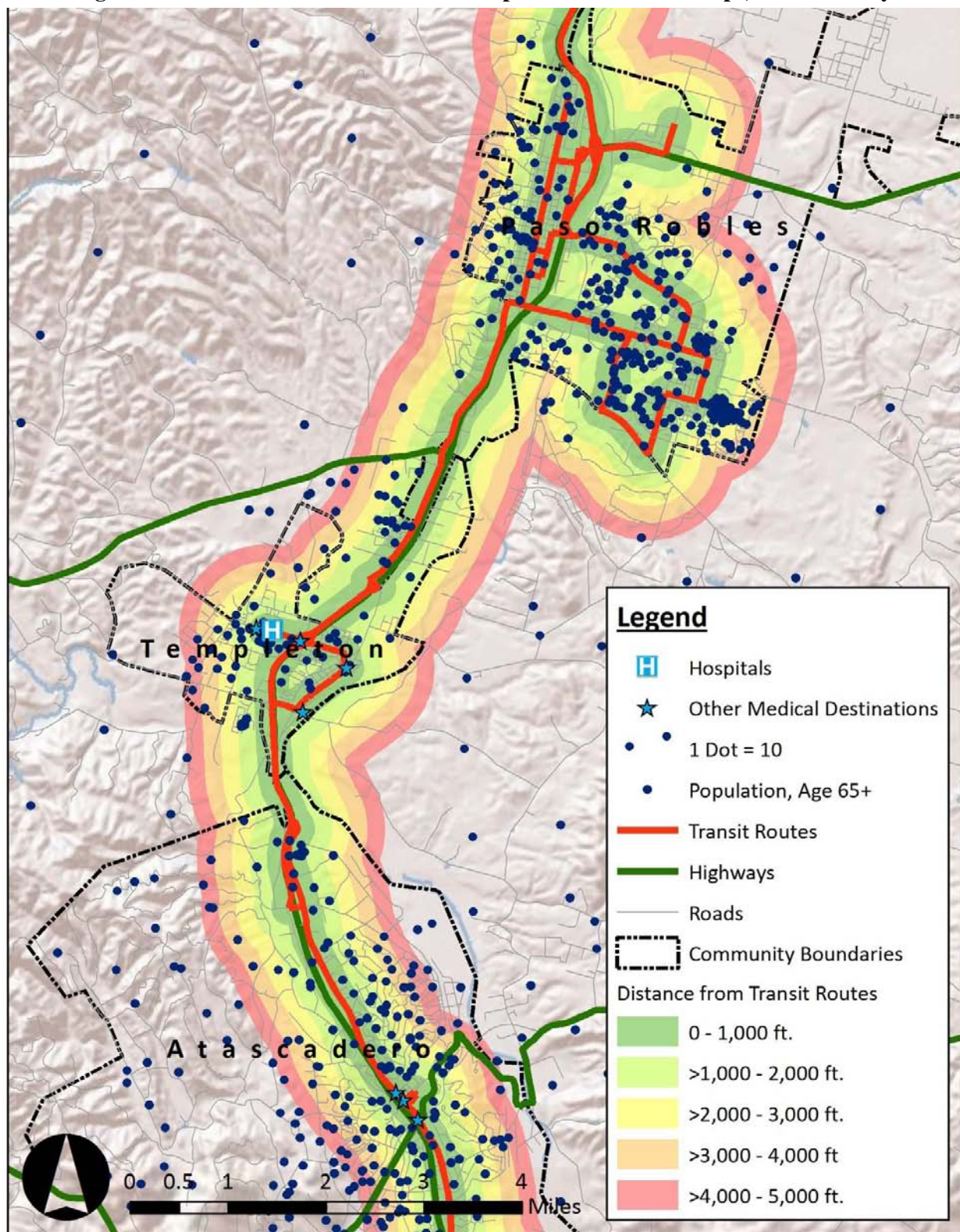
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-14: Most Common Destinations Reported for Medical Trips, North Coast



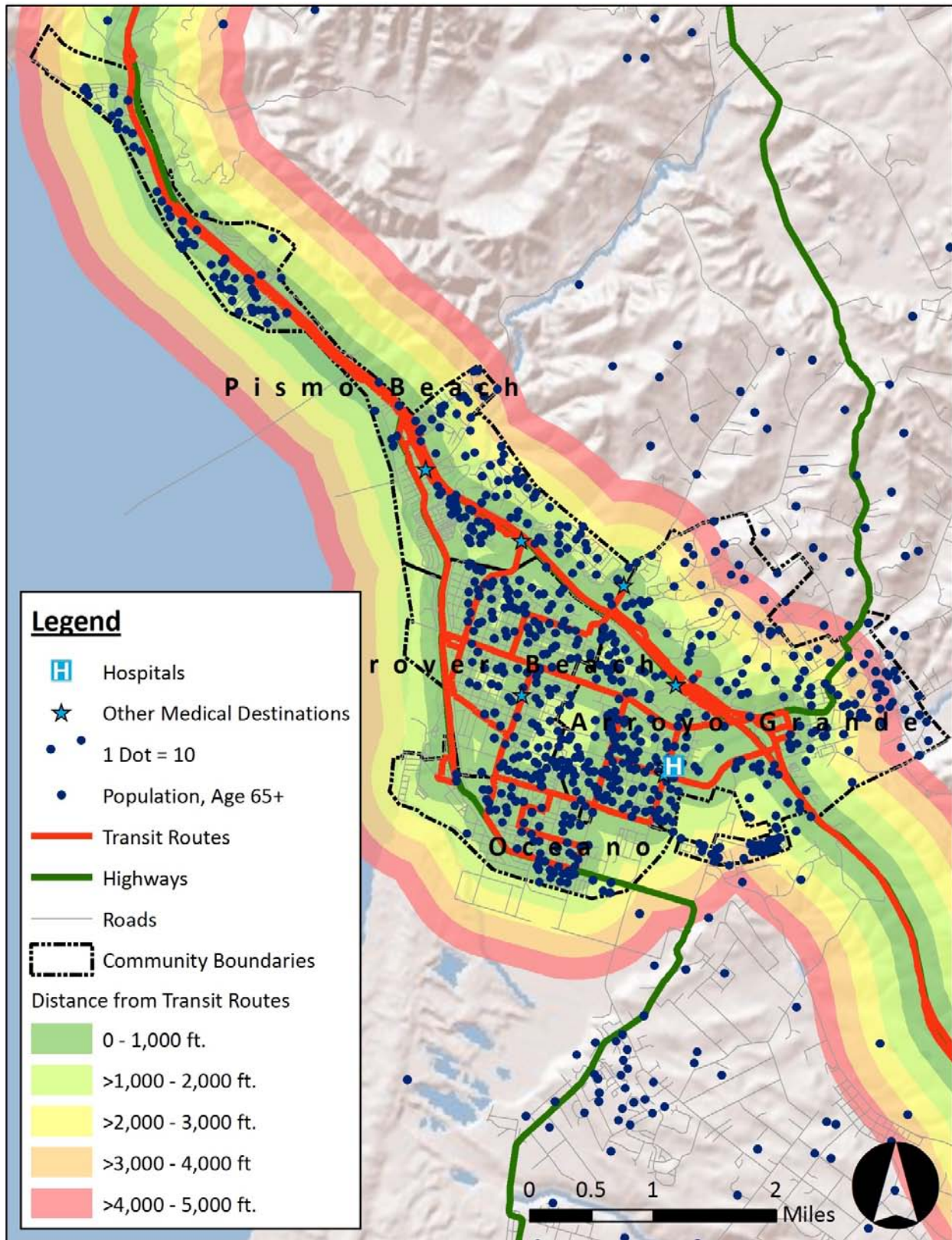
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-15: Most Common Destinations Reported for Medical Trips, North County



Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-16: Most Common Destinations Reported for Medical Trips, South County



Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Social/Recreational Trips

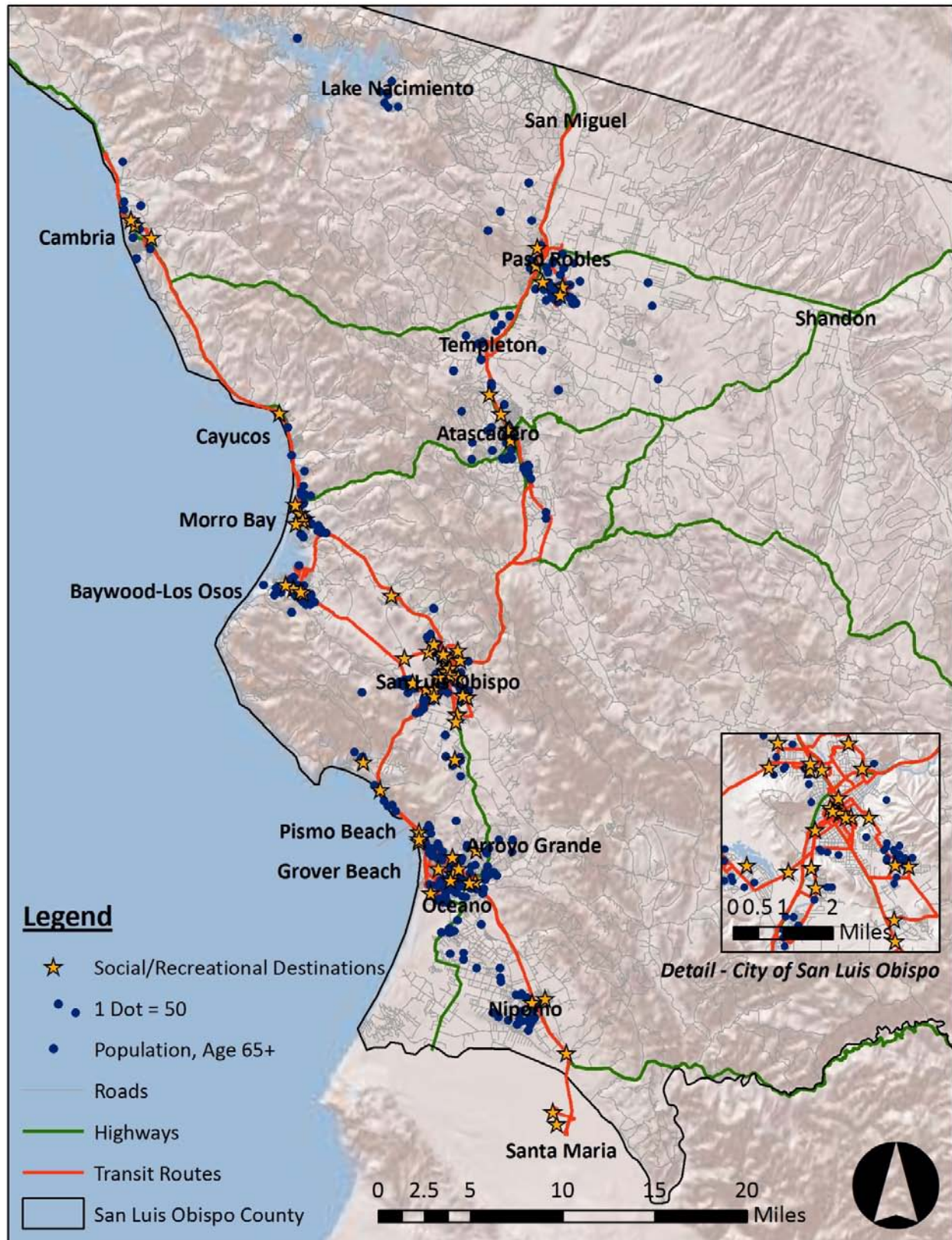
The most common social and recreational destinations of survey respondents are shown in **Figure 7-17**. Further detail for the four main geographic subareas of the County can be found in **Figures 7-18 to 7-21**. Out of the four trip types asked in the survey, social and recreational trips appear to have the most evenly distributed set of common destinations. Relative to the other trip types, common trip destinations follow the population distribution of senior citizens to a large degree.

Several common trip destinations are present in most communities. This might imply several things. It appears that seniors tend to stay in their own communities for social and recreational purposes, compared to other trip purposes. This would particularly make sense if it was assumed that social and recreational opportunities were at least part of an individual's decision to choose to live in a given place. The multiplicity of common destinations also echoes the more individually preferential nature of social and recreational travel compared to other trips. For example, it would make sense that all things being equal, shopping trips would have fewer destinations as people must shop for the same types of necessities, but have differing recreational interests.

While common social and recreational trip destinations are relatively evenly distributed, there is some clustering in the City of San Luis Obispo, similar to other trip types. This is possibly understandable as San Luis Obispo city is the largest city in the County, and is thus able to support certain types of specialized or niche recreational activities that the smaller communities may not have the population to support.

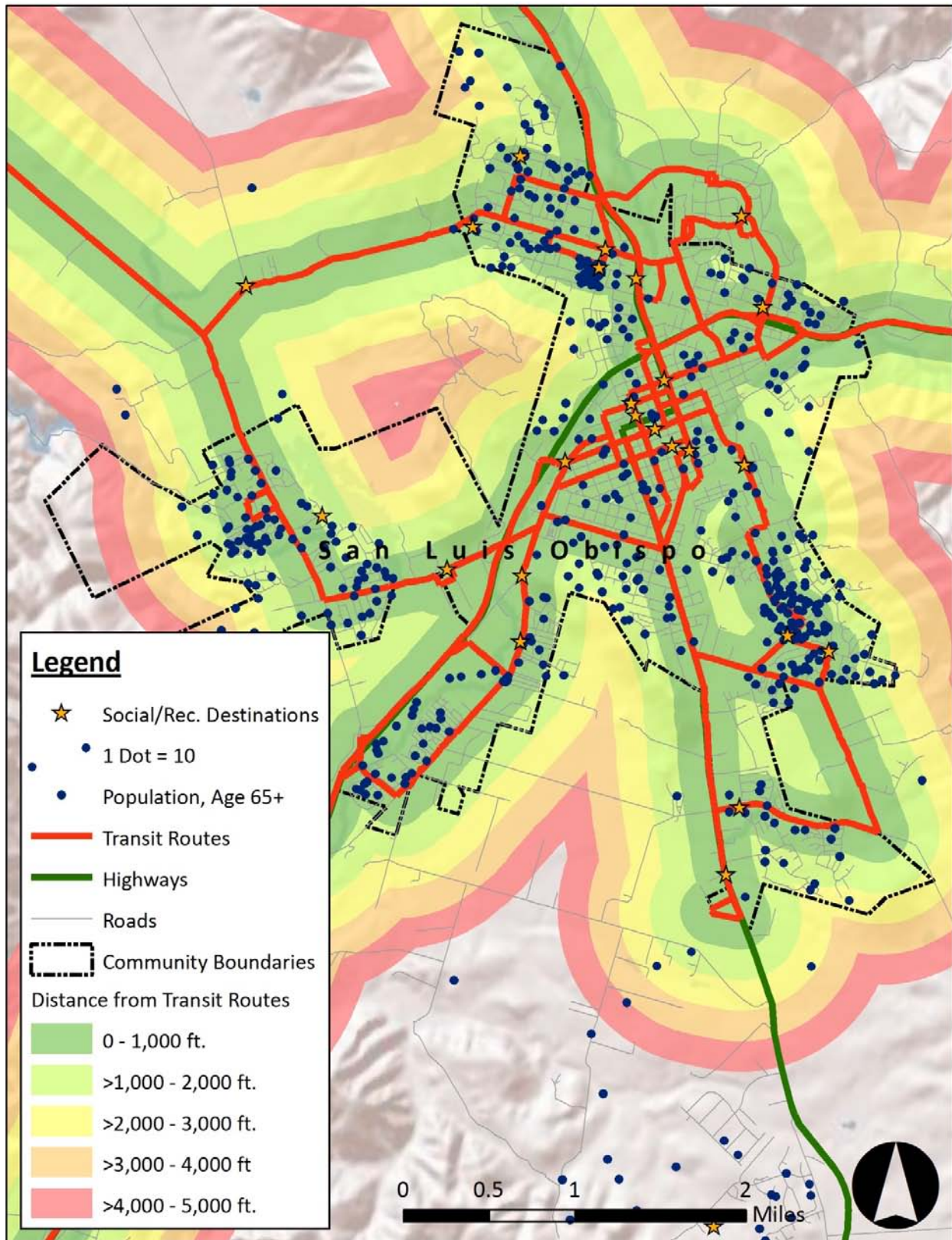
The dispersion of trip destinations for social and recreational purposes can have both positive and negative ramifications for the ease with which one can provide transportation for these trips. The presence of common destinations in more communities makes it that service does not have to transport seniors as far as for other trip types. Conversely however, the extra number of destinations means possible service must serve many more individual locations. For example, ten seniors may recreate in five different places while shop at one. This effectively cuts down on the demand for travel to each individual destination. If a service needs a critical mass of travelers in order to be sustainable to operate, this need tends to be difficult to meet with dispersed sets of travelers.

Figure 7-17: Most Common Destinations Reported for Social/Recreational Trips



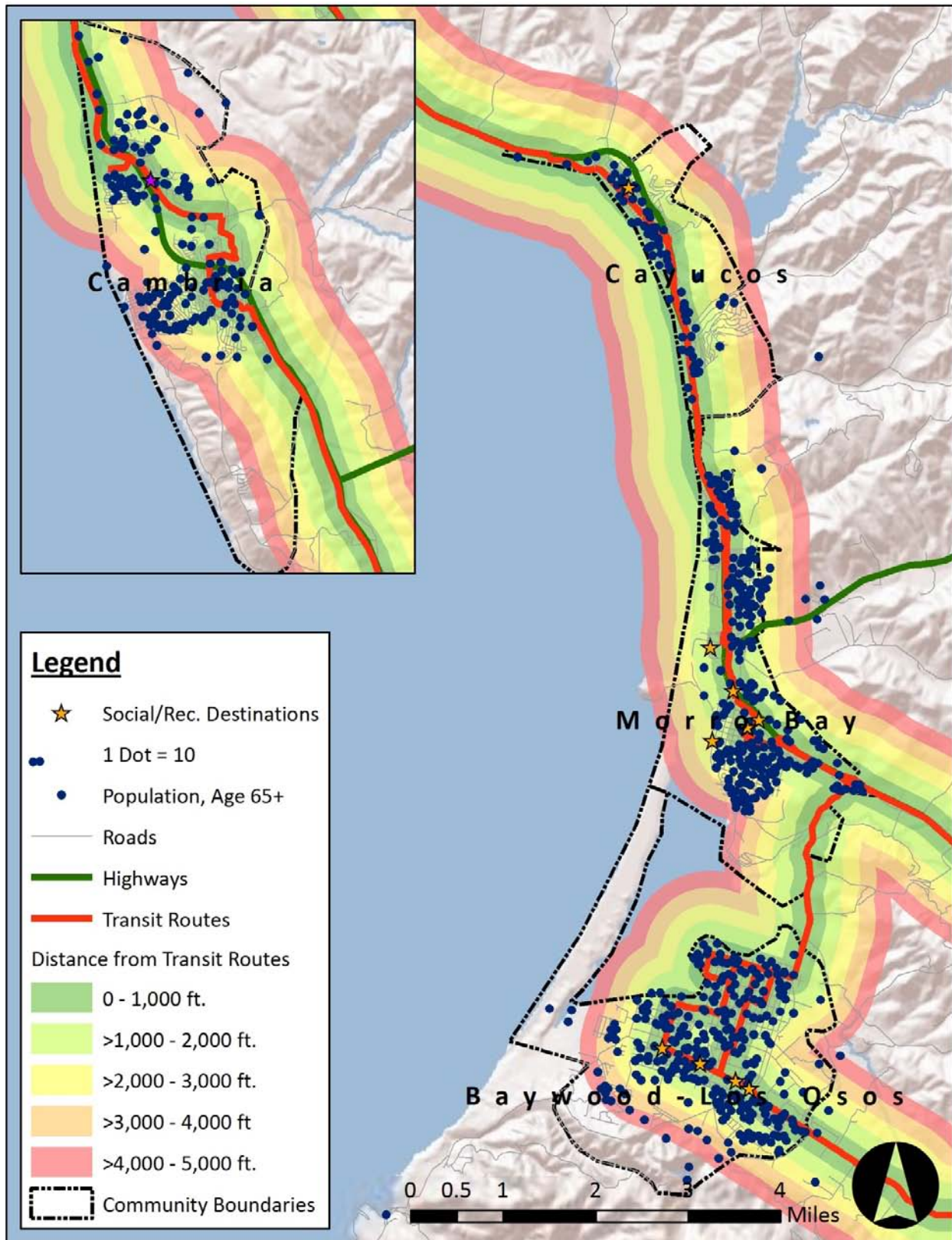
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-18: Most Common Destinations Reported for Social/Rec. Trips, Central County



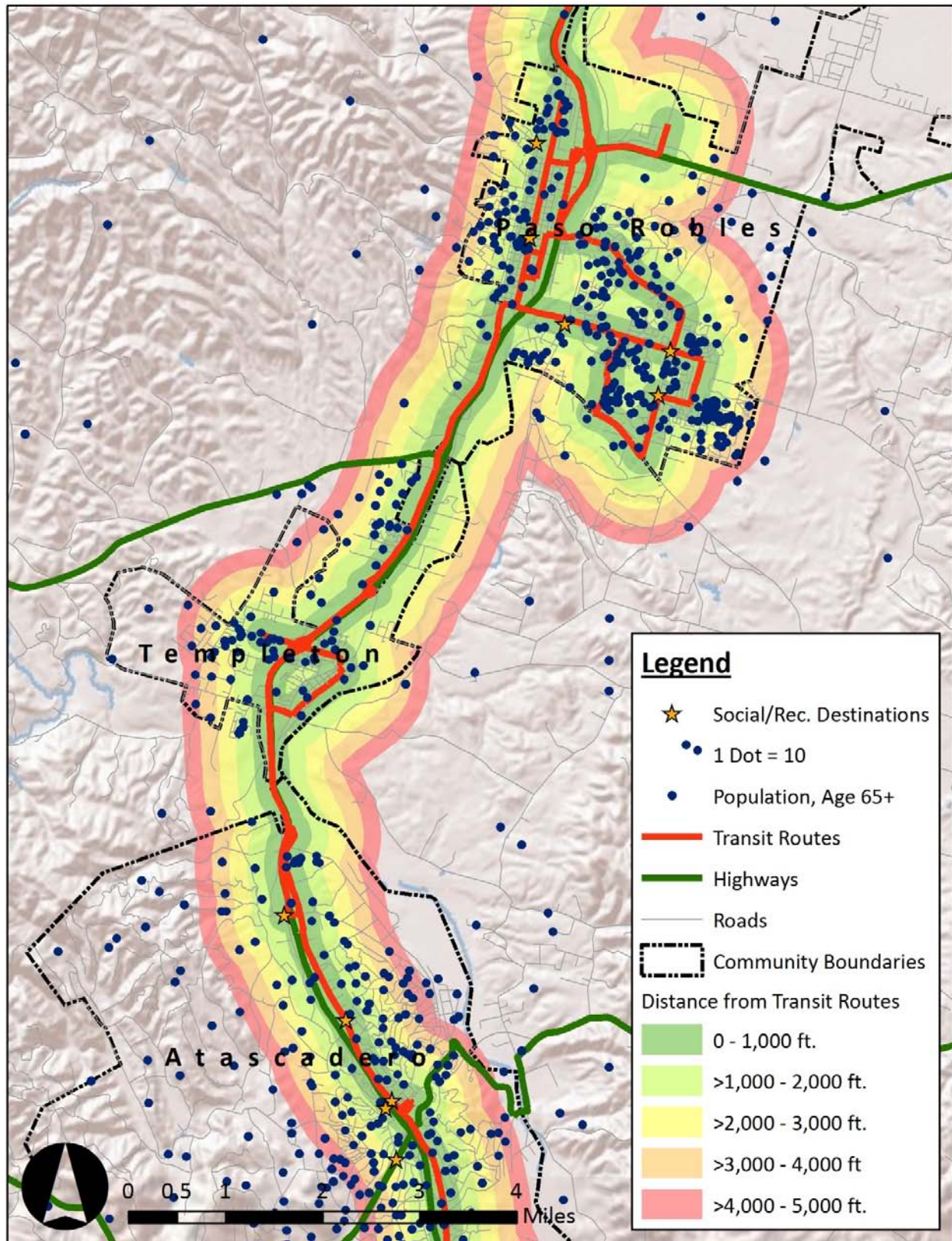
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-19: Most Common Destinations Reported for Social/Rec. Trips, North Coast



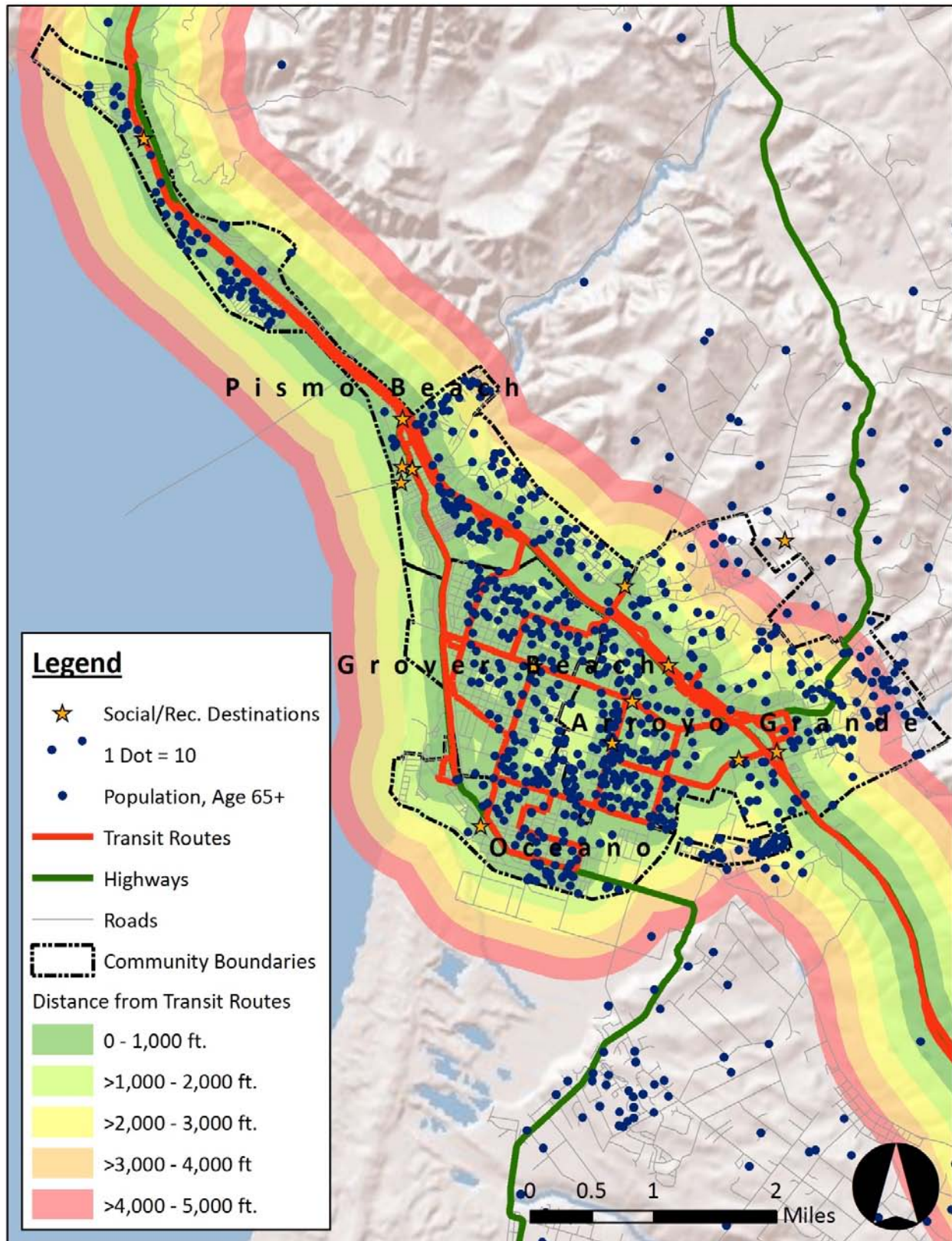
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-20: Most Common Destinations Reported for Social/Rec. Trips, North County



Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-21: Most Common Destinations Reported for Social/Rec. Trips, South County



Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Occupational Trips

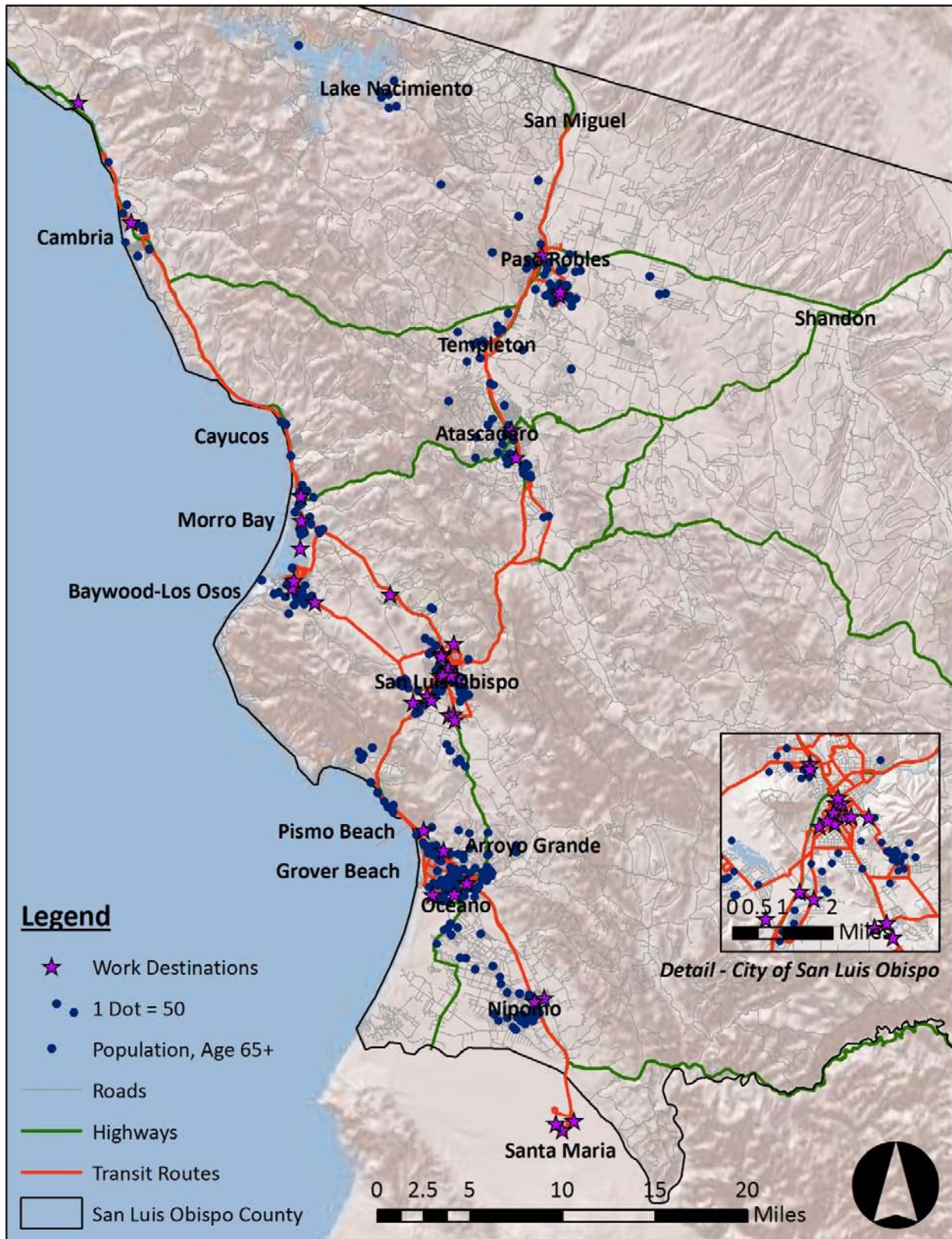
The most common occupational destinations of survey respondents are shown in **Figure 7-22**. Further detail for the four main geographic subareas of the County can be found in **Figures 7-23 to 7-26**. It is noteworthy that the survey did not limit respondents to paid employment trips, but also asked respondents to include volunteering or educational trips in their answers.

Out of the four primary trip types included in the survey, occupational trips have the fewest number of common trip destinations. This is a function of the low rate of respondents who identified making occupational trips. Only 30% of survey respondents identified at least part of a trip destination for occupational purposes. In comparison to the other three primary trip types, the next lowest share of respondents that identified at least part of a trip destination was just under 75% for social and recreational travel.

For the economy as whole, the City of San Luis Obispo is the clear main job center in the County. Thus it is not surprising that occupational trips are concentrated most in the City of San Luis Obispo. However, due to the wide scope of the definition of occupational trips in the survey, a surprising number of trip destinations are found in other cities. The volunteer and educational components of the occupational trips question led to reporting of trips to senior or community centers and churches that are present in many of the small and medium sized communities of the County.

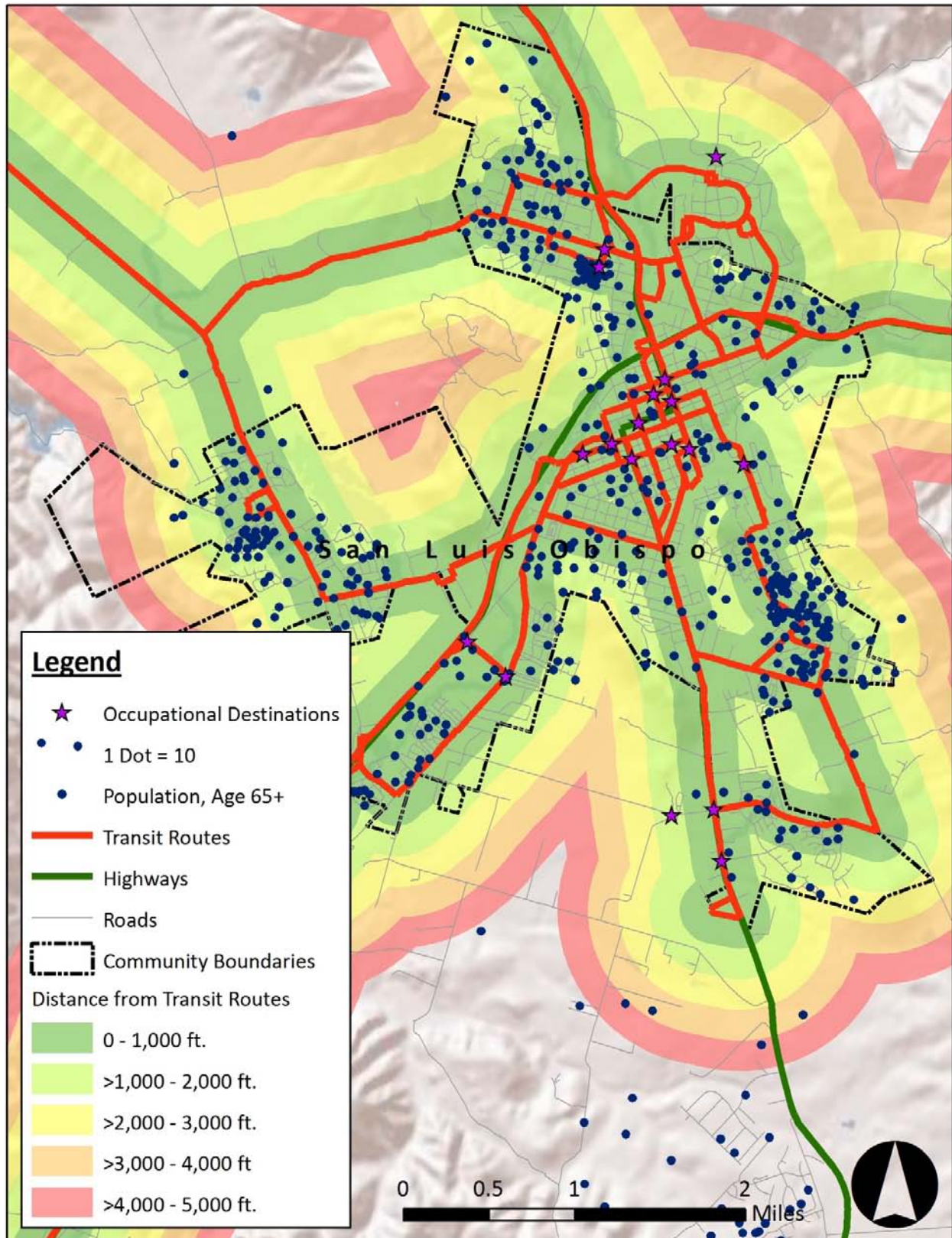
Several respondents identified occupational trips, which can conceivably be any of the three sub-types (employment, volunteering and educational), to the institutions of higher education in the County (the California Polytechnic State University and Cuesta College) and to Allan Hancock College in Santa Maria. Occupational trips reported to Allan Hancock College as well as Marian Hospital and the Santa Maria Senior Center make it such that trips are made for all four primary trip types to destinations outside of the county.

Figure 7-22: Most Common Destinations Reported for Occupational Trips



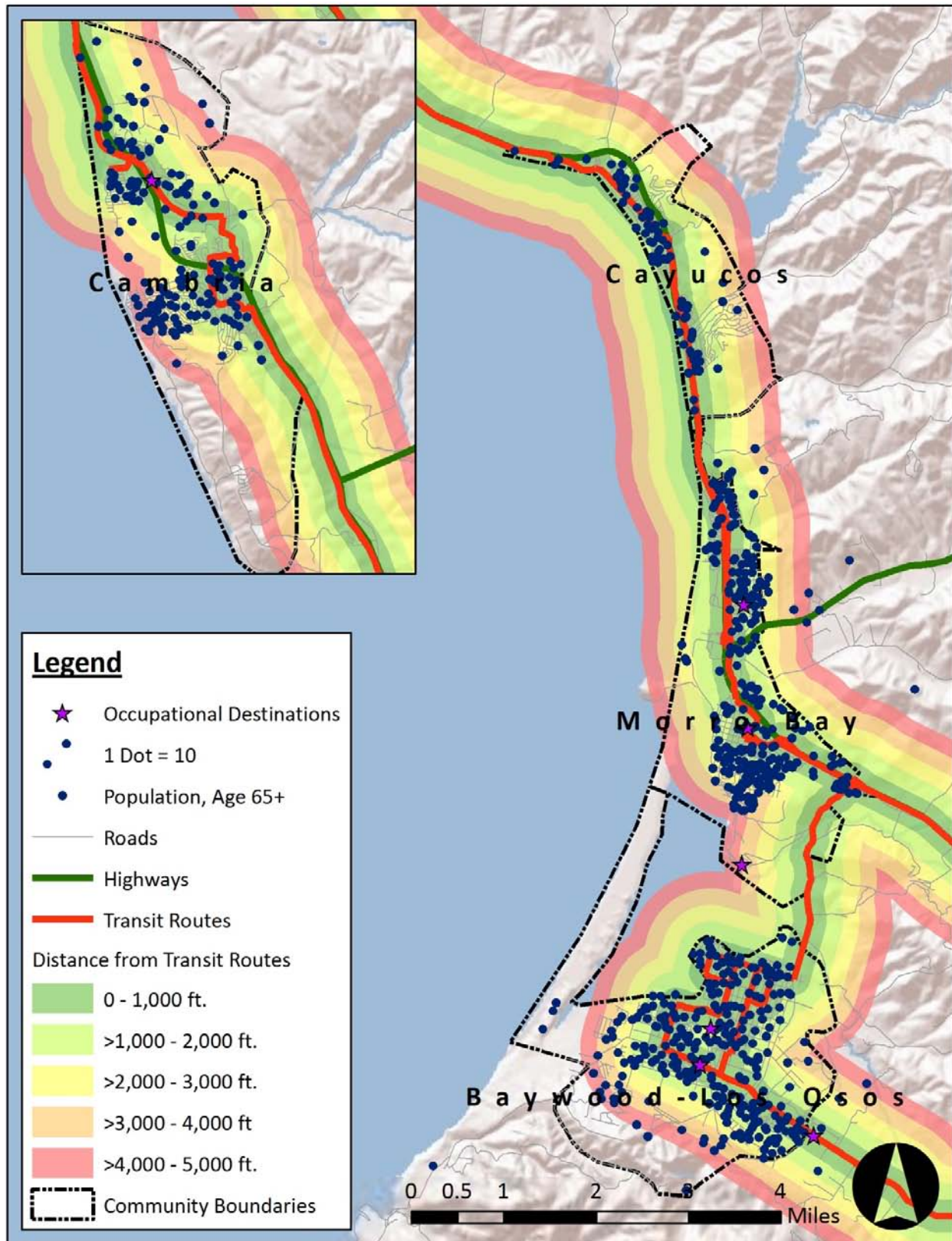
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-23: Most Common Destinations Reported for Occupational Trips, Central County



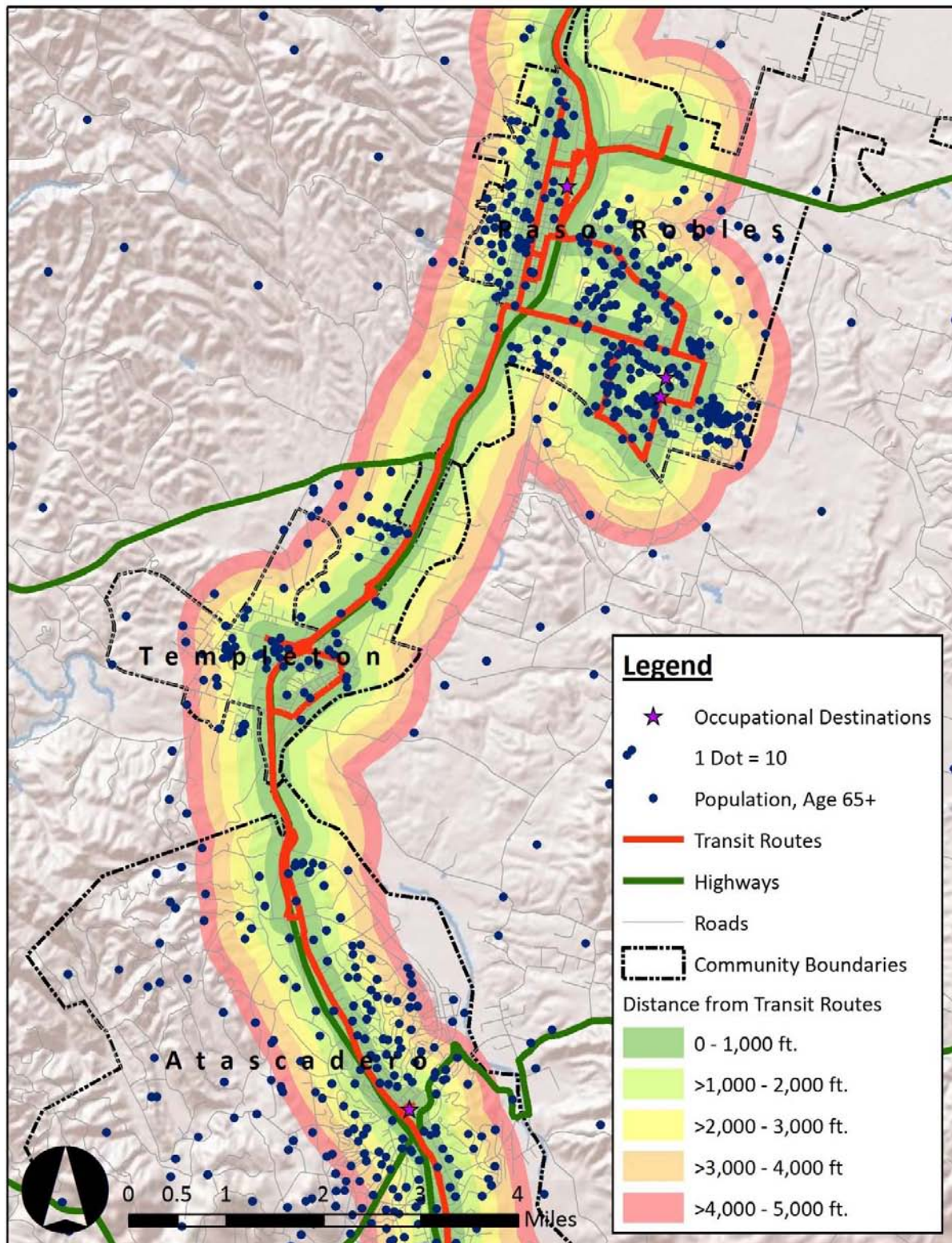
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-24: Most Common Destinations Reported for Occupational Trips, North Coast



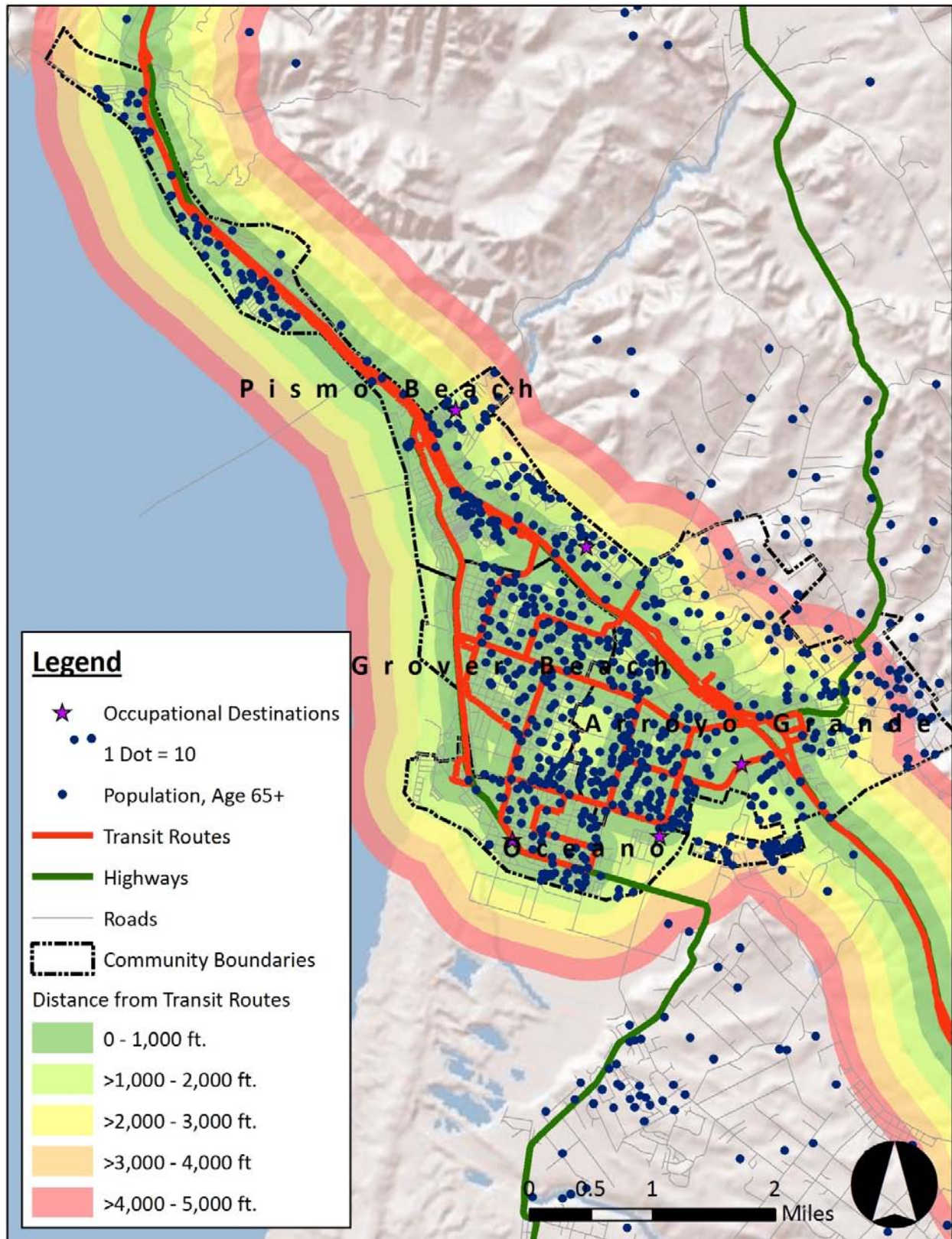
Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-25: Most Common Destinations Reported for Occupational. Trips, North County



Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Figure 7-26: Most Common Destinations Reported for Occupational. Trips, South County



Source: US Census (2000), San Luis Obispo County GIS Database, ESRI Shaded Relief Base Map

Measures of Accessibility

The distribution of senior citizens and transit routes shown by the combination of population density maps and distance buffers illustrate the variability in level of transit access across the county. Table 7-2 confirms the notion that denser, more compact communities have higher access to transit than lower density areas. In the City of San Luis Obispo, for instance, most of its senior citizen population (81%) falls within the 1,000 foot buffer to transit routes. This proportion compares fairly with the general population of the City of which 84% lies within the 1,000 foot buffer to transit routes. Overall, accessibility to public transit routes is slightly lower for seniors than the general population, but both population groups track each other closely across the case study county. See [Figure 7-27](#). Appendix 7-1 has additional details. But this only reflects spatial access.

Table 7-2: Population Densities and Proportions within Walking Distance to Transit Routes in San Luis Obispo County, California (2000)

Area	Population density (persons/ha)	Percent population within 1,000 feet of transit route	Percent seniors within 1,000 feet of transit route
Grover Beach	26.460	90%	89%
Oceano	20.499	91%	88%
San Luis Obispo	16.336	84%	81%
Morro Bay	10.252	59%	56%
Arroyo Grande	10.228	51%	45%
Baywood-Los Osos	10.099	61%	42%
Pismo Beach	9.533	66%	66%
Paso Robles	5.379	57%	44%
Atascadero	3.994	31%	32%
Templeton	3.858	65%	64%
Cayucos	3.817	87%	89%
San Miguel	3.266	55%	49%
Cambria	2.856	40%	36%
Shandon	1.271	0%	0%
Lake Nacimiento	1.147	0%	0%
County Average	0.373	48%	44%
Other County Areas	0.104	9%	5%

Accessibility is also measurable in terms of service frequency. For a given distance from a transit route, a line with frequent service provides higher accessibility than another with infrequent service. Thus a metric of accessibility may be developed to combine the effects of distance and service frequency. The former has an inverse relationship while the latter has a direct relationship with accessibility. Conceptually, the metric may be stated as:

The accessibility of a population group to transit is directly proportional to the frequency of services that are available to the group and inversely proportional to the distances from origins and destinations to the transit lines.

This may be represented symbolically as follows:

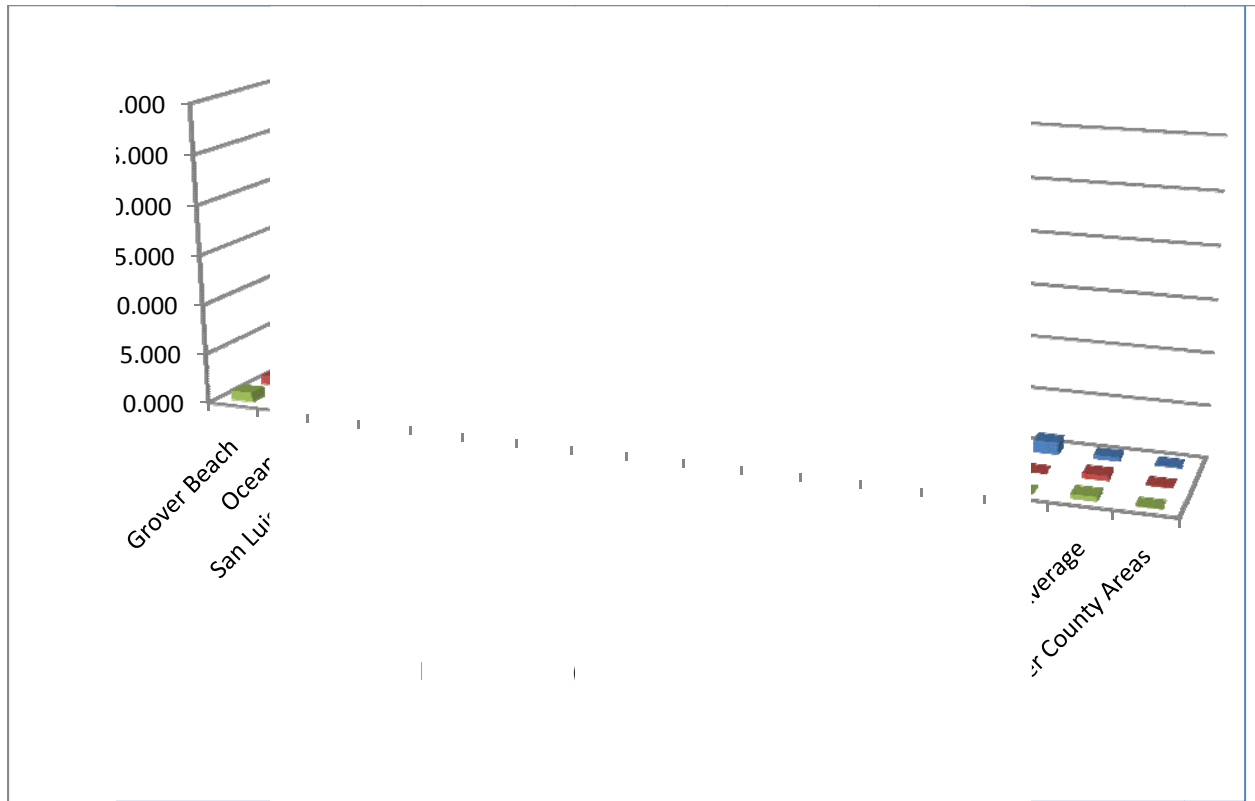
$$A_i = \sum_t F_t t_{it}^{-Y}$$

Where:

- A_i = accessibility of population group, i, to transit service
- F = Frequency of service along transit route, t
- t_{it} = Distance between origin or destination of population group, i, and transit route, t
- Y = Captures the inverse relationship between distance and accessibility

For a senior mobility program to address both of these factors, services need to provide spatial proximity and be timely in response. Timeliness of fixed-schedule service is enabled with frequent runs. Timeliness of on-call service is enabled with prompt response to demand. Proximity is possible with a comprehensive deployment of routes in space, while it is the hallmark of on-call services, which tend to be door-to-door. There are cost implications for expanding either fixed route or on-call service to enhance accessibility for seniors. The appropriateness of various service options is investigated in the next chapter.

Figure 7-27: Population Densities and Proportions near Public Transit, SLO County, 2000



Implications of Findings with Origins, Destinations, Trip Types and Transit Access

Of the four primary trip purposes covered in the survey and discussed in this chapter, two have destinations with opposite characteristics, while the other two have destinations that partially exhibit each of the opposing characteristics. Shopping trips have consolidated destinations, with common destinations concentrated in certain communities, and relatively few in other communities. On the opposite end of the spectrum are social and recreation trips, which have destinations distributed in most communities across the County. Medical trips appear to have both consolidated and distributed destinations, with agglomeration of medical offices in communities with hospitals, but with other medical offices present in many communities. Occupational trips, as defined in the survey, also appear to be both consolidated and distributed, with employment and some educational trips tending to be consolidated, and other educational and volunteer trips tending to be distributed.

In order to cover trips to both consolidated and distributed destinations, senior transportation service needs to be flexible. It should both have the capacity to carry several passengers over relatively long haul distances to a few set of destinations, but also nimble enough to carry few passengers for short distances to a wide array of destinations. This would suggest some form of van service rather than a large bus or an automobile.

All four primary trip types, even the more distributed social and recreational trips, have some concentration of common destinations in the City of San Luis Obispo. Making sure service covers more dominant cities well is likely universal across regions. As evidenced by the dearth of some destinations outside of San Luis Obispo city, it will be important to not only have thorough service within the more major cities themselves, but also from smaller neighboring communities to the major cities.

The geography and topography of San Luis Obispo County makes the provision of senior transportation, in whatever form, rather challenging. Geographically, the separation of communities, results in potential service having to cover greater distances than if communities were in direct contact with each other. Topographically, the narrow valleys and hills throughout the region limit the number of options which networks can be routed. For instance, areas where segments of the senior population have long distances from transit routes, decreasing that distance with new or re-routed service may be unfeasible.

8.0 Findings: Revealed vs. Stated Preferences

Introduction

This chapter presents key findings related to choices made by seniors for various travel purposes and compares them to those modes seniors would prefer to use. The results include highlights of the reasons why seniors make or prefer particular mode choices

Choice of Travel Mode by Purpose

Modal choices made by seniors vary only slightly between the key trip purposes to meet shopping, medical, recreational and occupational needs. The combination of automobile travel by either driving alone or as a passenger is consistently predominant, ranging between 83% and 85% for all the major travel purposes. See Table 8-1 for a summary of choices by trip purpose.

Overall, the most common mode chosen is drive alone (68%), at four times the second highest choice (auto passenger) at 16%, which in turn is double the third highest choice (fixed route transit) at 8%. The numbers of seniors who choose walking surpass those who choose on-call services for all major purposes except for medical.

It is clear that trips for medical purposes are most likely to be conducted by motorized travel modes. On-call modes maintain a consistent rank at about fifth position for all major travel purposes.

Table 8-1: Modal Choices by Trip purpose – Seniors in San Luis Obispo County, California

Mode	Trip Purpose				
	General	Shopping	Medical	Recreational	Occupational
Drive alone	68%	72%	71%	64%	76%
Car passenger	16%	12%	14%	19%	9%
Bus/train	8%	4%	8%	8%	7%
Walking	4%	6%	1%	4%	3%
On-call service	3%	3%	3%	1%	1%
Bicycle	3%	3%	1%	2%	4%
Taxi	0%	0%	1%	1%	0%
Wheelchair / Other	0%	1%	1%	0%	0%
Total	100%	100%	100%	100%	100%





Travel Mode Choices vs. Preferences

Table 8-2 compares the revealed vs. the stated modal preferences of seniors in San Luis Obispo County. In comparing the mode choices made with mode choices preferred, the following are noteworthy:

1. Twice as many seniors (24%) would prefer public transportation in the form of buses, trains and dial-a-ride as those that actually do (11%)
2. Dial-a ride would be particularly preferred as it would quadruple the existing level of choice from 3% to 12% matching the use of conventional fixed route transit. This suggests the need to revamp dial-a-ride service to be more efficient and more available.

- Half of all seniors would still prefer to drive, a significant reduction, nevertheless, from the existing level of two-thirds. The proportion of seniors who prefer to travel as car passengers remains the same as those who actually choose that means of travel.
- Non-motorized modes (walking and biking) are only preferred at approximately the same levels as existing. This is not surprising since activity centers are typically spread out because of land development patterns.
- It is apparent that seniors would prefer motorized wheelchairs over walking or biking as its stated preference gains in rank while the ranks of the non-motorized modes fall from existing choices. This suggests a close look at electric wheelchairs with appropriate infrastructure to address this aspect of senior mobility needs.

Table 8 2: Revealed vs. Stated Modal Preferences of Seniors in San Luis Obispo County, California

	Revealed preference		Change in Rank of Preference	Stated Preference	
Rank	Mode	Percent		Mode	Percent
1 st	Drive alone	68%		Drive alone	53%
2 nd	Car passenger	16%		Car passenger	15%
3 rd	Bus/train	8%		Bus/train	12%
4 th	Walking	4%		On-call service	12%
5 th	On-call service	3%		Walking	3%
6 th	Bicycle	3%		Wheelchair / Other	2%
7 th	Taxi	0%		Bicycle	2%
8 th	Wheelchair / Other	0%		Taxi	1%
	Total	100%		Total	100%

Reasons for not Choosing Public Transportation

The survey asked seniors to select from a menu of 15 reasons why they do not use public transportation, if they used other than that mode. Table 8-3 ranks the top eight reasons selected from the menu of choices. The top five reasons why seniors do not choose public transportation have to do with its availability and convenience. The literature confirms that public transportation is rather inconvenient in suburban and rural areas where seniors predominantly tend to live.

Table 8-3: Most Frequently Selected Reasons Why Seniors Avoid Public Transportation

Reason	Respondents	Percent
Lack of convenient routes	15514	27%
Other	14600	25%
Don't know about bus transportation system	11431	20%
No nearby stop	10952	19%
Bus does not come frequently	9963	17%
Too expensive	2359	4%
Departure times are inconvenient	1967	3%
Not reliable	1967	3%

Reasons Why Seniors Prefer Certain Modes of Transportation

Overall

The survey also asked seniors why they prefer certain modes of transportation over others. Table 8-4 ranks all fourteen reasons in the menu of choices for all modes overall. Subsequent tables depict the ranks for key mode choices. The following are noteworthy:

1. Overall, convenience is by far the most frequently chosen reason for preferring specified modes. Seventy-seven percent of respondents chose convenience, which is two times as frequent as the next highest reason.
2. Even the second tier of reasons: independence (37%), ease of use (33%), ability to carry goods (33%) and reliability (31%) all relate in some form to convenience
3. The third tier or reasons include time, efficiency, cost and privacy.

Table 8-4: Most Frequently Selected Reasons Why Seniors Prefer Certain Modes of Transportation

Reason	Percent of Seniors
Convenience	77%
Independence	37%
Ease of use	33%
Able to carry goods	33%
Reliability	31%
Time	27%
Efficiency	25%
Cost	23%
Privacy	21%
Safety	16%
Relaxation	15%
Habit	11%
Social interaction	9%
Health/Exercise	8%

Drive Alone

It is not surprising, that the top reason for seniors who prefer the automobile is by far convenience (44%), followed by independence (25%) and the ability to carry goods (22%). See table 8-5. While privacy ranks in the next tier of reasons, habit is not a strong reason for the choice and cost is ranked very low.

Table 8-5: Most Frequently Selected Reasons Why Seniors Prefer the Automobile

Reason	Percent of Seniors
Convenience	44%
Independence	25%
Able to carry goods	22%
Time	17%
Privacy	17%
Ease of use	16%
Reliability	15%
Efficiency	11%
Habit	9%
Relaxation	6%
Safety	5%
Cost	3%
Social interaction	0%
Health/Exercise	0%

Auto Passenger

Similar to the top reason for those who prefer to drive alone, the most frequently selected reasons by seniors who prefer to travel as automobile passengers is convenience, followed by reliability, independence and the ability to carry goods. See Table 8-6. For this group of seniors, cost ranks relatively high, but habit ranks very low.

Table 8-6: Most Frequently Selected Reasons Why Seniors Prefer to Ride as Automobile Passengers

Reason	Percent of Seniors
Convenience	10%
Reliability	6%
Independence	5%
Able to carry goods	5%
Ease of use	4%
Cost	4%
Social interaction	4%
Efficiency	4%
Time	3%
Safety	3%
Privacy	2%
Relaxation	2%
Habit	1%
Health/Exercise	0%

Demand-Response Service

Seniors who prefer dial-a-ride and other "on-call" types of services do so primarily because of convenience, followed by ease of use, reliability, cost, ability to carry goods and safety. See Table 8-7. Similar to automobile passengers, cost ranks relatively high for this group of seniors, but habit does not count.

Table 8-7: Most Frequently Selected Reasons Why Seniors Prefer Demand-Response Services

Reason	Percent of Seniors
Convenience	10%
Ease of use	6%
Reliability	5%
Cost	4%
Able to carry goods	4%
Safety	4%
Efficiency	3%
Time	3%
Independence	2%
Social interaction	1%
Relaxation	1%
Health/Exercise	0%
Privacy	0%
Habit	0%

Fixed Route Transit Service

For those seniors who prefer bus and train, convenience and cost are the two top reasons, followed by safety. See table 8-8. Unlike all other groups, cost is as important as convenience for this group of seniors. Habit, again, ranks very low among the reasons for this mode choice.

Table 8-8: Most Frequently Selected Reasons Why Seniors Prefer Fixed Route Transit Service

Reason	Percent of Seniors
Cost	7%
Convenience	7%
Safety	4%
Health/Exercise	3%
Ease of use	3%
Efficiency	3%
Social interaction	3%
Reliability	2%
Relaxation	2%
Independence	2%
Able to carry goods	2%
Habit	1%
Time	1%
Privacy	0%

Choices vs. Preferences of Seniors with Physical Limitations

Physical Limitations vs. Mode Choice

The survey asked seniors whether they have any physical limitations. The analysis took a close look at the modes chosen by seniors relative to their reported physical limitations. The survey suggests that 5% to 25% of seniors experience some form of physical limitation of which the commonest by far is "walking with difficulty" (25%) followed by "hard of hearing" (13%). See Table 8-9 for the summary.

Similar to the general senior population, seniors with various physical limitations most commonly drive alone followed by riding as auto passengers. The only exception is for those who need wheel chair for whom the choice is the reverse of these two leading choices of mode.

The third most frequently chosen means of travel by seniors with physical limitations is public transportation. Those who either need a wheel chair or walk with difficulty more commonly choose fixed-route transit; those who need a walker or have vision impairment more commonly choose on-call services.

Table 8-9: Relative Frequencies of Modes **Chosen** by Type of Physical Limitation

Mode Choice	Need wheelchair	Need walker	Walk with difficulty	Vision impairment	Hard of hearing	Other Physical Limitations
Bicycle	0%	0%	0%	0%	0%	26%
Bus/train	15%	5%	12%	8%	6%	9%
Car passenger	55%	34%	22%	21%	25%	9%
Drive alone	18%	47%	60%	53%	64%	22%
On-call service	12%	14%	4%	10%	3%	8%
Walking	0%	0%	1%	7%	1%	26%
Total	100%	100%	100%	100%	100%	100%
<i>Percent of all seniors</i>	5%	7%	25%	9%	13%	5%
Color Code:						
	1 st most frequently chosen mode					
	2 nd most frequently chosen mode					
	3 ^d most frequently chosen mode					

Physical Limitations vs. Mode Preferences

The analysis also took a close look at the modes preferred by seniors relative to their reported physical limitations. The survey results depict a clear contrast between modes most frequently chosen versus modes preferred by seniors with various physical limitations.

Among this group of seniors, on-call-services, such as dial-a-ride, are most preferred by seniors who need a wheelchair, need a walker or have vision impairment and are the second most preferred by those who walk with difficulty and are hard of hearing. In the latter case, the preference for on-call services is second to the preference to drive alone. Riding as an auto passenger drops to third place among the preferences of seniors with physical limitations. See Table 8-10 for the summary.

These results have serious implications for how we transport seniors in the future as their population expands with longevity and associated potential to develop physical limitations in large numbers. If society would want to meet senior preferences for travel, then major revamping of on-call services would be in order.

Table 8-10: Relative Frequencies of Modes Preferred by Type of Physical Limitation

Mode Preference	Need wheelchair	Need walker	Walk with difficulty	Vision impairment	Hard of hearing	Other Physical Limitations
Bicycle	0%	0%	0%	10%	4%	0%
Bus/train	0%	7%	7%	33%	10%	4%
Car passenger	30%	20%	15%	5%	19%	7%
Drive alone	10%	29%	47%	13%	42%	70%
On-call service	48%	45%	23%	39%	21%	17%
Walking	0%	0%	1%	0%	4%	2%
Taxi	12%	0%	0%	0%	0%	0%
Other (scooter, motorcycle, etc.)	0%	0%	7%	0%	1%	0%
Total	100%	100%	100%	100%	100%	100%
Color Code:						
	1 st most frequently preferred mode					
	2 nd most frequently preferred mode					
	3 ^d most frequently preferred mode					

A comparative study of public transit modes in California revealed that the dial-a-ride transit (the term for on-call services) appears to be the least utilized, the least productive and the most subsidized of all the transit modes. The average subsidy per ride by dial-a-ride service was \$6 compared to the average per ride of \$3 for fixed route transit (Nuworsoo, 2001; unpublished). Providers face operating costs that can exceed \$40 per vehicle per hour, of which material expenses such as fuel account for almost ten percent of total costs. These facts need to be reconciled with the findings that: (a) seniors in general would prefer dial-a-ride more than any other public transportation mode; and (b) seniors with disabilities would prefer dial-a-ride as much as, if not more than, any other means of travel. The quantity of dial-a-ride vehicles in service coupled with diminishing resources and rising costs make it imperative to maximize the efficiency and optimize the customer experience. Efficient travel is not only important to passengers utilizing dial-a-ride services, it is also essential to the operator's bottom line. Hence the need to rethink and revamp dial-a-ride service if society is to meet future mobility needs of a very large incoming cohort of seniors.

9.0 Transferable Procedure

One of the objectives of this project was the development of a transferable procedure for identifying and fulfilling mobility needs in areas other than the case study location. The procedure used in the determination of gaps in existing service and selection of service options is distilled and presented in this chapter.

Factors of Transit Accessibility

Variability in the level of transit access spatially is measurable with the combination of population density maps and distance buffers. Transit stops within comfortable walking distances of origins and destinations are more accessible than those that are far away. Accessibility is also measurable in terms of service frequency. For a given distance from a transit route, a line with frequent service provides higher accessibility than another with infrequent service. Thus a metric of accessibility may be developed to combine the effects of distance and service frequency. The former has an inverse relationship while the latter has a direct relationship with accessibility.

Measuring Spatial Access

Geographic information systems (GIS) tools are used in the analysis and display of origins, destinations and proximity to public transit as follows:

1. Using Census or other appropriate local data determine frequency distribution of seniors by some geographic unit such as census tract.
2. Using survey data determine locations that seniors frequent for key travel needs (or other trip purposes of interest) such as shopping, medical, social-recreational, and occupational needs
3. If addresses are available, geocode residential and destination locations in GIS. If address data is unavailable, create a dot density map of locations.
4. Add the existing network of transit routes (and highway network) on the map. For a refined analysis, indicate transit stops along the routes.
5. Create distance buffers along transit routes to show various levels of tolerance for walk access, such as an eighth-mile, a quarter-mile, a half-mile, and a mile. For refined analysis, indicate the buffers for transit stops
6. To determine levels of spatial accessibility, review resulting map for locations within tolerable and those within intolerable walking distances. For refined analysis query the intersection of locations and buffer zones to produce tables indicating distributions of access levels.
7. Use resulting map to revise the transit network through rerouting or existing or addition of new routes, as appropriate.

Transit Accessibility Metric

For a senior mobility program to address both of these factors, services need to provide spatial proximity and be timely in response. Timeliness of fixed-schedule service is enabled with frequent runs. Timeliness of on-call service is enabled with prompt response to demand. Proximity is possible with a comprehensive deployment of routes in space, while it is the hallmark of on-call services, which tend to be door-to-door. Conceptually, a metric to combine the effects of distance and service frequency may be stated as:

The accessibility of a population group to transit is directly proportional to the frequency of services that are available to the group and inversely proportional to the distances from origins and destinations to the transit lines.

This may be represented symbolically as follows:

$$A_i = \sum_t F_t t_{it}^{-Y}$$

Where: A_i = accessibility of population group, i , to transit service
 F = Frequency of service along transit route, t
 t_{it} = Distance between origin or destination of population group, i , and transit route, t
 Y = Captures the inverse relationship between distance and accessibility

User Characteristics and Preferences

Conduct a survey to find out about the most frequent travel needs and destinations of seniors within the study area. Ask survey participants to identify their various travel needs. Note that locations of the most frequently traveled locations are analyzed with GIS under “Measuring Spatial Access”.

The survey would also ask respondents to rank their choices and preferences of transportation options. Analyze survey responses to guide the identification of appropriate service delivery options for seniors in terms of the following:

1. The **distribution of seniors in space** and thus the feasibility of fixed route vs. demand response or other specialized type of service option
2. The **preferences of seniors for service options**, which tends to reflect their particular location, physical, economic and social circumstances.

10.0 Conclusion

The proportion of seniors in the US will double within the next two decades. The phenomenon is attributable to the aging of the baby-boomer generation within an era of increased longevity. In the US, more than three quarters of all seniors live in lower density rural and suburban areas. These areas are not served as well by public transportation as urban areas are. There are paratransit services that could fill the gap in mobility needs of seniors, but with the passing of ADA legislation, many of these services became devoted predominantly to disabled passengers. Besides, paratransit has proven to be a very expensive way of providing alternative transportation.

The survey of seniors revealed that: (a) seniors in general would prefer dial-a-ride more than any other public transportation mode; and (b) seniors with physical limitations would prefer dial-a-ride as much as, if not more than, any other means of travel. The costs of dial-a-ride service make it imperative to maximize its efficiency and optimize the customer experience. Efficiency is just as important to passengers using the service as it is to the operators. There is a need to rethink and revamp operation of dial-a-ride service, if society is to meet future mobility preferences of very large incoming cohorts of seniors.

Considering the dispersed pattern of land development in metropolitan areas within the US, dial-a-ride seems, in concept, to offer the type of public transport service that is closest to the overwhelmingly chosen form of personal transportation, automobile travel. However, its structure and method of operation has rendered it the least efficient. The very wide range in the costs of providing service suggest that major restructuring may hold promise in turning it into an effective public transportation option.

At the neighborhood or community level, an efficient and widely available dial-a-ride system may be viewed as an advanced form of car sharing that can serve the niche between the private automobile and fixed route service while society attempts to change land use patterns to more compact forms that support additional fixed route service. Thus improved dial-a-ride (that uses modern communications for real-time scheduling and routing) has the potential to enhance the mobility of seniors and also help a wide variety of users transition from over dependency on the automobile for most travel needs to (a) obtaining improved connectivity to line-haul services provided by fixed-route lines; and (b) substituting for short drive trips that are either impractical to walk or bike because of separation of land uses and activities or for which existing fixed route service is non-existent or cumbersome to use. Perhaps opening up dial-a-ride to a wider patronage with enhanced operational features could improve its efficiency; but this idea needs to be investigated.

How would society pay for expanded dial-a-ride services? A promising method of paying for senior use of a revamped and more efficient dial-a-ride service is the use of risk pooling schemes such as group passes. A group pass program provides a group of people (such as seniors) with unlimited transit rides in exchange for some contractual payment for or on behalf of pass users by an organizing body (which may be an umbrella senior center with or without contributions from individual seniors or the

department of human services). The concept is very similar to an insurance policy: a large group of people contribute an amount of money for a service and then they agree to share any losses or gains among the group. The larger the participating group, the more the costs are spread, resulting in a lower marginal cost for each additional member. In the case of group passes, a group of people can pay a monthly fare that is a fraction of the cost of buying a pass individually. In group financing schemes, participants inherently cross-subsidize each other. This scheme has the potential to minimize costs for both the public and individual seniors in meeting senior mobility needs of the future.

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Appendix to Chapter 3

Appendix 3-1: Federal and State Sources of Transit Funding

Transit Project Eligibility by Federal Funding Source (1 of 2)

FEDERAL FUNDING SOURCES ¹		TEA21 - Primary Programs (SAFETEA-LU)					Federal Transit Act				
Project Category	Project Type	Regional Surface Transportation Program	Congestion Mitigation & Air Quality Improvement Program (CMAQ)	Transportation Enhancement Activities (TEA)	Emergency Relief	Highway Bridge Program	Section 5307 Urbanized Area Formula Grants	Section 5308 Clean Fuels Program	Section 5309 Capitol Investment Grants & Loans	Section 5310 Grants for Special Needs of Elderly Individuals & Individuals with Disabilities	Section 5311 Formula Grants for Other than Urbanized Areas
Public Transit	Transit, Capital Improvement	x	x				x	x	x	x	x
	Transit, New Service	x	x						x		
	Transit, Oriented Design Projects	x	x								
	Transit, Maintenance/Operations ₂	x	x				x			x	x
	Transit, Rehabilitation	x	x				x	x	x	x	x
	Transit, Vehicles	x	x				x	x	x	x	x
	Transit, Enhancements	x	x	x			x				x
Fixed Guideway	Urban - Capital Improvement	x	x	x			x		x	x	x
	Urban - Maintenance/Operations ₂	x					x		x	x	x
	Urban - Vehicles	x	x				x		x	x	x
	Commuter - Capital Improvement	x	x				x		x		x
	Commuter - Maintenance/Operations ₂	x					x		x		x
	Commuter - Vehicles	x	x				x		x		x
	Intercity - Capital Improvement	x	x								x
	Intercity - Maintenance/Operations ₂	x									x
	Intercity - Vehicles	x	x								x
	Rail Rights-of-Way Acquisition	x	x	x			x		x		

Source: Adapted from Table 1: Sacramento Area Council of Governments, Transportation Funding Handbook, July 1999

Transit Project Eligibility by Federal Funding Source (2 of 2)

FEDERAL FUNDING SOURCES ¹		TEA21 - Discretionary Programs (SAFETEA-LU)							
Project Category	Project Type	Access to Jobs & Reverse Commute Program	Transportation & Community & System Preservation Pilot Program	Hazard Elimination Safety Program	Public Lands Highways Fund	National Scenic Byways	Innovative Surface Transportation Financing Methods	Transportation Infrastructure Finance & Innovation (Loans)	Intelligent Transportation Systems
Public Transit	Transit, Capital Improvement	x			x	x		x	x
	Transit, New Service	x						x	
	Transit, Oriented Design Projects		x					x	
	Transit, Maintenance/Operations ₂	x						x	x
	Transit, Rehabilitation	x						x	
	Transit, Vehicles	x						x	
	Transit, Enhancements		x					x	
Fixed Guideway	Urban - Capital Improvement			x				x	x
	Urban - Maintenance/Operations ₂	x							x
	Urban - Vehicles	x						x	
	Commuter - Capital Improvement	x		x				x	x
	Commuter - Maintenance/Operations ₂								x
	Commuter - Vehicles							x	
	Intercity - Capital Improvement			x				x	
	Intercity - Maintenance/Operations ₂								x
	Intercity - Vehicles							x	
	Rail Rights-of-Way Acquisition							x	

Transit Project Eligibility by State Funding Source (1 of 2)

STATE FUNDING SOURCES ¹		Public Transportation Account		State Highway Account			
Project Category	Project Type	State Transit Assistance-Population Based (25%); Revenue Based (25%)	State Transit Programs-e.g. Intercity Rail and Feeder Bus Funds (50%)	State Transportation Improvement Program		Other Programs	
				Regional Improvement Program	Interregional Improvement Program	Environmental Enhancement & Mitigation Program	State Highway Operations & Protection Program
Public Transit	Transit, Capital Improvement	x	x	x	x		
	Transit, New Service	x					
	Transit, Oriented Design Projects	x					
	Transit, Maintenance/Operation ²	x	x				
	Transit, Rehabilitation	x	x	x			
	Transit, Vehicles	x		x			
	Transit, Enhancements	x		x			x
Fixed Guideway	Urban - Capital Improvement	x	x	x			
	Urban - Maintenance/Operations ²	x	x				
	Urban - Vehicles	x	x	x			
	Commuter - Capital Improvement		x	x	x		
	Commuter - Maintenance/Operations ²		x		x		
	Commuter - Vehicles		x	x	x		
	Intercity - Capital Improvement		x	x	x		x
	Intercity - Maintenance/Operations ²		x		x		
	Intercity - Vehicles		x		x		
	Rail Right-of-Way Acquisition	x	x		x		

Source: Adapted from Table 1: Sacramento Area Council of Governments, Transportation Funding Handbook, July 1999

Transit Project Eligibility by State Funding Source (2 of 2)

STATE FUNDING SOURCES ¹		Other State Sources				
Project Category	Project Type	Bicycle (lane)	Local	Petroleum	State Gas Tax	
		Transportation	Transportation	Violation	Subvention	State
		Account	Funds	Escrow	(City & County	Passenger
				Account	Road Funds)	Rail Bonds
Public Transit	Transit, Capital Improvement	x	x	x		
	Transit, New Service		x	x		
	Transit, Oriented Design Projects		x			
	Transit, Maintenance/Operation ²		x			
	Transit, Rehabilitation	x	x	x		
	Transit, Vehicles		x	x		
	Transit, Enhancements		x			
Fixed Guideway	Urban - Capital Improvement	x	x	x	x	x
	Urban - Maintenance/Operations ²		x			
	Urban - Vehicles		x	x		
	Commuter - Capital Improvement	x	x	x	x	x
	Commuter - Maintenance/Operations ²		x			
	Commuter - Vehicles		x	x		
	Intercity - Capital Improvement	x	x			x
	Intercity - Maintenance/Operations ²		x			
	Intercity - Vehicles		x			
	Rail Right-of-Way Acquisition		x		x	

Notes: ¹ Each of the listed programs has specific goals and objectives. The reader needs to be aware of the restrictions imposed as part of achieving those goals. There is no guarantee that a mark in one of the columns means a given type of project will receive funding from a particular program. Many of these projects may only be conditionally or partially eligible for funding under these programs. Every effort has been made to ensure the accuracy of this table; however, there may be projects which are eligible for funding in a given program for which no mark has been included in the appropriate column of this table. Such unintentional omissions will be fixed in subsequent drafts as they are discovered. Table 2 summarizes the program goals, which will help the reader identify some of the likely restrictions or limitations on the program. It also gives supplemental, basic information and then points the reader to additional, primary resources where program details, including specific restrictions and limitations, can be found. ² Transit and rail operations are eligible activities in the State Transit Assistance and Local Transportation Funds, as are transit operations in the Access to Jobs Programs. Marks otherwise refer to maintenance being the eligible activity.

Appendix 3-2: Federal and State Transit Funding Programs

Federal Transit Project Funding Programs (1 of 3)

FEDERAL FUNDING PROGRAMS	Program Summary	Who Can Claim the Money	Who Decides Which Projects Get Funded?	Maximum Federal Share	Applicable Programming Documents
Regional Surface Transportation Program (RSTP)	The Surface Transportation Program provides flexible funding that may be used by States and localities for projects on any Federal-aid highway, including the National Highway System, bridge projects on any public road, transit capital projects, and intracity and intercity bus terminals and facilities - essentially all but local roads in urban areas. A portion of funds reserved for rural areas may be spent on rural minor collectors. Activities eligible under the CMAQ and TEA programs (see below) are also eligible.	Cities, counties, and other local governments; transit operators; Caltrans; federal agencies	COG; local governments	88.53%	Must be derived from the Metropolitan Transportation Plan (MTP), is included in a Metropolitan Transportation Improvement Program (MTIP)
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	The primary purpose of the Congestion Mitigation and Air Quality Improvement Program is to fund projects and programs which reduce transportation related emissions in air quality nonattainment and maintenance areas.	Cities, counties, and other local governments; transit operators; Caltrans	COG; local governments and agencies	88.53%	Federal Transportation Improvement Program; MTIP/FSTIP
Transportation Enhancement Activities (TEA)	Transportation Enhancements are transportation-related activities that are designed to strengthen the cultural, aesthetic, and environmental aspects of the Nation's intermodal transportation system. The transportation enhancements program provides for the implementation of a variety of transportation and must be above and beyond normal project requirements.	Cities, counties, and other local governments; transit operators; Caltrans; or be sponsored by one of the	COG and County Congestion Management Agencies (CTC for statewide projects)	88.53%	RTIP; MTIP/FSTIP
Access to Jobs and Reverse Commute Programs	The Access to Jobs Program provides competitive grants to local governments and non-profit organizations to develop transportation services to connect welfare recipients and low-income persons to employment and support services. A Reverse Commute project relates to the development of transportation services designed to transport residents of urban areas, urbanized areas, and areas other than urbanized areas to suburban employment opportunities.	Cities, counties, and other local governments; metropolitan planning organizations; transit operators; and non-profit organizations	FTA	50%	MTIP/FSTIP
Public Lands Highways Fund	The Public Lands Highways Program provides funding for a coordinated program of public roads and transit facilities serving Federal and Indian lands. Allows Public Lands Highways Funds and/or appropriated Federal land management agency funds to be used for State/local share for Federal-Aid Highway funded projects (Interstate Maintenance, National Highway System, Surface Transportation Program, Congestion Mitigation and Air Quality Improvement Program).	Local governments; Caltrans; select federal agencies	Caltrans, FHWA, USDA Forest Service, local agencies	100%	MTIP and FSTIP

Source: Adapted from Table 2: Sacramento Area Council of Governments, Transportation Funding Handbook, July 1999

Federal Transit Project Funding Programs (2 of 3)

FEDERAL FUNDING PROGRAMS (CONT)	Program Summary	Who Can Claim the Money	Who Decides Which Projects Get Funded?	Maximum Federal Share	Applicable Programming Documents
Innovative Surface Transportation Financing Methods— Value Pricing Pilot Program and Interstate System Reconstruction and Rehabilitation Pilot Program	The objective of the Value Pricing program is to encourage implementation and evaluation of Value Pricing pilot projects in order to promote economic efficiency in the use of highways and support congestion reduction, air quality, energy conservation, and transit productivity goals. The Interstate System Reconstruction and Rehabilitation Pilot Program allows the Secretary of Transportation to select three different states for testing of a pilot program whereby tolls may be collected on the interstate system.	State, regional, and local governments; public tolling authorities	U.S. Department of Transportation; FHWA	88.53%	MTIP/FSTIP
Intelligent Transportation Systems	The Intelligent Transportation Systems (ITS) program provides for the research, development, and operational testing of ITS aimed at solving congestion and safety problems, improving operating efficiencies in transit and commercial vehicles, and reducing the environmental impact of growing travel demand. Proven technologies that are technically feasible and highly cost effective will be deployed nationwide as a component of the surface transportation systems of the United States.	Universities; local governments	U.S. Department of Transportation; ITS America Federal Advisory Committee	80 to 100%	air quality State Implementation Plans; MTIP/FSTIP
Section 5307 - Urbanized Area Formula Grants	The Urbanized Area Formula Grants Program provides transit capital and operating assistance to urbanized areas with populations of more than 50,000.	Public transit operators.	Sacramento Regional Transit District; Caltrans for areas	80%, unless for vehicle related equipment needed to comply with ADA or Clean Air Act Amendments (90%)	MTIP/FSTIP
Section 5308 - Clean Fuels Program	To assist transit operators in the purchase of low-emissions buses and related equipment, construction of alternative-fuel fueling facilities, and modification of garage facilities to accommodate clean-fuel vehicles, and assist in the utilization of alternative fuels.	Public transit operators.	FTA	80%	MTIP/FSTIP

Federal Transit Project Funding Programs (3 of 3)

	Program Summary	Who Can Claim the Money	Who Decides Which Projects Get Funded?	Maximum Federal Share	Applicable Programming Documents
Section 5309 - Capital Investment Grants and Loans for Fixed Guideway Modernization Projects, Buses, and New Transit Starts	The renamed Capital Investment Grants and Loans Program (formerly Discretionary Grants) will continue providing transit capital assistance for new fixed guideway systems and extensions to existing fixed guideway systems (New Starts), fixed guideway modernization, and bus related facilities.	Public transit operators.	Congress, Sacramento Regional Transit District	80%, unless for vehicle related equipment needed to comply with ADA or Clean Air Act Amendments (90%)	MTIP/STIP/SIP
Section 5310 - Grants and Loans for Special Needs of Elderly Individuals and Individuals with Disabilities	The Formula Grants for Special Needs of Elderly Individuals and Individuals with Disabilities provides transit capital assistance, through the States, to organizations that provide specialized transportation services to elderly persons and to persons with disabilities.	Nonprofit agencies, approved	CTC, COG	80%, unless for vehicle related equipment needed to comply with ADA or Clean Air Act Amendments (90%)	MTP/FSTIP
Section 5311 - Formula Grants for Other than Urbanized Areas	Formula Grants for Other than Urbanized Areas provides transit capital and operating assistance, through the States, to non-urbanized areas (less than 50,000 in population).	Cities, counties, and other local governments; American Indian tribes; nonprofit agencies.	COG	80%, unless for vehicle related equipment needed to comply with ADA or Clean Air Act Amendments (90%)	Estimated Program of Projects; MTIP/FSTIP

State Transit Project Funding Programs (1 of 1)

STATE FUNDING PROGRAMS	Program Summary	Who Can Claim Money	Who Decides Which Projects Get Funded?	Applicable Programming Documents
Regional Improvement Program	A program to fund regional capital improvement projects. Of the State Transportation Improvement Program, 75% of the funds come to the regional improvement program with regional agencies choosing the projects. COG nominates projects for funding to the California Transportation Commission in their Regional Improvement Program.	Cities and counties; transit operators; Caltrans	COG, county transportation advisory committees	Must be included in a project study report, major investment study, or equivalent; RTIP/STIP/MTIP/FSTIP
State Transportation Enhancement Activities	Transportation Enhancements are transportation-related activities that are designed to strengthen the cultural, aesthetic, and environmental aspects of the Nation's intermodal transportation system. The transportation enhancements program provides for the implementation of a variety of non-traditional projects. Projects must be directly linked to surface transportation and must be above and beyond normal project requirements.	Cities, counties, and local agencies; transit operators; Caltrans	Caltrans, Resources Agency	MTIP/FSTIP
State Transit Assistance	Under the Public Transportation Account (PTA), this fund assists cities and counties pay for mass transit. The population portion of the Public Transportation Account makes up 25% of the available funds and is distributed based on the relative share of the statewide population. The revenue portion of the PTA is based on the local transit agency's fare collections and accounts for an additional 25% of the PTA.	Transit operators	RTPAs and transit operators	MTIP/FSTIP
State Transit Programs - Intercity Rail and Feeder Bus Funds	The remainder of the Public Transportation Account (PTA) funds available (50%) is apportioned to Caltrans to assist statewide mass transportation objectives. Intercity rail operating funds are programmed in the State budget process. Capital funding is part of Caltrans' Interregional Improvement Program in the State Transportation Improvement Program process.	Transit operators	Caltrans and transit	MTIP/FSTIP process; STIP 4 year
Local Transportation Fund	The Transit Development Act provides for a 1/4 cent portion of the state retail sales tax to be apportioned back to each county of origin for use in fulfilling public transit capital and operating needs which are reasonable to meet." If there are unmet transit needs requiring funding, the money must be spent meeting those needs. If there are no unmet needs the funds may be used for other transportation needs.	Cities, counties, and other local governments	COG	N/A
State Passenger Rail Bonds bond measure(s)	Funds to construct intercity, commuter, and urban rail and must be used by July 1, 2000 transit projects.	Transit operators;	Funds earmarked in bond measure(s)	State Transportation Improvement Program
Petroleum Violation Escrow Account	Court ordered refunds to the State for price overcharges on crude oil and refined petroleum products during a period of price control regulations. Projects must save or reduce energy, they must provide restitution to the public within a reasonable time, and must supplement, not supplant, those funds already available for the proposed project.	Cities and counties; Caltrans; transit operators	California Legislature	N/A

Source: Adapted from Table 2: Sacramento Area Council of Governments, Transportation Funding Handbook, July 1999

Appendix 3-3: County-Sponsored Transit Tax Ballot Measures in California

Transit Districts (Permanent ½% Taxes)

- BART (S.F., Alameda, Contra Costa)
- Santa Clara
- San Mateo
- Santa Cruz

"Self-Help" (Temporary ½% Taxes)

County	Duration	Est. 2007 Rev. (million \$)
Alameda	2002-22	135
Contra Costa	1989-2034	75
Fresno	1987-2027	66
Imperial	1990-2010	11
Los Angeles (1%)	Permanent	1,450
Madera	1990-2027	8
Marin	2005-25	24
Orange	1991-2041	320
Riverside	1989-2039	173
Sacramento	1989-2039	123
San Bernardino	1990-2040	178
San Diego	1988-2048	268
San Francisco	1990-2034	73
San Joaquin	1991-2041	54
San Mateo	1989-2033	66
Santa Barbara	1990-2010	31
Santa Clara	1996-2036	180
Sonoma (1/4%)	2005-25	21
Tulare	2007-37	26

Article XIII B of the State Constitution provides the authority and requirements for the imposition of local sales tax measures subject to voter approval.

Office of Transportation Economics
Division of Transportation Planning
Caltrans
10/2007

Source: Caltrans (2007)

Appendix to Chapter 5

Appendix 5-1: Distributions and Weighting of Survey Data

Distribution of Seniors: 2009 Population vs. Survey Sample

Distributions	CA Dept Finance 2009				Senior Mobility Survey		
Age	Both sexes	Male	Female		Both sexes	Male	Female
60-64	16,035	7,956	8,079		28	10	17
65-69	11,760	5,602	6,158		50	19	31
70-74	9,500	4,409	5,091		42	12	30
75-79	8,186	3,698	4,488		68	17	51
80-84	6,538	2,776	3,762		71	16	55
85+	6,342	2,294	4,048		117	39	79
Total	58,361	26,735	31,626		375	112	263
Percentages							
60-64	27%	30%	26%		7%	9%	7%
65-69	20%	21%	19%		13%	17%	12%
70-74	16%	16%	16%		11%	10%	12%
75-79	14%	14%	14%		18%	15%	19%
80-84	11%	10%	12%		19%	14%	21%
85+	11%	9%	13%		31%	35%	30%
Total	100%	100%	100%		100%	100%	100%

Two-Stage Weighting

Age	Gender unknown	Male	Female
<i>Weights to correct for age distribution bias</i>			
60-64	3.56	3.20	3.92
65-69	1.45	1.26	1.63
70-74	1.49	1.59	1.40
75-79	0.83	0.93	0.73
80-84	0.65	0.73	0.57
85+	0.34	0.25	0.43
Total	1.00	1.00	1.00
Age unknown			1.45
<i>Weights to correct for gender distribution bias</i>		1.54	0.77
<i>Weight Products (age and gender)</i>	Gender unknown	Male	Female
60-64	3.97	4.92	3.02
65-69	1.60	1.94	1.26
70-74	1.76	2.45	1.08
75-79	1.00	1.44	0.56
80-84	0.78	1.13	0.44
85+	0.36	0.38	0.33
Total	1.16	1.54	0.77
Age unknown			1.12

Weighting to Match Census Population

A third stage weighting may be applied if it is desired to match survey totals to the census total. It will not affect distributions in the data

The third correction is to apply the census total as a multiple of the survey size:

$$58361 / 375 = 155.63$$

Multiplying this weight by each weight product provides the following set of weights:

Age	Gender unknown	Male	Female
<i>Weights to match census totals</i>			
60-64	618.37	766.13	470.61
65-69	249.20	302.63	195.78
70-74	274.36	381.27	167.46
75-79	155.93	224.12	87.73
80-84	121.98	175.30	68.67
85+	55.40	59.24	51.56
Total	179.88	239.73	120.03
Age unknown			173.63

Appendix to Chapter 6

Appendix 6-1: Senior Mobility Survey Instrument

Transportation Needs and Safe Mobility Study



Dear valued resident,

Thank you for participating in the countywide **Transportation Needs and Safe Mobility Study**. This survey will provide important information to improve travel options and safety, and reduce cost to seniors. All information is confidential and cannot be identified with you in any way. Please answer the following questions as soon as you can and return.

1. What is your gender? ☐ Male ☐ Female

2. What is your age?

- ☐ 60-64 ☐ 75-79
☐ 65-69 ☐ 80-84
☐ 70-74 ☐ 85 or more

3. What is your ethnicity?

- ☐ White (non-Hispanic)
☐ Hispanic
☐ Black or African-American
☐ Native American or Alaska Native
☐ Asian-American or Pacific Islander
☐ Other: _____

4. Do you have a driver's license?

- ☐ Yes ☐ No

If no, when did you last have one?

- ☐ less than 1 year ago ☐ 10 or more years ago
☐ 1-9 years ago ☐ Never

Do you have a blue disability placard/plate?

- ☐ Yes ☐ No

5. Do you live with a licensed driver?

- ☐ Yes ☐ No

6. How many cars and trucks are available to your household?

- ☐ 0 ☐ 2
☐ 1 ☐ 3 or more

7. Are you employed?

- ☐ Yes ☐ No

If so, how long is your commute?

_____ miles OR _____ minutes

8. What is your approximate annual income?

- ☐ less than \$10,000 ☐ \$60,000 - \$79,999
☐ \$10,000 - \$24,999 ☐ \$80,000 - \$99,999
☐ \$25,000 - \$39,999 ☐ \$100,000 or more
☐ \$40,000 - \$59,999

9. Do you have any of the following physical limitations? (select all that apply)

- ☐ Need wheelchair ☐ Vision impairment
☐ Need walker ☐ Hard of hearing
☐ Walk with difficulty ☐ Other: _____

10. What city do you live in, and what is the closest intersection?

City: _____
 Intersection _____ & _____

11. What is your housing type?

- ☐ House ☐ Apartment/Condo
☐ Duplex/Townhouse ☐ Assisted living
☐ Mobile home ☐ Other: _____

12. What is your housing ownership?

- ☐ Own your residence ☐ Neither
☐ Rent your residence

13. With whom do you live?

- ☐ Alone ☐ Other: _____
☐ With Spouse/Significant Other
☐ With Family

Transportation Needs and Safe Mobility Study

14. How many people live in your residence?

- ☐ 1 ☐ 3-4
☐ 2 ☐ 5 or more

15. What mode of transportation do you use most frequently?

- ☐ Drive alone ☐ Bus/Train
☐ Car passenger ☐ Bicycle
☐ Taxi ☐ Walking
☐ On-call service ☐ Other: _____
(Dial-a-ride, Ride-On, Runabout)

16. If you drive, do you find driving difficult?

- ☐ Yes ☐ No

If yes, what aspects of driving do you find difficult? (select all that apply)

- ☐ Pain or discomfort while driving
☐ Signs are difficult to read
☐ Highway speeds are too fast
☐ Threat of accidents
☐ Traffic congestion
☐ Parking is difficult
☐ Cost to maintain a car
☐ Roads are difficult to navigate
☐ Other: _____

17. If you own a car, how much does it cost to maintain it annually? (includes gas, insurance, repair, registration, etc.)

- ☐ Less than \$1000 ☐ \$5,000 or more
☐ \$1,000-\$2,499 ☐ Don't know
☐ \$2,500-\$4,999

18. If driving is your most frequent choice, how frequently do you use **other** modes of transportation? (except walking)

- ☐ Every day ☐ Few times a month
☐ Few times a week ☐ Never

19. How far is the nearest bus/transit stop to where you live?

- ☐ Less than 500 ft. (less than 3 minutes)
☐ 500 ft - ¼ mile (about 5 minutes)
☐ ¼ mile - ½ mile (about 10 minutes)
☐ ½ mile - 1 mile (about 20 minutes)
☐ 1 mile + (more than 20 minutes)
☐ Don't know where nearest stop is

20. If you do **not** use public bus transportation why not? (select all that apply)

- ☐ No nearby stop
☐ Lack of convenient routes
☐ Bus does not come frequently
☐ Departure times are inconvenient
☐ Not reliable
☐ Too expensive
☐ Don't know about bus transportation system
☐ Other

21a. What mode of transportation would you prefer if you had the choice?

- ☐ Drive alone ☐ Bus/Train
☐ Car passenger ☐ Bicycle
☐ Taxi ☐ Walking
☐ On-call service ☐ Other: _____
(Dial-a-ride, Ride-On, Runabout)

21b. Why would this be your preferred mode? (select all that apply)

- ☐ Convenience ☐ Safety
☐ Cost ☐ Independence
☐ Reliability ☐ Health/Exercise
☐ Efficiency ☐ Time
☐ Privacy ☐ Relaxation
☐ Social interaction ☐ Able to carry goods
☐ Ease of use ☐ Habit
☐ Other: _____

Typical Shopping Trips

S1. How frequently do you make shopping trips (e.g. market, store, pharmacy)

- ☐ Daily ☐ Once a month
☐ Few times a week ☐ Few times per year
☐ Few times a month ☐ Never

Answer Questions 2-7 for your **typical shopping trip**

S2. What city is your typical shopping destination in and what is the nearest intersection?

City: _____
 Location: _____ (e.g. Vons)
 Intersection: _____ & _____

S3. What mode do you typically use to get to your destination?

- ☐ Drive alone ☐ Bus/Train
☐ Car passenger ☐ Bicycle
☐ Taxi ☐ Walking
☐ On-call service ☐ Other: _____
 (Dial-a-ride, Ride-On, Runabout)

S4. How far do you travel to your destination?

- ☐ Less than 1 mile ☐ 5-6.9 miles
☐ 1-2.9 miles ☐ 7-9.9 miles
☐ 3-4.9 miles ☐ 10 miles or more

S5. How long does it take to reach your destination?

- ☐ Less than 5 minutes ☐ 20-29 minutes
☐ 5-9 minutes ☐ 30 minutes or longer
☐ 10-19 minutes

S6. When do you typically make this trip?

- ☐ 8-10 am ☐ 2-4 pm
☐ 10am - Noon ☐ 4-6 pm
☐ Noon - 2pm ☐ After 6 pm

S7. If Bus, Dial-a-ride, Ride-on, Runabout, or Taxi, how much do you pay one way?

\$_____ Do you find this cost reasonable
☐ Yes ☐ No

Medical Trips

M1. How frequently do you make medical trips (e.g. visit physician, hospital)?

- ☐ Daily ☐ Once a month
☐ Few times a week ☐ Few times per year
☐ Few times a month ☐ Never

Answer Questions 2-7 for your **typical medical trip**

M2. What city is your typical medical destination in and what is the nearest intersection?

City: _____
 Location: _____ (e.g. French Hosp.)
 Intersection: _____ & _____

M3. What mode do you typically use to get to your destination?

- ☐ Drive alone ☐ Bus/Train
☐ Car passenger ☐ Bicycle
☐ Taxi ☐ Walking
☐ On-call service ☐ Other: _____
 (Dial-a-ride, Ride-On, Runabout)

M4. How far do you travel to your destination?

- ☐ Less than 1 mile ☐ 5-6.9 miles
☐ 1-2.9 miles ☐ 7-9.9 miles
☐ 3-4.9 miles ☐ 10 miles or more

M5. How long does it take to reach your destination?

- ☐ Less than 5 minutes ☐ 20-29 minutes
☐ 5-9 minutes ☐ 30 minutes or longer
☐ 10-19 minutes

M6. When do you typically make this trip?

- ☐ 8-10 am ☐ 2-4 pm
☐ 10am - Noon ☐ 4-6 pm
☐ Noon - 2pm ☐ After 6 pm

M7. If Bus, Dial-a-ride, Ride-on, Runabout, or Taxi, how much do you pay one way?

\$_____ Do you find this cost reasonable
☐ Yes ☐ No

Transportation Needs and Safe Mobility Study

Recreational/Social Trips

R1. How frequently do you make recreational trips (e.g. visit friends, gym, religious services)?

- ☐ Daily
 ☐ Once a month
☐ Few times a week
 ☐ Few times per year
☐ Few times a month
 ☐ Never

Answer Questions 2-7 for your **typical recreation trip**

R2. What city is your typical recreation destination in and what is the nearest intersection?

City: _____
 Location: _____ (e.g. Senior Ctr)
 Intersection: _____ & _____

R3. What mode do you typically use to get to your destination?

- ☐ Drive alone
 ☐ Bus/Train
☐ Car passenger
 ☐ Bicycle
☐ Taxi
 ☐ Walking
☐ On-call service
 ☐ Other: _____
 (Dial-a-ride, Ride-On, Runabout)

R4. How far do you travel to your destination?

- ☐ Less than 1 mile
 ☐ 5-6.9 miles
☐ 1-2.9 miles
 ☐ 7-9.9 miles
☐ 3-4.9 miles
 ☐ 10 miles or more

R5. How long does it take to reach your destination?

- ☐ Less than 5 minutes
 ☐ 20-29 minutes
☐ 5-9 minutes
 ☐ 30 minutes or longer
☐ 10-19 minutes

R6. When do you typically make this trip?

- ☐ 8-10 am
 ☐ 2-4 pm
☐ 10am - Noon
 ☐ 4-6 pm
☐ Noon - 2pm
 ☐ After 6 pm

R7. If Bus, Dial-a-ride, Ride-on, Runabout, or Taxi, how much do you pay one way?

\$ _____ Do you find this cost reasonable
☐ Yes
 ☐ No

Occupational Trips (work, volunteering, educational)

W1. How frequently do you make occupational trips?

- ☐ Daily
 ☐ Once a month
☐ Few times a week
 ☐ Few times per year
☐ Few times a month
 ☐ Never

Answer Questions 2-7 for your **typical work trip**

W2. What city do you work in and what is the nearest intersection?

City: _____
 Location: _____ (e.g. Library)
 Intersection: _____ & _____

W3. What mode do you typically use to get to your destination?

- ☐ Drive alone
 ☐ Bus/Train
☐ Car passenger
 ☐ Bicycle
☐ Taxi
 ☐ Walking
☐ On-call service
 ☐ Other: _____
 (Dial-a-ride, Ride-On, Runabout)

W4. How far do you travel to your destination?

- ☐ Less than 1 mile
 ☐ 5-6.9 miles
☐ 1-2.9 miles
 ☐ 7-9.9 miles
☐ 3-4.9 miles
 ☐ 10 miles or more

W5. How long does it take to reach your destination?

- ☐ Less than 5 minutes
 ☐ 20-29 minutes
☐ 5-9 minutes
 ☐ 30 minutes or longer
☐ 10-19 minutes

W6. When do you typically make this trip?

- ☐ 8-10 am
 ☐ 2-4 pm
☐ 10am - Noon
 ☐ 4-6 pm
☐ Noon - 2pm
 ☐ After 6 pm

W7. If Bus, Dial-a-ride, Ride-on, Runabout, or Taxi, how much do you pay one way?

\$ _____ Do you find this cost reasonable
☐ Yes
 ☐ No

Appendix to Chapter 7

Appendix 7-1: Distances between Residences and Transit Routes

General Population

Total Population by Distance to Transit (SLO County, 2000)							
Community	Distance to Fixed Route Transit Line (Feet)						Total
	1000	2000	3000	4000	5000	> 5000	
Other County Areas	5,688	5,817	5,372	9,894	3,354	35,036	65,161
Arroyo Grande	8,130	3,944	1,276	1,004	714	949	16,017
Atascadero	8,066	4,831	2,648	3,883	2,192	4,758	26,378
Baywood-Los Osos	8,593	3,974	604	684	141	143	14,139
Cambria	2,508	1,937	575	930	250	32	6,232
Cayucos	2,553	342	-	48	-	-	2,943
Grover Beach	10,786	1,160	67	-	-	-	12,013
Lake Nacimiento	-	-	-	-	-	2,176	2,176
Morro Bay	5,926	3,000	558	561	74	-	10,119
Oceano	6,273	594	-	-	-	-	6,867
Paso Robles	13,892	5,121	2,344	1,525	201	1,097	24,180
Pismo Beach	4,970	2,360	249	-	-	-	7,579
San Luis Obispo	35,996	4,332	2,446	-	10	-	42,784
San Miguel	711	315	-	129	132	-	1,287
Shandon	-	-	-	-	-	986	986
Templeton	3,031	467	437	506	40	206	4,687
Total	117,123	38,194	16,576	19,164	7,108	45,383	243,548
Other County Areas	9%	9%	8%	15%	5%	54%	100%
Arroyo Grande	51%	25%	8%	6%	4%	6%	100%
Atascadero	31%	18%	10%	15%	8%	18%	100%
Baywood-Los Osos	61%	28%	4%	5%	1%	1%	100%
Cambria	40%	31%	9%	15%	4%	1%	100%
Cayucos	87%	12%	0%	2%	0%	0%	100%
Grover Beach	90%	10%	1%	0%	0%	0%	100%
Lake Nacimiento	0%	0%	0%	0%	0%	100%	100%
Morro Bay	59%	30%	6%	6%	1%	0%	100%
Oceano	91%	9%	0%	0%	0%	0%	100%
Paso Robles	57%	21%	10%	6%	1%	5%	100%
Pismo Beach	66%	31%	3%	0%	0%	0%	100%
San Luis Obispo	84%	10%	6%	0%	0%	0%	100%
San Miguel	55%	24%	0%	10%	10%	0%	100%
Shandon	0%	0%	0%	0%	0%	100%	100%
Templeton	65%	10%	9%	11%	1%	4%	100%
Total	48%	16%	7%	8%	3%	19%	100%

Senior Population

Seniors 65+ by Distance to Transit (SLO County, 2000)

Community	Distance to Fixed Route Transit Line (Feet)						Total
	1000	2000	3000	4000	5000	> 5000	
Other County Areas	398	1,000	705	490	285	5,191	8,069
Arroyo Grande	1,458	907	299	251	188	154	3,257
Atascadero	965	491	327	445	191	613	3,032
Baywood-Los Osos	1,113	1,074	158	200	57	45	2,647
Cambria	591	493	165	310	93	8	1,660
Cayucos	620	68	-	5	-	-	693
Grover Beach	1,231	151	6	-	-	-	1,388
Lake Nacimiento	-	-	-	-	-	379	379
Morro Bay	1,376	665	150	225	24	-	2,440
Oceano	598	85	-	-	-	-	683
Paso Robles	1,409	1,038	528	207	17	33	3,232
Pismo Beach	1,164	556	45	-	-	-	1,765
San Luis Obispo	4,081	623	313	-	1	-	5,018
San Miguel	40	24	-	4	14	-	82
Shandon	-	-	-	-	-	60	60
Templeton	343	40	41	77	10	26	537
Total	15,387	7,215	2,737	2,214	880	6,509	34,942
Other County Areas	5%	12%	9%	6%	4%	64%	100%
Arroyo Grande	45%	28%	9%	8%	6%	5%	100%
Atascadero	32%	16%	11%	15%	6%	20%	100%
Baywood-Los Osos	42%	41%	6%	8%	2%	2%	100%
Cambria	36%	30%	10%	19%	6%	0%	100%
Cayucos	89%	10%	0%	1%	0%	0%	100%
Grover Beach	89%	11%	0%	0%	0%	0%	100%
Lake Nacimiento	0%	0%	0%	0%	0%	100%	100%
Morro Bay	56%	27%	6%	9%	1%	0%	100%
Oceano	88%	12%	0%	0%	0%	0%	100%
Paso Robles	44%	32%	16%	6%	1%	1%	100%
Pismo Beach	66%	32%	3%	0%	0%	0%	100%
San Luis Obispo	81%	12%	6%	0%	0%	0%	100%
San Miguel	49%	29%	0%	5%	17%	0%	100%
Shandon	0%	0%	0%	0%	0%	100%	100%
Templeton	64%	7%	8%	14%	2%	5%	100%
Total	44%	21%	8%	6%	3%	19%	100%

Land Area

Land Area (in hectares) by Distance to Transit (SLO County, 2000)							
	Distance to Fixed Route Transit Line (Feet)						
	1000	2000	3000	4000	5000	> 5000	Total
Other County Areas	2,499	5,752	6,538	8,060	8,532	595,350	626,731
Arroyo Grande	457	527	214	97	118	153	1,566
Atascadero	661	742	455	755	356	3,635	6,604
Baywood-Los Osos	393	359	318	249	18	63	1,400
Cambria	341	297	65	1,084	100	295	2,182
Cayucos	237	318	18	188	-	10	771
Grover Beach	410	42	2	-	-	-	454
Lake Nacimiento	-	-	-	-	-	1,897	1,897
Morro Bay	470	340	46	34	97	-	987
Oceano	220	115	-	-	-	-	335
Paso Robles	997	1,030	360	480	27	1,601	4,495
Pismo Beach	493	234	67	1	-	-	795
San Luis Obispo	1,602	354	490	-	123	50	2,619
San Miguel	71	100	8	159	56	-	394
Shandon	-	-	-	-	-	776	776
Templeton	382	295	97	138	47	256	1,215
Total	9,233	10,505	8,678	11,245	9,474	604,086	653,221
Other County Areas	0%	1%	1%	1%	1%	95%	100%
Arroyo Grande	29%	34%	14%	6%	8%	10%	100%
Atascadero	10%	11%	7%	11%	5%	55%	100%
Baywood-Los Osos	28%	26%	23%	18%	1%	5%	100%
Cambria	16%	14%	3%	50%	5%	14%	100%
Cayucos	31%	41%	2%	24%	0%	1%	100%
Grover Beach	90%	9%	0%	0%	0%	0%	100%
Lake Nacimiento	0%	0%	0%	0%	0%	100%	100%
Morro Bay	48%	34%	5%	3%	10%	0%	100%
Oceano	66%	34%	0%	0%	0%	0%	100%
Paso Robles	22%	23%	8%	11%	1%	36%	100%
Pismo Beach	62%	29%	8%	0%	0%	0%	100%
San Luis Obispo	61%	14%	19%	0%	5%	2%	100%
San Miguel	18%	25%	2%	40%	14%	0%	100%
Shandon	0%	0%	0%	0%	0%	100%	100%
Templeton	31%	24%	8%	11%	4%	21%	100%
Total	1%	2%	1%	2%	1%	92%	100%

