2024 OC TRANSIT VISION

APPENDIX A.
State of OC Transit

MAY **2025**

OCTA

OC TransitVISION

State of OC Transit

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

SECTION

1

EXECUTIVE SUMMARY

The Orange County Transportation Authority (OCTA) is the primary provider of public transit service in Orange County. OCTA is developing the "2024 OC Transit Vision," a transit master plan to define and articulate the future of transit in Orange County. The 2024 OC Transit Vision will identify travel corridors with the greatest transit demand for potential rapid transit lines and stations. It will then assess which mode of high-capacity transit such as rapid bus or bus rapid transit (BRT) would best fit each corridor. Finally, the 2024 OC Transit Vision will prioritize the most immediately needed projects for near-term development.

The 2024 OC Transit Vision is scheduled to be completed in late 2024. This "State of OC Transit" report is an important first step in that process. By providing an overview of transit in Orange County including existing service, as well as the context in which it operates, the built environment, travel patterns, and Orange County demographics, the report establishes the starting place for the Transit Vision. It also summarizes important plans and policies, describes best practices in the development of rapid-transit corridors, and discusses emerging transportation trends and technologies. Finally, the State of OC Transit report includes the transit-related opinions, perceptions, and priorities of a broad range of local stakeholders, the first of many opportunities for the public to engage in this project. Data for this report was collected from Fiscal Years 2021-2023 (depending on availability), with some data collected as late as early 2024. The draft report was completed in early 2024 and the final version will be published in early 2025 as an attachment to the 2024 OC Transit Vision.

1.1 REPORT OUTLINE

This State of OC Transit includes the following chapters:

- A history of transit in Orange County
- Analysis of the existing fixed-route transit system in Orange County, including OCTA buses as well as Metrolink commuter rail and other local operators
- A review of plans and policies that provide context for the 2024 OC Transit Vision
- An overview of recent trends in transit, including transit ridership, demographic and cultural developments relevant to transit, and emerging transit-related technologies
- A review of industry best practices in the design of high-capacity transit services, including high-capacity transit modes, transit access, integration of transit and land use, and sources of funding for transit expansion
- A market analysis of current and projected future travel patterns and demand for transit service in Orange County
- Initial findings from interviews with community stakeholders regarding their transit perceptions and future role of transit in Orange County

A synthesis of findings from these preliminary analyses helps to shape areas of focus for the development of the 2024 OC Transit Vision.

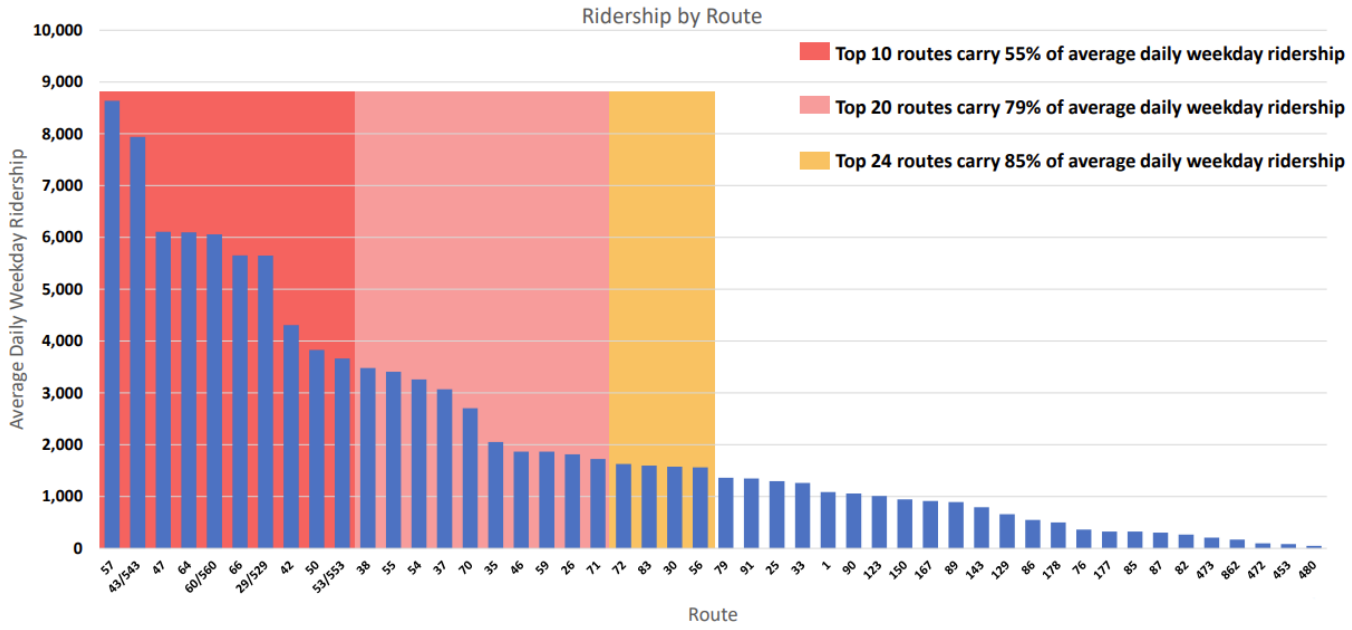
1.2 KEY FINDINGS

The following is a brief summary of the key findings of the State of OC Transit.

The majority of existing OC Bus ridership is concentrated in a few key corridors.

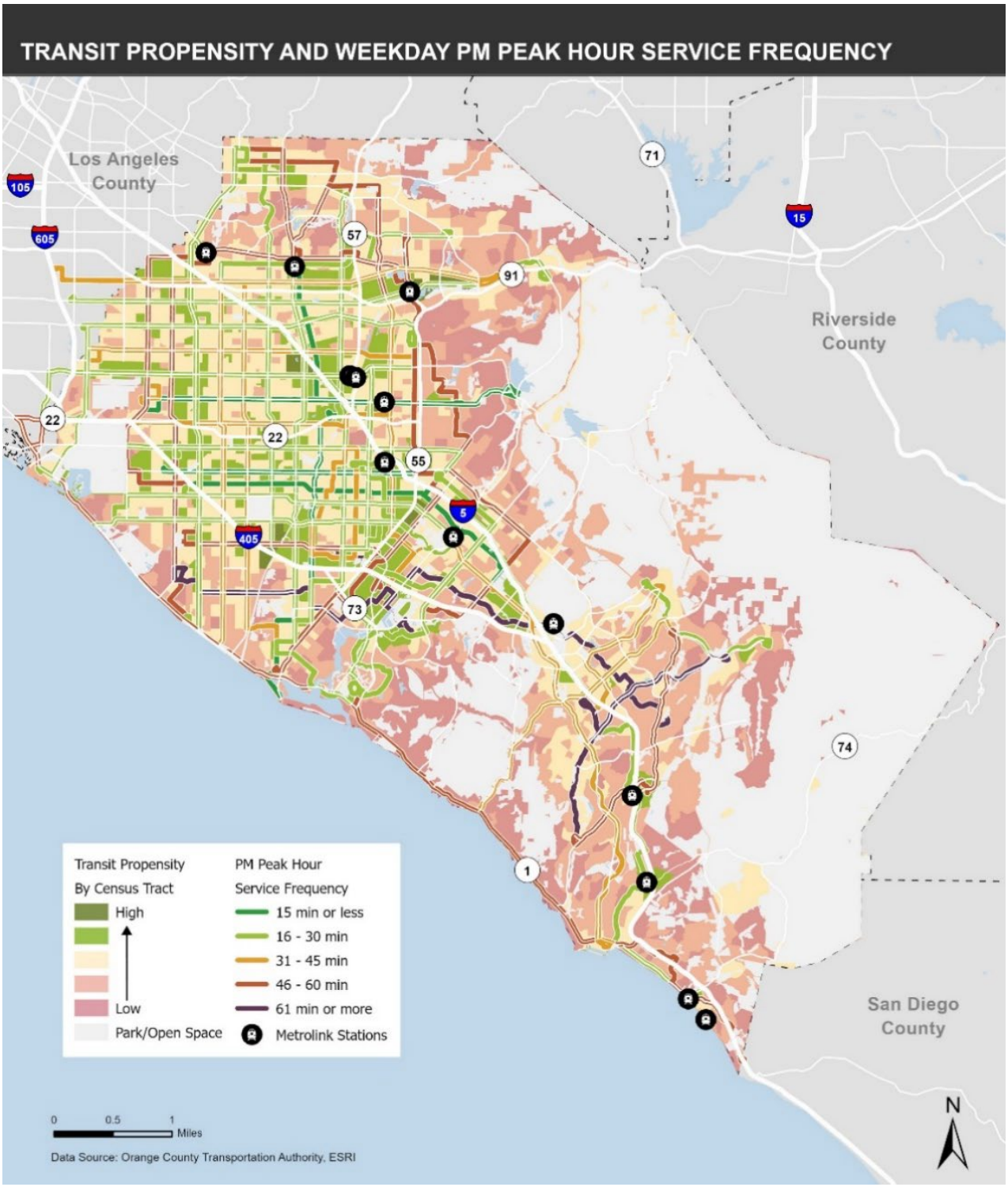
- Approximately 20 routes, out of a total of 52 in the system, carry 79 percent of riders. The top 10 routes carry 55 percent of riders. These numbers explain much of the rationale for focusing transit improvements in a handful of corridors, to improve service for the vast majority of riders. This high concentration of ridership was reflected in the development of the Making Better Connections service plan, which was approved in 2022 and concentrates fixed-route bus resources in the highest-demand portions of the OCTA service area.

FIGURE 1 AVERAGE WEEKDAY RIDERSHIP PER ROUTE (APRIL 2024)



- Most OC Bus service is in the central part of the county, where denser neighborhoods and relatively flat topologies are located. These are factors which typically lead to a higher propensity to use transit. There are major job centers in South County that are predominately auto oriented and have lower existing transit use than employment centers in North and Central Orange County.

FIGURE 2 TRANSIT PROPENSITY AND WEEKDAY PM PEAK HOUR SERVICE FREQUENCY



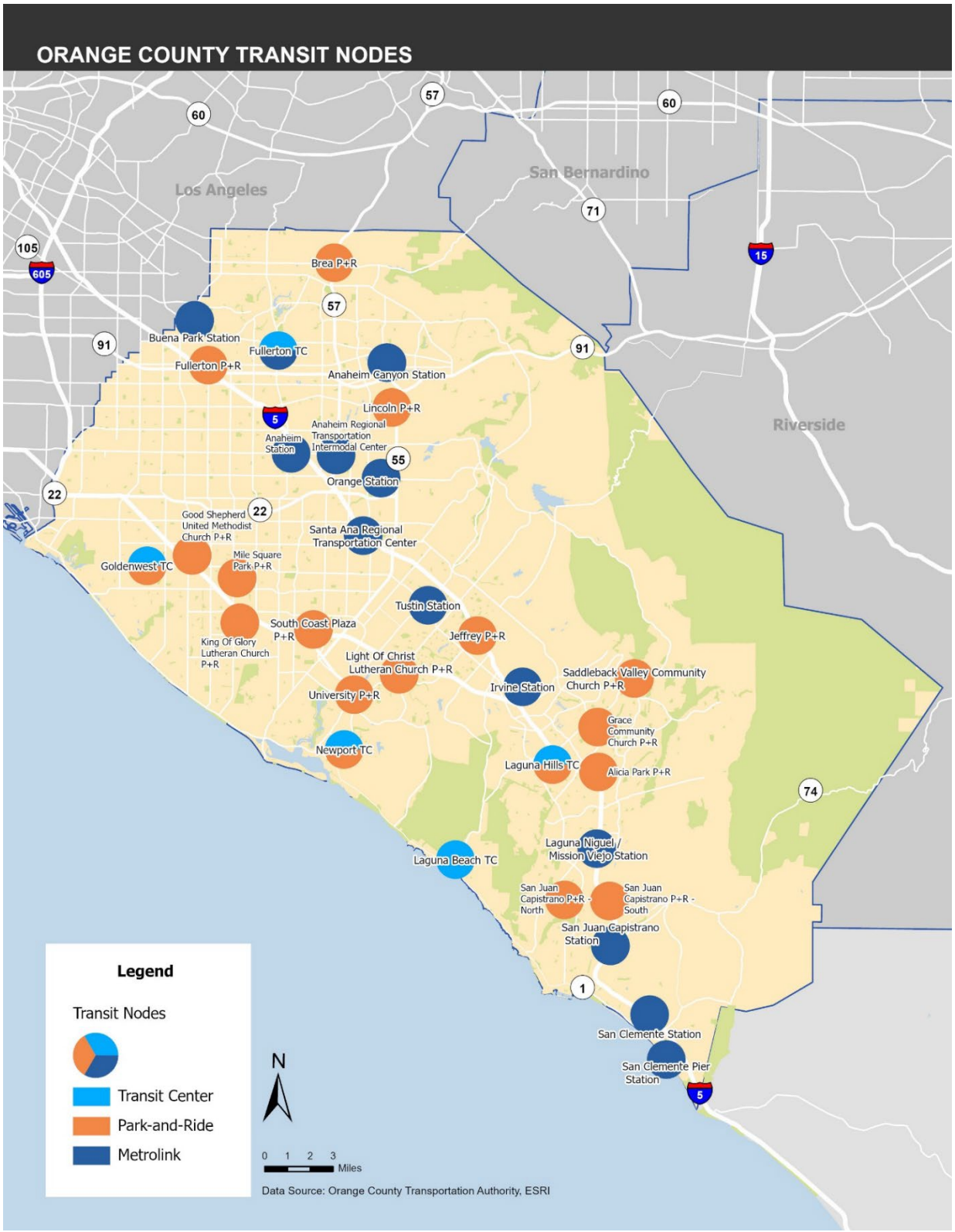
OC Bus service is focused on the weekday commuter market.

- The periods of highest demand in virtually any transit system are weekday peak commute periods, or rush hours, followed by late mornings and early afternoons on weekdays. Since the coronavirus pandemic, demand has become more consistent throughout the day, with lower AM and PM peaks. Orange County is unique, however, as it has a number of destinations that generate high travel demand on weekends, from beaches to theme parks.
- OCTA also provides reduced evening service immediately following the PM peak period. This means that travel options are limited for job shifts that extend into the evening, as well as for those who may wish to live a car-free lifestyle.
- OCTA provides limited special event and holiday service. These types of services are typically used by people who do not regularly ride transit, and if provided effectively, can serve as a gateway to more regular transit use.

OC Bus service is focused on a select number of hubs, including destinations and connection points.

- OCTA and Orange County cities operate more than 30 intermodal transfer facilities ranging from Metrolink stations to park-and-rides. While these facilities serve as transfer points between multiple transportation modes such as bus-to-train, auto-to-bus, and bus-to-bus trips, they are also important points of connection for people walking and biking, making multimodal access to these facilities an area for attention.

FIGURE 3 ORANGE COUNTY TRANSIT NODES



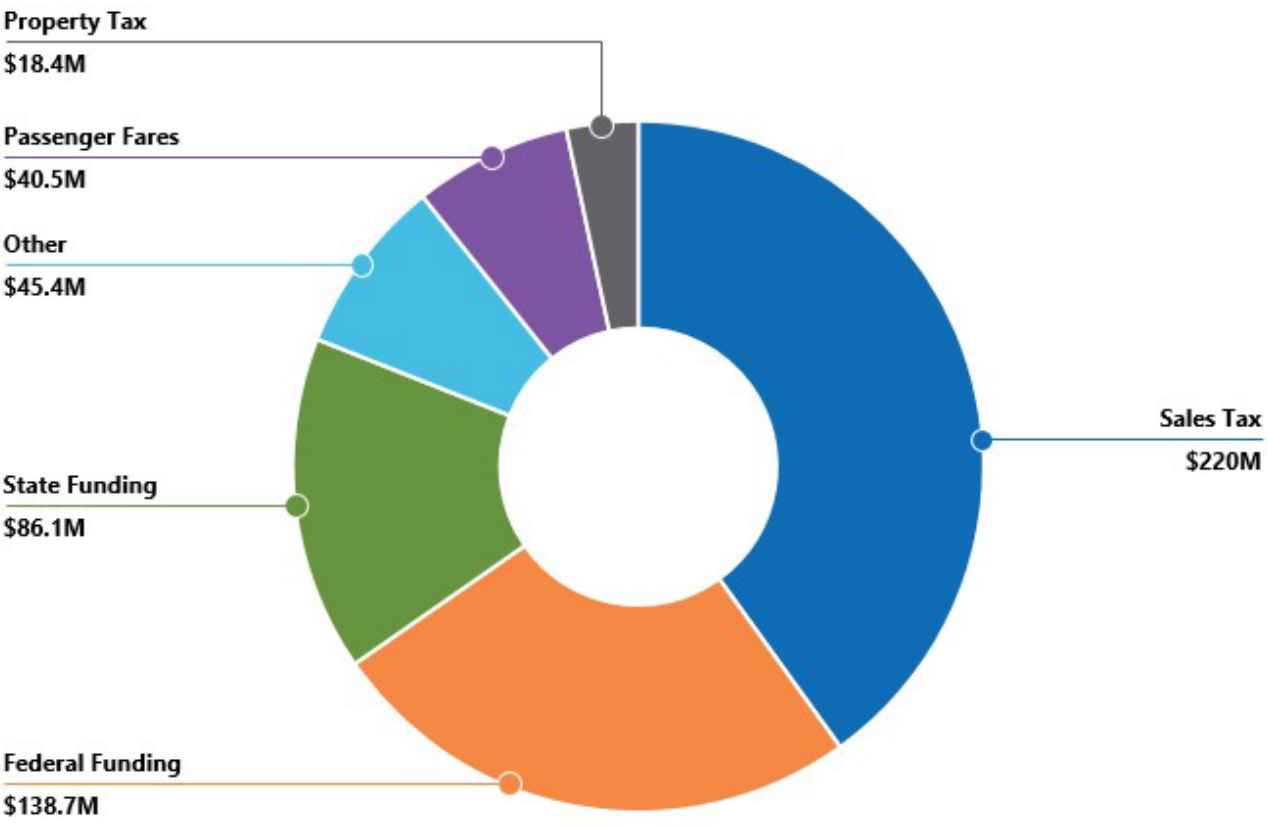
OCTA is taking steps to increase ridership.

- The agency is tailoring service to context, focusing on fixed-route service in its most productive and cost-effective corridors and exploring creative mobility solutions in other areas.
- OCTA has also emphasized connectivity, including between the bus system and future mobility hubs that will connect multiple modes to the OCTA and Metrolink systems.
- Innovative fare options such as Youth Ride Free, College and University passes, and fare capping (2025) help transit to be more competitive with personal automobiles.

Limited funding and a recent driver shortage have constrained OCTA's ability to boost service to attract ridership.

- OCTA and other agencies are recovering from the coronavirus pandemic which impacted ridership and traditional commute patterns. Funding and operator constraints in 2023 limited OCTA from expanding services.

FIGURE 4 OCTA BUS AND PARATRANSIT REVENUES (2023)

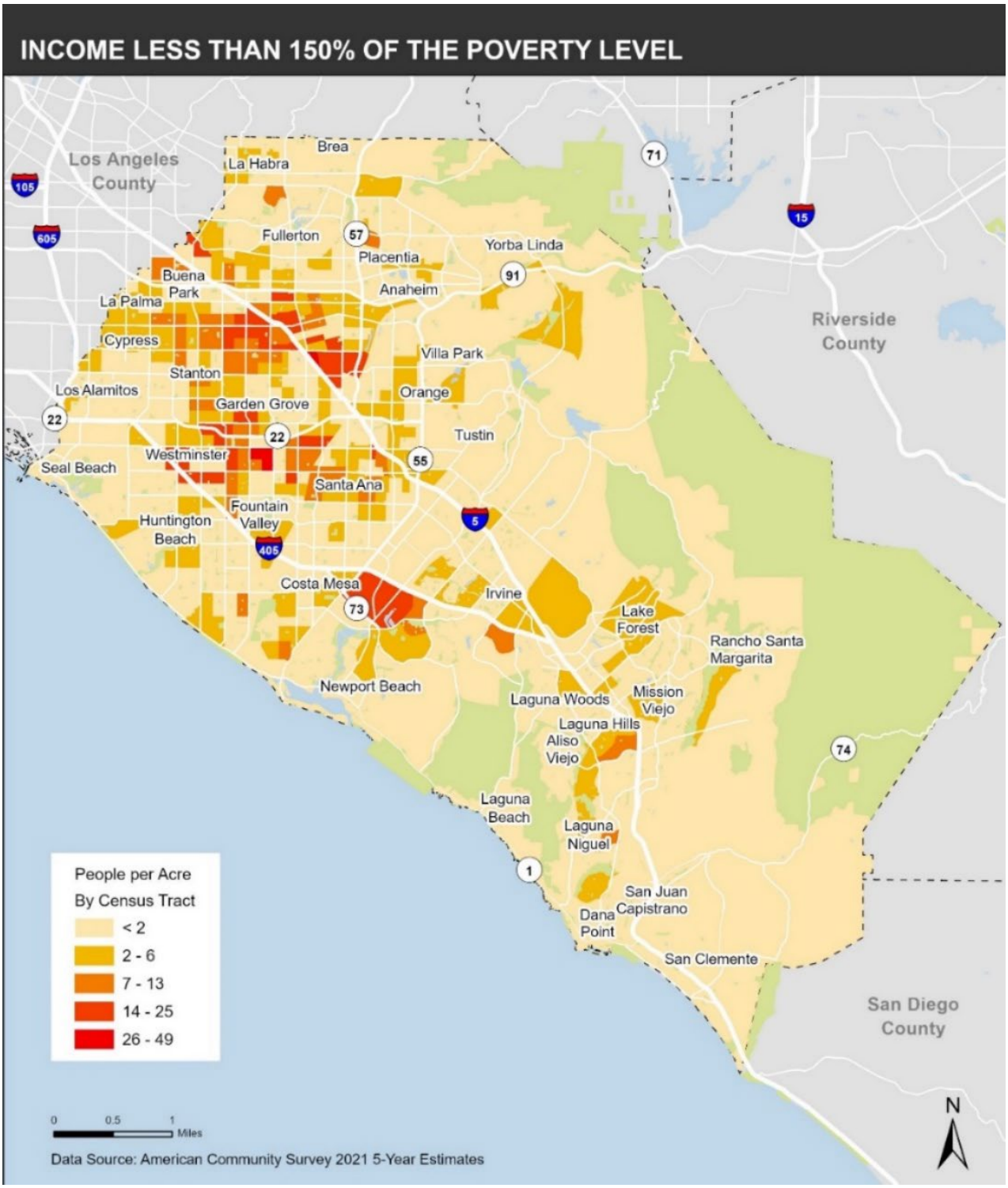


M = Millions

Land uses and demographics in Orange County—as well as Orange County's overall transportation network—present both challenges and opportunities for effective transit service.

- While Orange County is primarily suburban, much of the central and north parts of the county exhibit some attributes of urban areas, including racial and economic diversity, pockets of density, and major employment centers.
- The county has major destinations including several large college campuses, major retail centers, and unique recreational attractions such as Disneyland, Knott's Berry Farm, and popular beaches. The recreational destinations are busiest on weekends when there is traditionally less transit service. These major destinations are dispersed across the county rather than concentrated as they would be in a traditional downtown.
- Orange County's auto-oriented land use patterns are not especially conducive to effective transit service. In South County, land uses are highly segregated rather than mixed together, requiring longer trips.

FIGURE 5 LOCATIONS OF LOW-INCOME INDIVIDUALS



Increased transit use can support greenhouse gas reduction targets.

- In California, the transportation sector is the primary source of greenhouse gas (GHG) emissions. For this reason, policy efforts at both the state and regional level have identified reduction in vehicle miles traveled as a primary means to achieve GHG reduction targets. Along with active transportation, transit has a key role to play in providing convenient alternatives to driving and reducing emissions from the transportation sector.

The future OC Streetcar and OC Bus Rapid lines provide a template for future ridership growth.

- OCTA has already made progress in identifying, developing, and implementing practical improvements to transit in the highest-demand corridors. This plan will consider a range of modes for other priority corridors, including rapid bus and forms of bus rapid transit.

Key stakeholder interviews indicate shifting trends.

- Mobility hubs in Orange County will be beneficial in integrating various transportation modes, promoting connectivity, and offering convenient, multi-modal options for commuters.
- Investing in improved biking infrastructure will encourage people to choose bicycles over cars and facilitate crucial first and last-mile connections.
- Integrating technology will be essential for optimizing Orange County's transit system, improving efficiency, and enhancing the overall passenger experience.
- Microtransit can offer flexible, on-demand transportation solutions tailored to individual needs.
- Education will be pivotal for the success of Orange County's transit initiatives, fostering public awareness, understanding, and contributing to a more informed and supportive community.
- As housing increases in Orange County, it is essential to carefully plan transportation infrastructure to accommodate a growing population, ensuring efficient access to transit options and minimizing congestion while promoting sustainable development patterns.

SECTION

2

INTRODUCTION

2.1 ABOUT ORANGE COUNTY

In 1950, a few years before Interstate 5 was completed and Disneyland opened near one of its off-ramps, citrus groves still covered much of Orange County and the population was just over 200,000 people. In the decades that followed, freeways, tract homes, and shopping centers famously spread across the coastal plain from the Los Angeles County line into the rolling hills of South County and "the O.C." became a prototypical suburban area (if one with world-famous beaches and theme parks).

Today's Orange County, however, is not your father's suburb. It is now nearly built-out: vacant sites for "greenfield" or "blank slate" development have almost disappeared. At the same time, the northern part of the county has become ever denser and more culturally diverse. In the 2020 census, the county's population surpassed 3.1 million, making it the sixth-largest county in the country. Just 37 percent of residents were non-Hispanic white. The combined population of Anaheim, Santa Ana, Garden Grove, Orange, and Westminster, the five cities that constitute the urbanized core of the county is now nearly 1 million, in just 132 square miles. If they were a single city, it would be the 10th largest in the country and would have a population density greater than Baltimore, Pittsburgh, Detroit, or Cleveland.

While Orange County remains largely auto-oriented, there has been a small shift: in 2014, less than two percent of households had no car, a figure that increased to less than five percent by 2023, and over the same period, the share of commuters driving alone decreased from 79 percent to 69 percent. In 2023 just over one percent of Orange County commuters used a bus or train, compared to just over four percent in Los Angeles County, over two percent in San Diego County, and a nationwide average of three and a half percent. The share of Orange County residents working from home rose from just over five percent in 2014 to over sixteen and a half percent in 2023, influenced by long-term trends from the coronavirus pandemic.

Even as freeways have continued to expand, Orange County has remained among the most traffic-congested places in America: survey after survey (such as those by the data firm Inrix and the Texas Transportation Institute) has found that the county and its northern neighbor, L.A., together compose the first- or second-most traffic-clogged region in the country. All signs point toward a need for increased travel choices, and for choices that can efficiently, cleanly, and safely move large volumes of people.

OCTD and Early Days of OCTA (1972-2008)

- In 1972, The Orange County Transit District (OCTD), the precursor to today's Orange County Transportation Authority (OCTA), was established by county voters. The district unified a patchwork of municipal bus operators, assumed operation of some Southern California RTD routes, and set the stage for OCTA, which has a much broader, more multimodal mandate.
- In 1990, voters approved the county's first "self-help" sales tax dedicated to transportation, the original Measure M. It was also the year the region's transit agencies jointly bought 175 miles of rail right-of-way from the Southern Pacific and ATSF railways, land that eventually formed the core of the Metrolink commuter rail system. And finally, in 1990 Amtrak launched the Orange County Commuter, providing a single daily round trip between San Juan Capistrano and Los Angeles. Transferred to Metrolink in 1994, the service is now known as the Orange County Line and provides up to 13 weekday roundtrips; this is in addition to 23 weekday roundtrips on Metrolink's 91/Perris Valley and Inland Empire-OC lines and Amtrak's Pacific Surfliner, all of which serve Orange County.
- In 1991, the Transit District merged with the Orange County Transportation Commission and other local agencies to form OCTA. Soon after, OCTA produced its first Long-Range Transit System Plan and Development Strategy. Effectively the agency's first transit master plan, it recommended development of an 87-mile urban rail network, new commuter rail stations with expanded service, and more than 40 freeway express bus routes.
- In 2006, county voters renewed Measure M, expanding funding for Metrolink service and fixed guideway (i.e., a rail line or bus rapid transit line in exclusive lanes) connections to Metrolink stations.
- In 2007 to 2008, transit ridership peaked at 69 million annual boardings.

Recent Past and Present (2013-Today)

- In 2013, OCTA became manager of the LOSSAN Corridor, which is owned by an intergovernmental joint powers authority.
- In 2013, OCTA introduced Bravo! rapid bus service (now OC Bus Rapid), which makes fewer stops and offers faster and more reliable long-distance trips than traditional buses.
- In 2014, Anaheim Regional Transportation Intermodal Center (ARTIC) opened.
- In 2015, OCTA bus service was rebranded "OC Bus," and real-time bus arrival information became available through smartphone apps.
- In 2016, the agency updated its route network (through the OC Bus 360 program), and introduced smartphone ticketing.
- In 2019, OC Flex service and Beach Blvd Bravo! were launched.
- In March 2020, at the start of the coronavirus pandemic, OCTA reduced bus service levels to approximately 40% of regular service. Prior to the pandemic, the OC Bus system saw an average of nearly 120,000 riders per day. That number dropped to approximately 33,000 daily riders at its lowest.

- In 2022, Main Street Bravo! was launched.
- In 2022, the Making Better Connections Study was approved. The study is a redesign of the OC Bus network to reflect current travel patterns resulting from changes brought on by the coronavirus pandemic. The plan will expand access to destinations, increase frequency, reduce transfer wait times, and extend hours of service. The Plan is being implemented from 2023 through 2025.
- In 2022, OC Bus reached 100,000 average weekday riders for the first time since the start of the pandemic. OCTA launched the Youth Ride Free pass which offers free bus rides to all youth ages 18 and younger. OCTA also worked to expand the College Pass Program for all community colleges in Orange County.
- In mid-2020's, OCTA will launch the OC Streetcar, Orange County's first modern streetcar that will travel 4.15 miles between downtown Santa Ana and Garden Grove.

Each of these actions has taken OCTA another step along the path toward a transit system that is adjusting to the current needs of Orange County residents, workers, and visitors, one that provides attractive alternatives to sitting in traffic and that makes a greater contribution to larger community goals of economic development, environmental sustainability, and social equity. The 2024 OC Transit Vision represents the next step in that process, toward the development of new higher-capacity rapid transit options in the county's busiest corridors.

SECTION

3

EXISTING TRANSIT SYSTEM

This chapter describes the characteristics and performance of existing transit services and infrastructure in Orange County. The system analysis covers the following topics:

- An overview of OCTA fixed-route services, including OC Bus, OC Bus Rapid, and the future OC Streetcar
- An overview of Metrolink and Amtrak Pacific Surfliner regional rail service
- An overview of other transit operations in the county, including Anaheim Resort Transit, community shuttles and circulators, OC Vanpool, OC Flex, local shuttle services, and OC ACCESS paratransit
- A description of major transit facilities, including Metrolink stations and park-and-rides
- A review of regional connections to transit in Orange County
- An analysis of OCTA transit system performance

3.1 OVERVIEW OF OCTA FIXED-ROUTE SERVICES

This section describes existing OCTA fixed-route transit services in Orange County, including OC Bus, OC Bus Rapid and the future OC Streetcar.

OC Bus

OC Bus is OCTA's largest and most visible service, providing transit options throughout Orange County via 52 fixed-route bus services. Routes range from those geared toward connecting passengers to community and local destinations to those providing connections to regional transit like Metrolink. In fiscal year 2022-2023, OC Bus service carried over 31 million passengers. Tables 1 through 5 show each OC Bus route in their respective route categories and destinations served.

TABLE 1 OC BUS LOCAL ROUTES

Route	Destinations	Route	Destinations
1	Long Beach-San Clemente	57	Brea-Newport Beach
25	Fullerton-Huntington Beach	59	Anaheim-Irvine
26	Fullerton-Placentia	60	Long Beach-Tustin
29/A	La Habra-Huntington Beach	64	Huntington Beach-Tustin
30	Cerritos-Anaheim	66	Huntington Beach-Irvine
33	Fullerton-Huntington Beach	70	Sunset Beach-Tustin
35	Fullerton-Costa Mesa	71	Yorba Linda-Newport Beach
37	La Habra-Fountain Valley	72	Sunset Beach-Tustin
38	Cerritos-Anaheim Hills	76	Huntington Beach-John Wayne Airport
42/A	Long Beach-Orange	79	Tustin-Newport Beach
43	Fullerton-Costa Mesa	82	Foothill Ranch-Rancho Santa Margarita
46	Seal Beach-Orange	83	Fullerton-Laguna Hilles
47	Fullerton-Balboa	85	Mission Viejo-Laguna Beach
50	Long Beach-Orange	86	Costa Mesa-Mission Viejo
53	Anaheim-Irvine	87	Rancho Santa Margarita-Laguna Niguel
54	Garden Grove-Orange	89	Mission Viejo-Laguna Beach
55	Santa Ana-Newport Beach	90	Tustin-Dana Point
56	Garden Grove-Orange	91	Laguna Hills-San Clemente

TABLE 2 COMMUNITY ROUTES

Route	Destinations	Route	Destinations
123	Anaheim-Huntington Beach	167	Orange-Irvine
129	La Habra-Anaheim	177	Foothill Ranch-Laguna Hills
143	La Habra-Brea	178	Huntington Beach-Irvine
150	Santa Ana-Costa Mesa		

TABLE 3 METROLINK STATIONLINK ROUTES

Route	Destinations	Route	Destinations
453	Orange Transportation Center-St Joseph's Hospital	473	Tustin Metrolink Station-UCI
472	Tustin Metrolink Station-Irvine Business Complex	480	Irvine Metrolink Station-Lake Forest

TABLE 4 OC BUS RAPID ROUTES

Route	Destinations	Route	Destinations
529	Fullerton to Huntington Beach	553	Anaheim-Costa Mesa
543	Fullerton Transportation Center-Costa Mesa	560	Santa Ana-Westminster

TABLE 5 CITY SHUTTLES

Route	Destinations
862	Santa Ana Regional Transportation Intermodal Center-Civic Center

Maps of the service provided by each route category on weekdays and weekends are shown in Figures 6 and 7. Figure 8 shows evening peak frequency levels. Corridors on which multiple routes operate show levels of service provided by all route categories combined. Generally, frequency levels match weekday ridership patterns, with high-ridership corridors supported by 15- minute or better service (see weekday ridership map on page 21).

FIGURE 6 WEEKDAY SERVICE BY CATEGORY

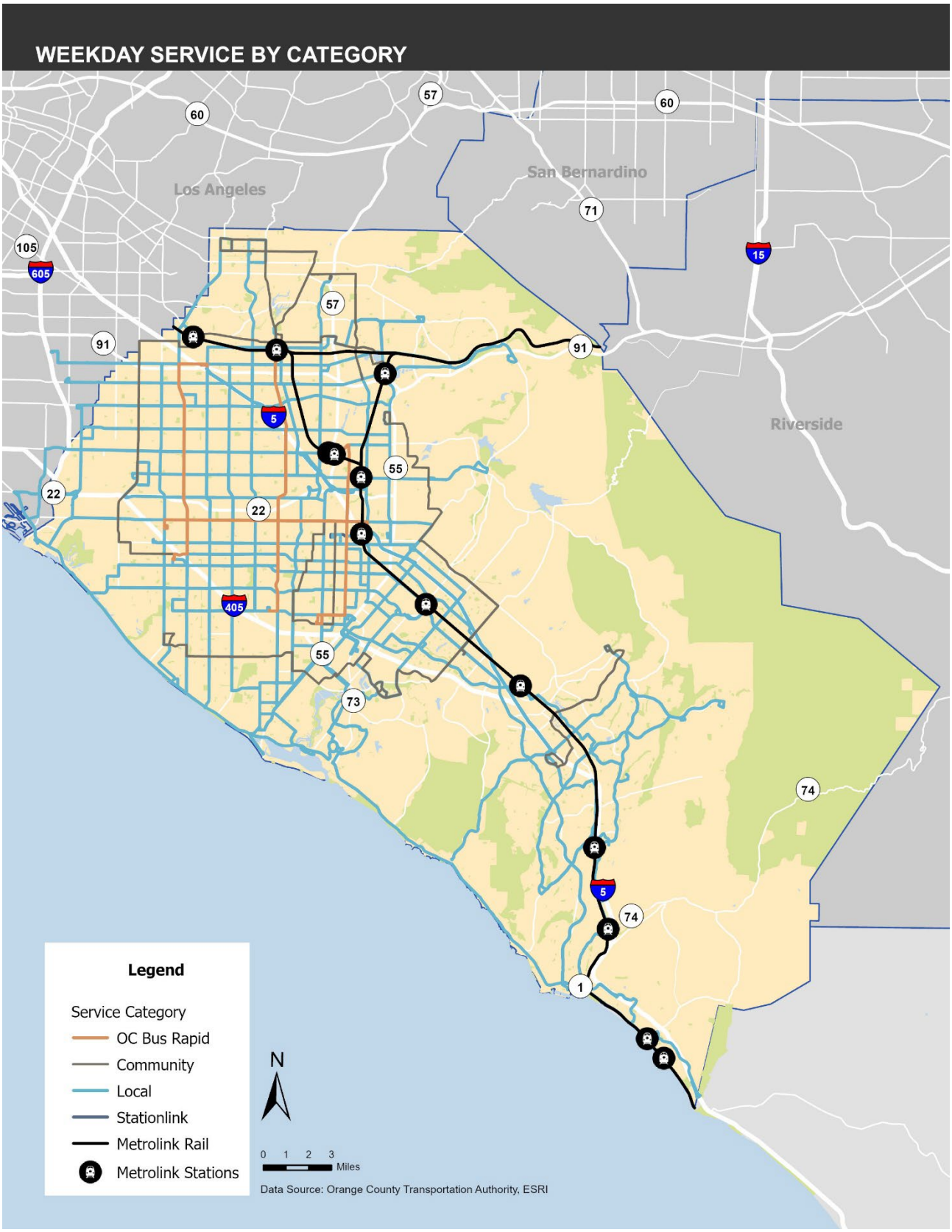


FIGURE 7 WEEKEND SERVICE BY CATEGORY

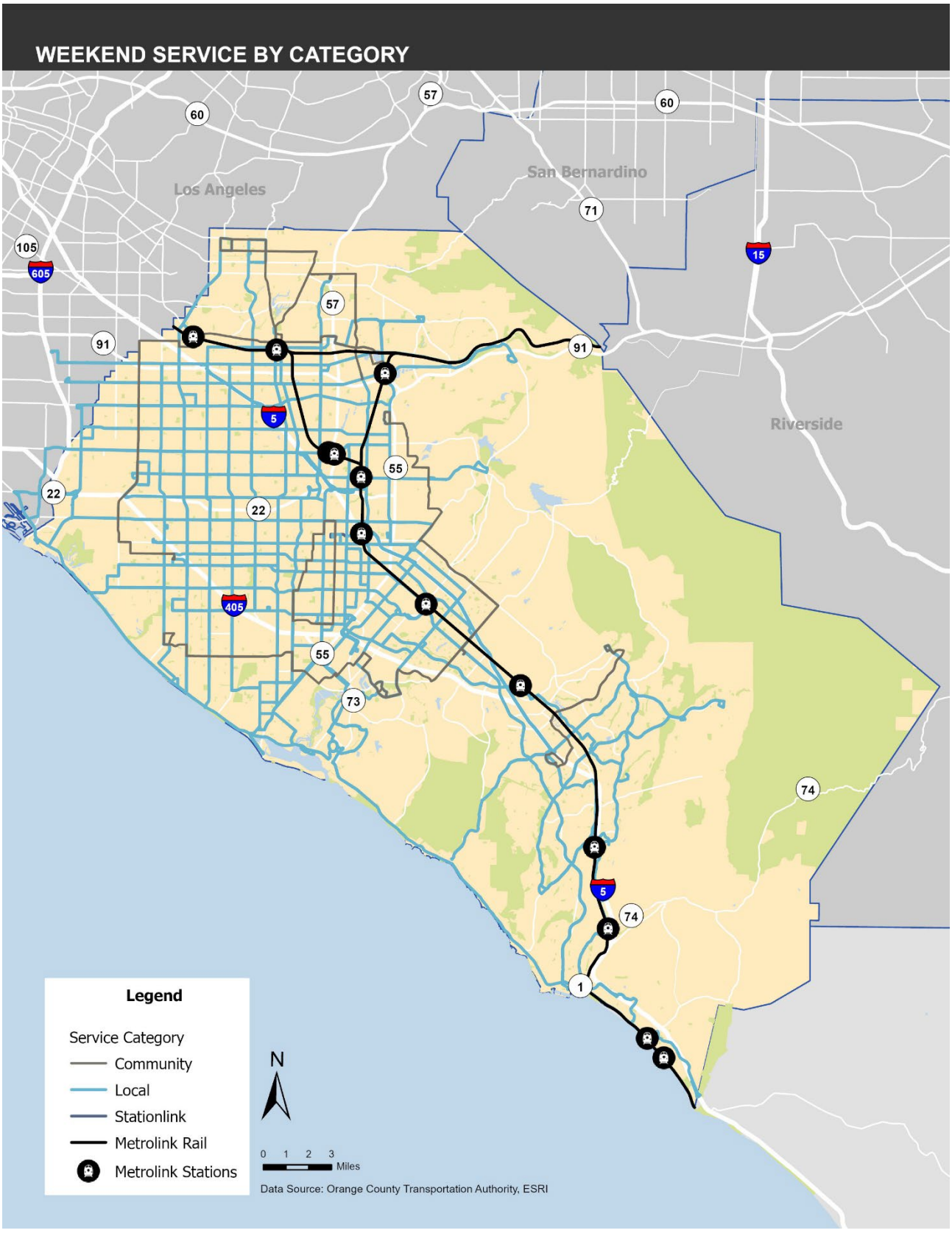
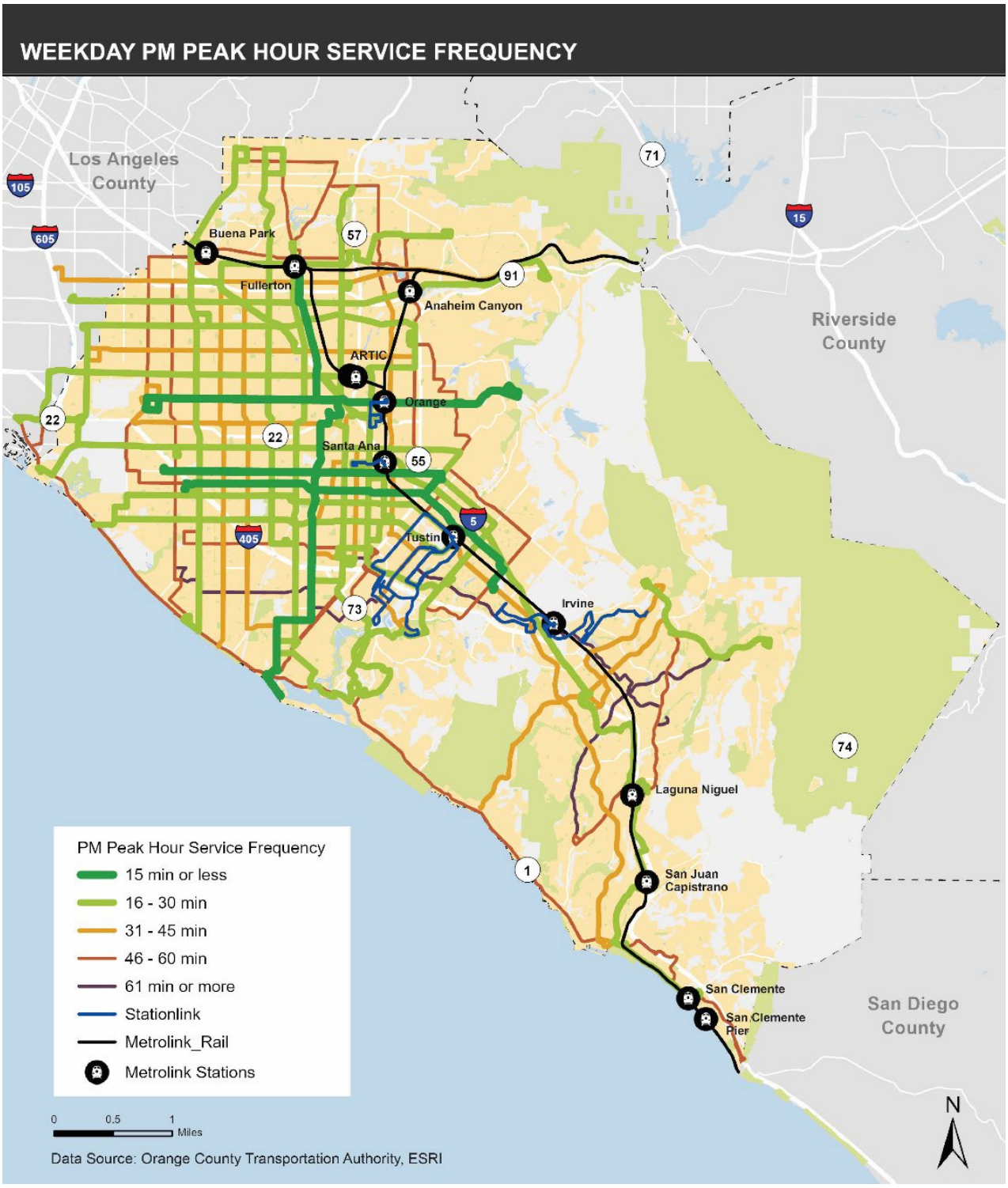


FIGURE 8 WEEKDAY PM PEAK HOUR SERVICE FREQUENCY



OC Bus Ridership

Figure 9 illustrates a comparison of bus ridership among peer agencies since the coronavirus pandemic in early 2020. OCTA was roughly in line with other regional agencies at the start of the pandemic when ridership dropped to around 33% of pre-pandemic levels. As of September 2023, OC Bus returned to 96% of pre-pandemic levels, while regional agencies and the national average ranged from 66% to 82% of pre-pandemic levels.

FIGURE 9 BUS RIDERSHIP RECOVERY SINCE THE CORONAVIRUS PANDEMIC

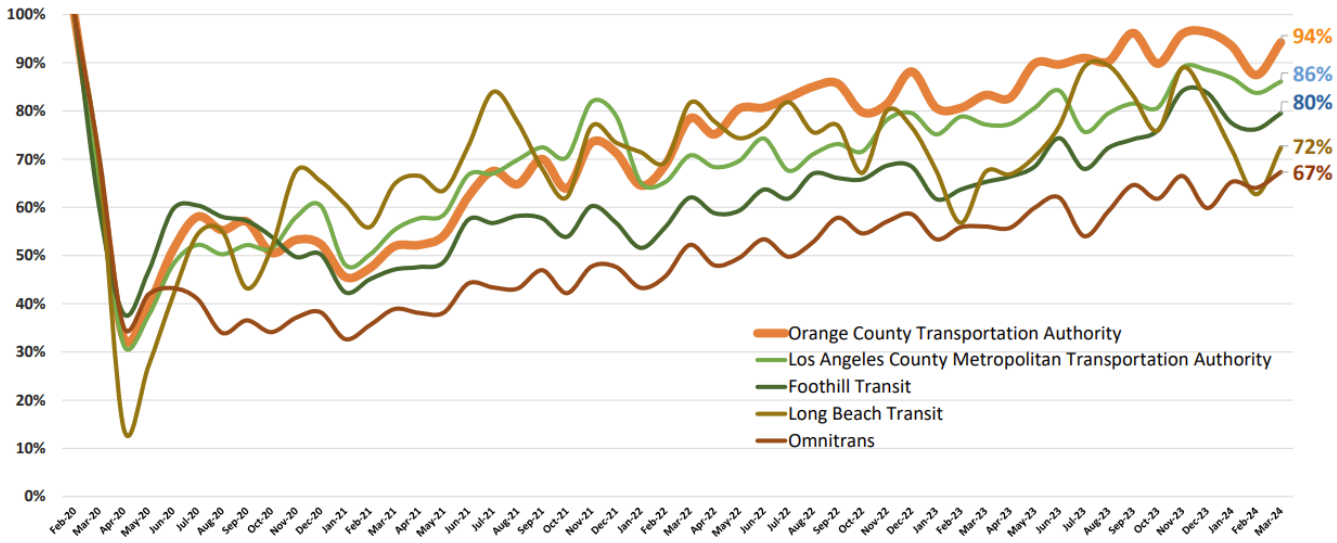


Figure 10 to Figure 12 illustrate Weekday, Saturday, and Sunday stop-level ridership. Ridership volumes are notably higher north of State Route 55. In North Orange County, ridership is concentrated heavily in Santa Ana and is highest where many corridors intersect. Because of transfers, The Beach Boulevard, Harbor Boulevard, Westminster Boulevard, and Main Street corridors served by OC Bus Rapid routes stand out as major spines for the system. In addition, the Bristol Street/State College Boulevard corridor has a strong ridership market. Ridership declines overall on Saturday and Sunday but maintains a similar pattern.

In South Orange County, weekday ridership centers around Metrolink stations and transit hubs such as the Laguna Hills Transportation Center and local high schools. On Saturdays and Sundays, ridership at these transit hubs decreases significantly, as Stationlink does not operate.

FIGURE 10 WEEKDAY BUS BOARDINGS BY BUS STOP

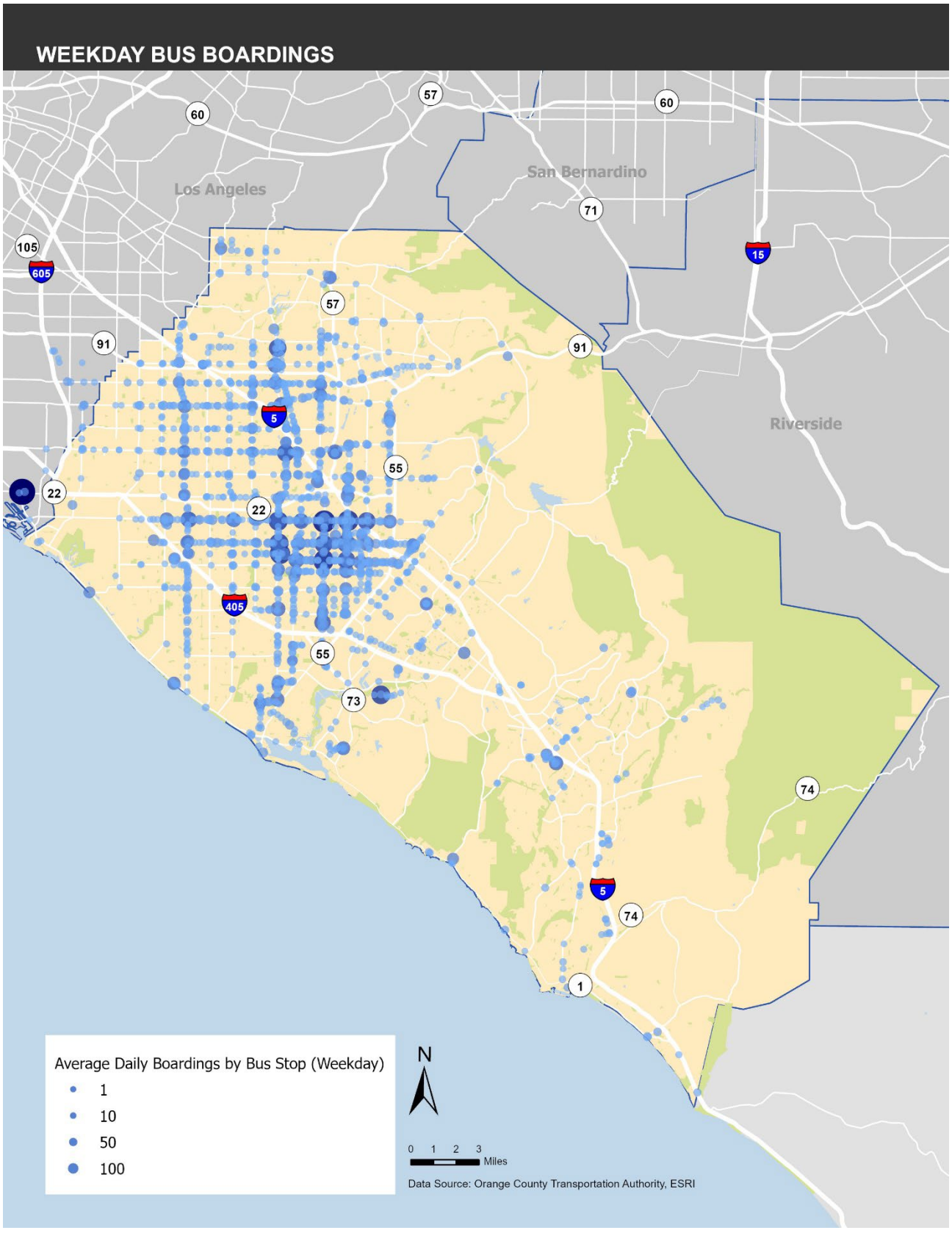


FIGURE 11 SATURDAY BUS BOARDINGS BY BUS STOP

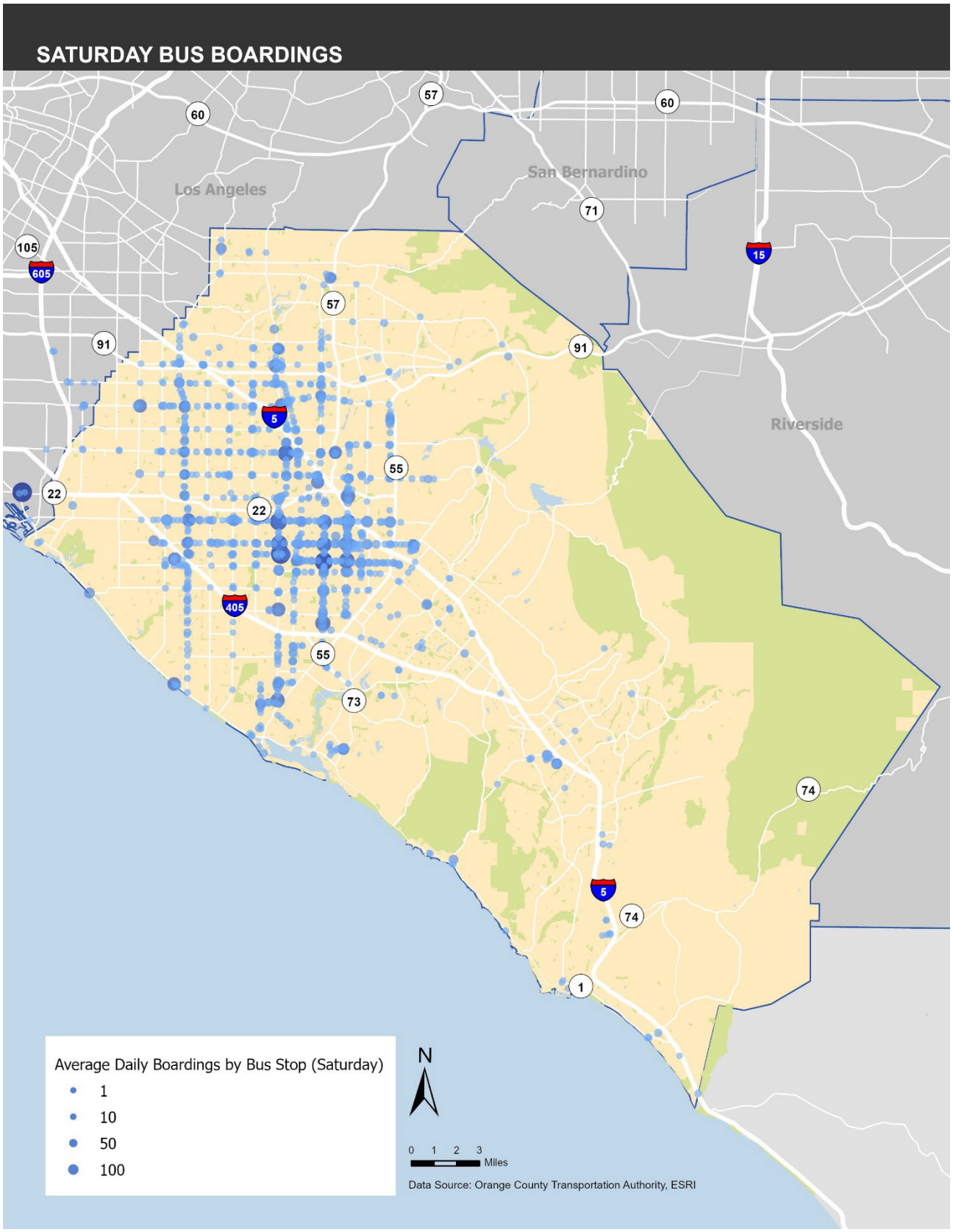
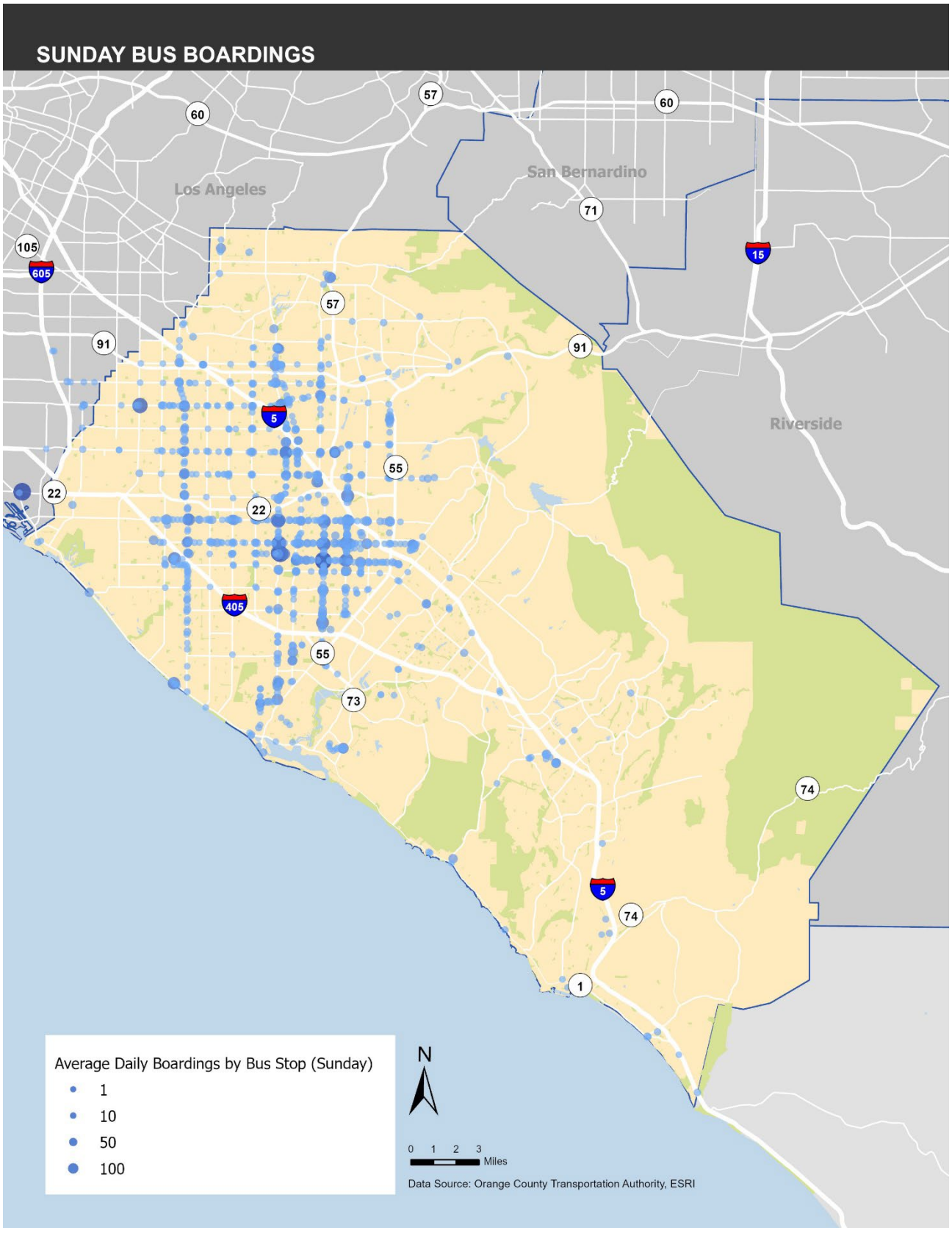


FIGURE 12 SUNDAY BUS BOARDINGS BY BUS STOP



OC Bus Rapid

OCTA's OC Bus Rapid service includes four limited-stop routes: Route 529 in the Beach Boulevard corridor, running north-south between Fullerton and Huntington Beach; Route 543 in the Harbor Boulevard corridor, running north-south between Fullerton and Costa Mesa; Route 553 in the Main Street corridor, running north-south between Anaheim and Costa Mesa; and Route 560 in the Westminster Boulevard/17th Street corridor, running east-west between Santa Ana and Westminster.

OC Bus Rapid is an example of partial or light bus rapid transit (BRT). The distinction between full and partial BRT or rapid bus as a transit mode is described in more detail in Chapter 7 of this document. The routes are faster and more reliable, convenient, and attractive than typical local bus service. The most notable feature is limited stop spacing, with stops as much as a mile apart serving only the busiest locations, such as transfer points and major destinations.

OC Bus Rapid service runs relatively frequently all day on weekdays. Buses are specially branded to be more recognizable and visible. OC Bus Rapid is similar to the Metro Rapid service operated by LA Metro, with its highly recognizable red buses. OC Bus Rapid service, however, does not feature other elements of "full" BRT, such as transit priority at signalized intersections, exclusive transit lanes, or full stations (rather than stops) with more passenger amenities. The sbX Green Line in San Bernardino is a local example of full BRT.

Additional corridors were considered for OC Bus Rapid service in the 2018 OC Transit Vision, including Bristol Street, State College Boulevard, La Palma Avenue, Lincoln Avenue, Chapman Avenue, McFadden Avenue, Bolsa Avenue, and an extension on Harbor Boulevard. As discussed below, existing Routes 543 and 560 intersect at the future OC Streetcar terminus in Garden Grove at the intersection of Harbor Boulevard and Westminster Avenue. Route 553 will intersect with the OC Streetcar at Main Street in downtown Santa Ana.

OC Bus Fares

Current OC Bus fares are shown in Table 6.

TABLE 6 SUMMARY OF OC BUS FARES

	Adult	Senior/Disabled
Regular		
Cash Fare	$2.00	$0.75/$0.25*
Day Pass	$5.00	$1.50
30-Day Pass	-	-
Prepaid		
Cash Fare	-	-
Day Pass	$4.50	$1.35
30-Day Pass	$69.00	$22.25

** $0.25 Fare is for OC ACCESS Customers Only*

In addition to discounted fares for those 60 or older, people with disabilities, and Medicare cardholders, OCTA provides free bus service to and from K-12 schools for youth ages 6 to 18 through the Youth Ride Free Program. The agency also offers a variety of discounted College Passes for students at participating colleges and U-Passes for students and employees of Cal State Fullerton, UC Irvine, and Chapman University (rates vary by campus). Finally, OCTA offers discounted Perk Passes through employers good for $1.25 trips up to a maximum cost of $69 per month.

OCTA offers mobile ticketing via an OC Bus smartphone app. Using the app, riders load a pass or one-way cash fare onto their phone, then activate their ticket or pass from within the app and show it to the bus operator upon boarding. Paper passes are still sold online and at more than 100 retailers, including major supermarket chains. The development of a new rider validation system and transit pass with contactless technology is underway now.

Information on fixed-route bus schedules and other transit services offered by OCTA can be found on the OCTA website, which provides free PDF copies of the most current bus book. Bus book information is also available via physical copies as well as through the OC Bus app.

OCTA maintains interagency agreements with LA Metro, Long Beach Transit, and the Riverside Transit Agency that provide free transfers for passengers traveling across county lines. The agreement also gives Metrolink/Amtrak riders free trips to and from Metrolink stations.

COSTS

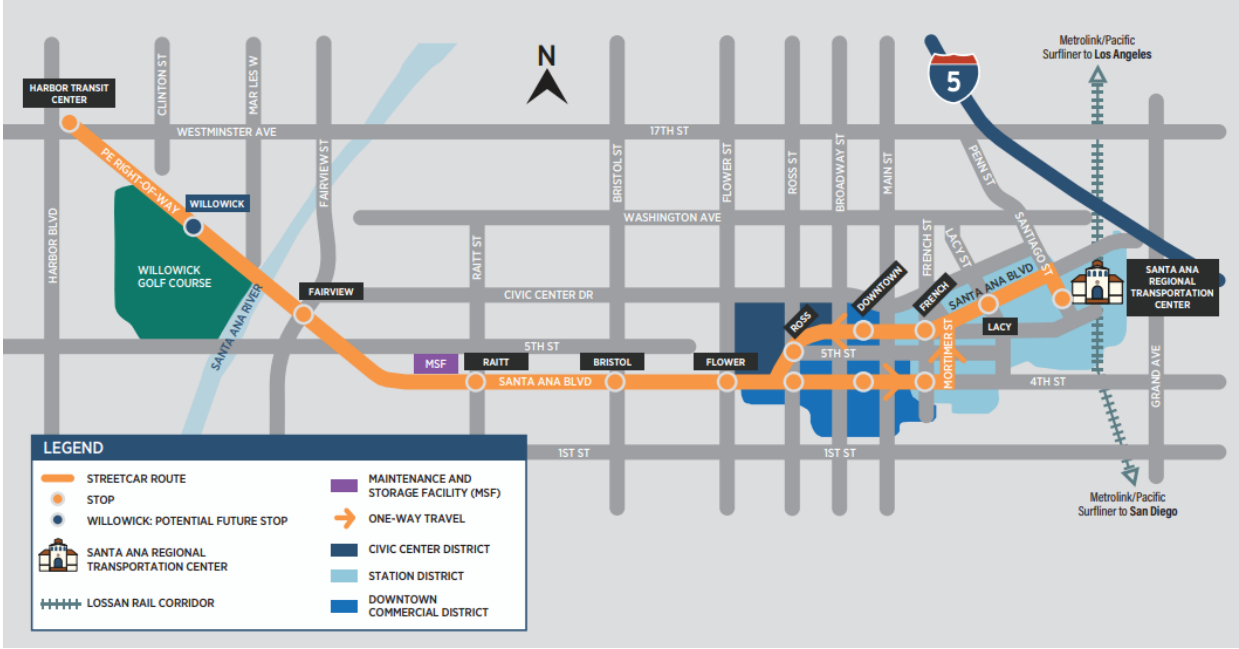
Compared to driving, the cost to ride transit in Orange County is a bargain. Between the cost of buying or leasing a car, gas, maintenance, insurance and fees, AAA estimates that the cost of owning and operating a new vehicle in 2022 is $10,728. This is a nationwide estimate that doesn't reflect the higher costs of driving in California.

OC Streetcar

The OC Streetcar will be Orange County's first urban rail line. Scheduled to open in 2026, it will run more than four miles from the Santa Ana Regional Transportation Center, through Downtown Santa Ana, and terminate at the intersection of Harbor Boulevard and Westminster Avenue in Garden Grove. This intersection with OC Bus Rapid Routes 543 and 560 will become a key transit connection point.

The OC Streetcar is the first fixed-guideway feeder connection to the Metrolink rail spine funded through Project S ("Transit Extensions to Metrolink") as part of the 2006 Measure M sales tax renewal. The $298 million project was awarded a matching federal grant and is now in its final construction phase.

FIGURE 13 OC STREETCAR ROUTE



The OC Streetcar will be a modern streetcar line like those in Portland (Oregon), Seattle, and Tucson. Modern streetcars are larger, provide a smoother ride, and are typically more comfortable than buses; however, most are single cars and are significantly smaller than light rail trains. They also typically operate in mixed traffic, as the OC Streetcar will in its segment in Downtown Santa Ana. Outside of Downtown Santa Ana, stops will be spaced relatively far apart—more than a half-mile on average, compared to roughly a quarter-mile downtown—to allow greater speed and reliability than local bus service. Stops will include shelters and other amenities.

3.2 METROLINK AND AMTRAK

Orange County is one of six coastal counties served by the 351-mile LOSSAN Rail Corridor linking San Diego, Los Angeles, and San Luis Obispo. The corridor is the second busiest intercity rail corridor in the U.S. (second only to

the northeast corridor that connects Boston and Washington, D.C.), serving 3.7 million[1] people annually with Metrolink, COASTER, and Amtrak services. The LOSSAN Rail Corridor Agency is a joint powers authority staffed by OCTA.

Both Amtrak and Metrolink serve Orange County along the LOSSAN Corridor. Amtrak's Pacific Surfliner connects the Southern California coast between San Luis Obispo and San Diego. Metrolink's commuter rail serves the Los Angeles metropolitan area, connecting Los Angeles, Orange, Riverside, and Ventura counties. The Orange Line runs along the LOSSAN Corridor, the 91 Line to Riverside, and the Inland Empire-Orange County Line to San Bernardino and Riverside.

Orange County is home to 12 Metrolink stations, 11 of which are on the LOSSAN Corridor, with plans to add an additional station in Placentia that will serve the 91 Line. Of these stations, five are shared by Metrolink and Amtrak. The joint Rail 2 Rail program allows Metrolink Monthly Pass holders along the Orange Line to take advantage of overlapping services: holders have access to Amtrak Pacific Surfliner trains at no additional cost between the station pairs identified on their pass. There were more than 1.2 million boardings at Orange County stations during the 2022-2023 fiscal year.

The Irvine and Santa Ana stations have the highest level of service among Orange County stations, with 53 daily trains. Service at the Irvine and Santa Ana stations runs from 4:15 a.m. to 11:12 p.m. and 4:28 a.m. to 11:01 p.m., respectively. Service averages two trains per hour in each direction and as many as three trains per hour during peak times. San Clemente Pier has the least service, with Amtrak providing two daily trips in each direction.

[1] *As of Fiscal Year 2022-2023. Includes passengers counted twice when transferring between rail segments due to multiple temporary track closures in San Clemente.*

TABLE 7 TRAIN SERVICE BY STATION (WEEKDAY, 2023)

		Northbound Trips		Southbound Trips	
Station	**Shared**	**Metrolink**	**Amtrak**	**Metrolink**	**Amtrak**
Buena Park	No	15	-	16	-
Fullerton	Yes	15	10	16	10
Anaheim	Yes	10	10	9	10
Orange	No	17	-	16	-
Santa Ana	Yes	17	10	16	10
Tustin	No	17	-	16	-
Irvine	Yes	17	10	16	10
Laguna Niguel/Mission Viejo	No	15	-	14	-
San Juan Capistrano	Yes	7	10	7	10
San Clemente	No	7	-	7	-
San Clemente Pier	No	-	2	-	2
Anaheim Canyon	No	7		7	

Metrolink and Pacific Surfliner fares are distance-based, but generally higher than bus fares. Metrolink offers discounted passes.

Performance

The Irvine Station generates the highest total ridership in Orange County, with 294,664 boardings during fiscal year 2022-2023. Of these boardings, slightly over half were on the Amtrak Pacific Surfliner. Fullerton served the second highest number of passengers at 216,939, with nearly 70 percent of those riding Metrolink trains. Ridership by station is shown in Figure 14. As shown in Table 8, Fullerton has the highest-ridership station pairs originating in the county. The four station pairs with the greatest ridership share Los Angeles as their destination.

FIGURE 14 METROLINK/AMTRAK STATION BOARDINGS

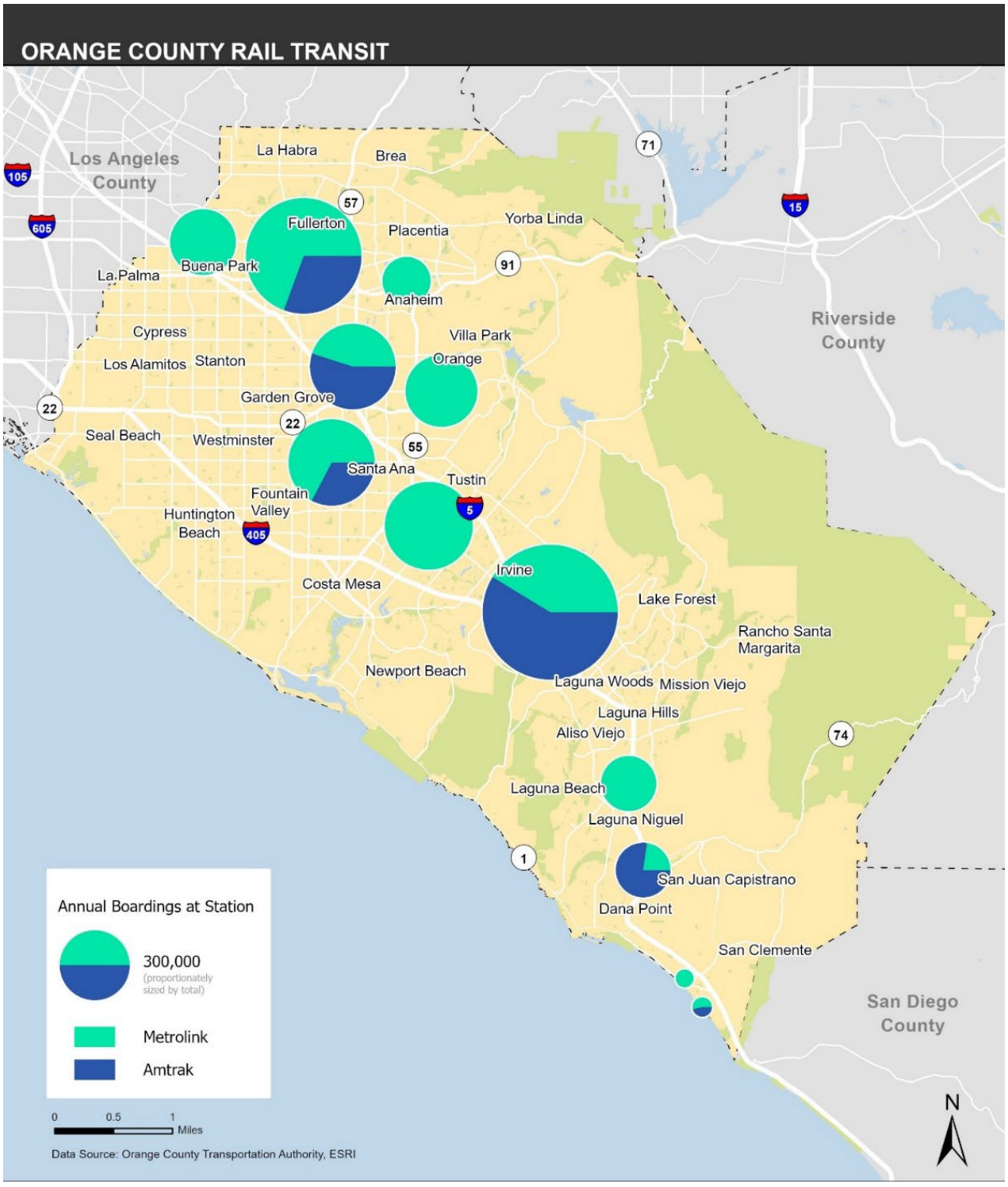


TABLE 8 HIGHEST RIDERSHIP STATION PAIRS ORIGINATING IN ORANGE COUNTY – 2022-2023 FISCAL YEAR

Station Pair	Ridership
Fullerton – Los Angeles	201,583
Irvine – Los Angeles	179,964
Buena Park – Los Angeles	108,084
Anaheim – Los Angeles	93,642
Orange – Riverside/La Sierra	25,931

3.3 COMMUNITY SHUTTLES AND CIRCULATORS

Project V

Project V, also known as the Community-Based Transit Circulator Program, is a funding program administered by OCTA. It utilizes Measure M2 funds to support local transit services that complement OCTA's regional bus and rail services, especially in underserved areas. Overall, Project V plays a crucial role in expanding transit options in Orange County, particularly in communities with limited access to regional services. By supporting a variety of transit modes, including traditional fixed-route, on-demand, and innovative solutions, it aims to improve mobility and connectivity for residents throughout the county.

Examples of transit projects funded through Project V include the Dana Point Summer Trolley and San Clemente Trolley.

A call for projects was issued in November 2023. OCTA requested letters of interest for a future round of Project V funding. Responses were received from 18 eligible local agencies and findings will be reported to the OCTA Board in fall 2024. The next call for projects is estimated in 2030, whereby OCTA will continue to partner with cities to determine underserved areas where transit funding can support local needs.

Anaheim Canyon Circulator

The City of Anaheim, in partnership with the Anaheim Transportation Network (ATN), operates a circulator route from the Anaheim Regional Transportation Intermodal Center (ARTIC) to downtown Anaheim. The route operates Monday through Friday and is scheduled to meet four morning and three evening Metrolink trains at ARTIC as of early 2024. Funding is provided through a partnership between the city of Anaheim and OCTA that utilizes Measure M funds.

Dana Point Summer Trolley

The City of Dana Point operates a free seasonal trolley service that runs in two loops (north and south) seven days a week during summer and on select weekends during fall. These loops connect the Dana Point Harbor

area with surrounding neighborhoods and neighboring trolley services, such as the Laguna Beach Trolley and San Clemente Trolley. The service begins in May and ends in October, with service generally operating every 15 minutes from 12 p.m. to 9 p.m. Mondays through Thursdays, 12 p.m. to 10 p.m. Fridays, 10 a.m. to 10 p.m. Saturdays, and 11 a.m. to 8 p.m. Sundays. Funding is provided through a partnership between the City of Dana Point and OCTA that utilizes Measure M funds. The service is also funded in part by Assembly Bill 2766 Subvention Funds.

Huntington Beach Rideshare Pilot Program

Huntington Beach has partnered with a rideshare company to operate an on-demand shuttle service serving various destinations around the city. This service operates 12:00 p.m. to 9:00 p.m. Monday through Thursday, 10:00 a.m. to 10:00 p.m. Friday and Saturday, and 10:00 a.m. to 9:00 p.m. on Sundays. Top attractions served by the shuttle include Main Street, Huntington Beach Pier, and Huntington City Beach. Customers can request a ride by downloading a smartphone application. Fares start at $2.00 for a single-person trip, with $2.00 added for each additional passenger added. Fares are capped at $6.00 per group. The service is a partnership between the City of Huntington Beach and OCTA that utilizes Measure M funds as well as Mobile Source Air Pollution Review Committee (MSRC) funds.

Irvine Shuttle (iShuttle)

The Irvine Shuttle provides weekday access to major employment destinations from local train stations. Routes 400A and 401B serve the Tustin Metrolink station and the Irvine Business Complex, while routes 402C and 403D connect passengers to the Irvine station and Irvine Spectrum areas. Routes are designed around Metrolink and Amtrak schedules to provide commuters and residents efficient service to and from the train stations. For peak period trips, shuttle services depart stations within 5 to 10 minutes of train arrival, and shuttles drop off passengers within 5 to 10 minutes of train departure.

Annual ridership for the 2022 fiscal year on Irvine Shuttle services ranged from 1,949 for Route 402C to 13,580 for Route 401B. Fares are $1, but riders may present a valid Metrolink pass or ticket to ride the shuttle for free. Previously operated by the City of Irvine, the iShuttle had been operated by OCTA since July 2016.

La Habra Special Event Service

The City of La Habra offers city-led shuttle services from three satellite parking lots to high-volume special events each year. Funding for the shuttle is through a partnership between the City of La Habra and OCTA, funded by Measure M.

Laguna Beach Trolley Services

The City of Laguna Beach, in partnership with OCTA, runs three free seasonal bus routes providing local circulation within Laguna Beach. Laguna Beach also offers after-school trolley service to students at both the local middle and high school. In addition to fixed route trolley service, Laguna Beach operates a free on-demand

shared ride service called Laguna Beach Local that connects visitors and residents to various city amenities. Customers can book trips along former Laguna Beach Trolley routes as well as several newer "virtual" stops located throughout the city.

FIGURE 15 LAGUNA BEACH TROLLEY MAP

Source: City of Laguna Beach.

Laguna Niguel Summer Trolley

The Laguna Niguel Summer Trolley provides free service along a single specified route from Memorial Day weekend to Labor Day weekend. Service is provided in part by funding from OCTA through Measure M. Destinations served by the trolley include the Laguna Niguel Library/Civic Center, Ritz-Carlton Resort, Salt Creek Beach, and Crown Valley Mall. The trolley runs every 20 minutes Thursday through Sunday, as well as holidays. Hours of service are as follows: Thursday 12 p.m. to 8 p.m., Friday/Saturday 9 a.m. to 10 p.m., and Sunday/Holidays 9 a.m. to 9 p.m.

Mission Viejo Local Transit Circulator

The City of Mission Viejo, in partnership with OCTA, operates the free Mission Viejo Local Transit Circulator service to connect high schools, Saddleback College, medical centers, shopping centers, and the Laguna

Niguel/Mission Viejo train station. The service is a partnership between OCTA and the City of Mission Viejo, funded by Measure M.

Newport Beach Balboa Peninsula Trolley

Newport Beach offers a free seasonal trolley service in partnership with OCTA that runs through the Balboa Peninsula neighborhood of the city, traveling southbound from the Avon Street parking lot to Balboa Pier before looping back to the start of the route. The trolley is only operational during the summer, beginning on Memorial Day weekend and ending on Labor Day weekend. Service runs every 15 minutes from 10 a.m. to 9:30 p.m. on weekends and select holidays. Funding for the trolley is provided in part through a partnership with OCTA that utilizes Measure M funds.

County of Orange RanchRide

The County of Orange's RanchRide promotes and enhances the use of shared transportation resources to benefit the community of Rancho Mission Viejo and Ladera Ranch. The shuttle focuses on getting passengers around the neighborhood for key activities such as Signature RanchLife events and other special events and day trips. For most community events, RanchRide runs as a 'circulator' with service every 30-40 minutes, or as otherwise noted. RanchRide is a partnership with the County of Orange and OCTA, funded by Measure M.

San Clemente Trolley

San Clemente and OCTA have partnered to provide a free local trolley service funded by Measure M. The seasonal service consists of two lines (northbound and southbound) that operate every 15-25 minutes on weekdays from 12 p.m. to 10 p.m., Saturdays from 10 a.m. to 10 p.m., and Sundays from 10 a.m. to 8 p.m. Special hours of operation on holidays are also provided. Destinations served by the trolley include the pier, San Clemente High School, Del Mar Shopping District, the Outlets at San Clemente, and the San Clemente North Beach Metrolink Station.

San Clemente On-Demand Rideshare

The City of San Clemente launched the SC Rides rideshare program in 2018. The service was established to address the loss of OCTA fixed-route service. The city contracts with private transportation services to be the official rideshare providers in the area. SC Rides operates daily, including weekends from 6 a.m. to 8 p.m. Passengers use the discount code SCRIDES to enable to them to take a ride for $2. Funding for SC Rides is through a partnership between the City of San Clemente and OCTA, funded by Measure M.

San Juan Capistrano Trolley

The City of San Juan Capistrano provides a free special event and summer trolley service that operates on weekends from June through early September. The trolley is offered through a Measure M partnership with

OCTA and allows customers to travel to destinations such as Mission San Juan Capistrano and the San Juan Capistrano Metrolink Station, as well as transfers to the Dana Point Summer Trolley Service. Service frequency is 20 minutes, and the hours of operation are 11 a.m. to 9 p.m. Saturdays and 11 a.m. to 7 p.m. Sundays.

3.4 OTHER TRANSPORTATION SERVICES

OC Vanpool

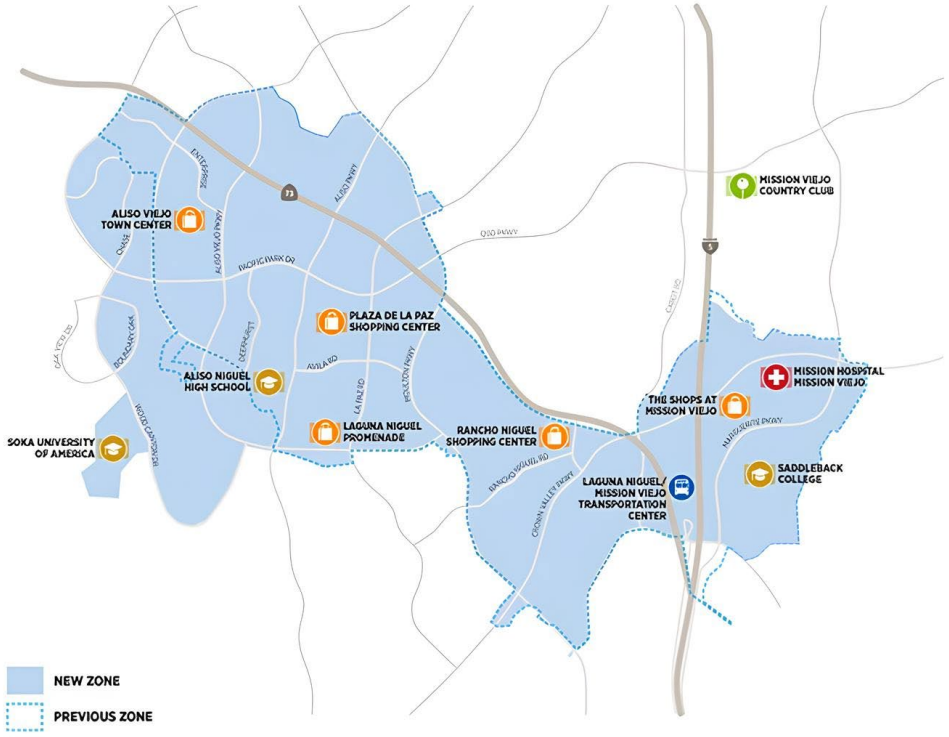
OCTA's OC Vanpool Program offers a subsidized, month-to-month shared commuting option for groups of seven to fifteen people traveling to workplaces within Orange County. To qualify, vanpools must maintain at least 50 percent occupancy, remain open to nearby riders, and report monthly ridership and expenses. The program benefits both employees and employers by decreasing commute costs and offering reliable transportation.

Prior to the coronavirus pandemic, there were over 450 vanpools operating in Orange County. The long-term growth trend is favorable as many commuters are returning to their workplaces, notwithstanding, on hybrid work schedules. Despite the pandemic related decline, funding for the program has not been affected. Based upon the past five reporting years, OCTA paid $11.6 million in monthly vanpool subsidies and received more than $25 million in increased Federal allocation of transit capital funds. Since vanpool vehicles have seven to fifteen seats and must be at least 50 percent occupied, this means that daily combined ridership on vanpools totals several thousand—more than many OC Bus routes. Additionally, vanpools require a lower subsidy than express bus service. Vanpooling is an essential component of the transportation system in Orange County, even more so because it reduces traffic congestion during peak periods.

OC Flex

OC Flex is a microtransit pilot program to explore the potential of on-demand, shared-ride services where fixed-route bus service is limited. For $4.50, riders have access to unlimited local rides all day within the OC Flex zone. The current zone operates in south Orange County in parts of Aliso Viejo, Laguna Niguel, and Mission Viejo.

FIGURE 16 OC FLEX SERVICE ZONE



Special Event Services

Special event services help introduce new riders to OCTA, who may then become regular riders. The OC Fair Express bus service and Metrolink's Angels Express train service are supported by OCTA to reduce congestion and encourage transit ridership to events where parking availability is limited. The 2028 Olympic Games, which is expected to attract 10–15 million visitors, is being designed as a car-light event prioritizing public transportation. OCTA is committed to maintaining efficient transit services for both daily commuters and Olympic attendees. OCTA is coordinating with regional partners to determine Olympic venue locations and transportation strategies that support demand. OCTA will continue to explore opportunities to expand its special event services after the Olympic Games.

3.5 OC ACCESS SERVICE

OC ACCESS is OCTA's complementary Americans with Disabilities Act (ADA) paratransit service for people who are unable to use fixed-route bus services. As required under ADA, service is provided "curb to curb" (and in some cases "door to door") within three-quarters of a mile of fixed routes.

Passengers must be certified eligible for the service based on ADA criteria related to physical and cognitive ability and may be accompanied by a personal care attendant or one or more fare- paying companions, depending on space limitations. Passengers must also request a trip at least one day (and up to three days) in advance. Service hours are comparable to those of local bus services.

OC ACCESS offers two types of ADA service:

- Standard curb-to-curb service, which requires trips to be requested in advance ($3.60 per one-way trip)
- Subscription service, which schedules recurring trips, such as a commute trip, without requiring an advance request ($3.60 per one-way trip)
- OCTA also offers same-day taxi service, available during the same times as standard curb-to-curb and subscription service. ($3.60 for up to roughly a five-mile trip) to OC ACCESS-eligible passengers.

In FY 2023, OC ACCESS accounted for 3.2 percent of all OCTA boardings, which is slightly below the amount in FY 2015 (3.4 percent). Despite a decline in annual boardings since 2015, projected growth in the population of older Americans is expected to boost paratransit demand in the future.

3.6 REGIONAL CONNECTIONS

Anaheim Resort Transit

Anaheim Resort Transit (ART) serves resort guests, employees, and residents of Anaheim, providing connections to major attractions such as Disneyland, The Outlets at Orange, Anaheim Regional Transportation Intermodal Center (ARTIC), South Coast Plaza, Knott's Berry Farm, and several area hotels. Routes operate every day of the week. There were 8,289,646 ART boardings during the 2023 fiscal year.

Daily passes start at $6 for adults and $2.50 for children. Three-day ($16 adult/$3.50 children), five-day ($25/$5.50), 15-day ($51/$15), and 30-day passes ($69/$25) are also available. Passes may be purchased either on-board, via the A-Way WeGo app, or at ARTIC. OCTA accepts transfers from ART bus routes 1-17 at any stop where OCTA and ART buses connect directly. ART accepts transfers from OC Bus routes at stops where buses connect directly.

Los Angeles Metro

OCTA offers connections to Metro routes in LA County. Metro operates Express Route 460 connecting Downtown Los Angeles to Disneyland.

Metro accepts OC Bus one-day and 30-day bus passes from passengers transferring to inbound Metro route 62 and 460. OC Bus accepts monthly Metro bus passes, MTA TAP and MTA TAP cards with EZ stickers on most[2] bus stops along routes that serve Los Angeles County, or at stops where OC buses and Metro buses connect directly. Additionally, transfers are accepted from Metro 460 passengers at the following locations:

- Fullerton Park-and-Ride
- Disneyland East Shuttle Area
- Magnolia Avenue stops between Orangethorpe Avenue and La Palma Avenue
- La Palma Avenue stops between Magnolia Avenue and Beach Boulevard
- Beach Boulevard stops between La Palma Avenue and La Mirada Avenue

Foothill Transit

Foothill Transit serves the San Gabriel and Pomona Valleys of Los Angeles County. Service overlaps with OC Bus routes, providing connections at the following locations:

- Beach Boulevard/La Habra Boulevard – OC Bus routes 29, 129, and 143 connect with Foothill Transit 285, which takes passengers to destinations such as Whittier Hospital and Puente Hills Mall
- Brea Mall – OC Bus routes 57, 129, and 143 connect to Foothill Transit 286 with service to Diamond Bar and Pomona

Foothill Transit accepts OCTA monthly passes and day passes at these transfer locations.

Riverside Transit Agency

Riverside Transit Agency (RTA) provides service to western Riverside County. Thirty-two fixed-route bus services connect local communities while three CommuterLink express routes connect to regional transit facilities, shopping destinations, and business parks. CommuterLink Route 200 provides access to Orange County, connecting the Riverside Downtown Transit Terminal to the Village at Orange for $3.50. Route 200 connects to OC Bus routes 42, 43, 46, 50, 71, 83, 167, and 543. OC Bus one-day and multi-day passes are accepted on RTA Route 200 in Orange County (for base fare only).

Long Beach Transit

Long Beach Transit (LBT) serves Long Beach, Lakewood, Cerritos, Signal Hill, and Carson. LBT operates 38 bus routes that connect to transit services in neighboring communities, including 13 routes that connect to 7 OC Bus routes (see Table 10). LBT accepts OC Bus day passes for one transfer only on connecting routes. OCTA accepts LBT day passes on connecting OC Bus routes

[2] Note that MTA TAP cards are not accepted as transfers on OCTA Route 560

TABLE 9 OCTA-LBT CONNECTIONS IN LOS ANGELES COUNTY SERVING OCTA ROUTES

OCTA Route	Connecting LBT Routes
1	41, 91, 92, 93, 94, 121, 171
30	141, 172, 173, 192
38	191, 173
42	101, 102, 104, 171, 173
46	102, 104
50	41, 91, 92, 93, 94, 121, 171, 173
60	41, 91, 92, 93, 94, 121, 171

North County Transit District

The North County Transit District (NCTD) annually serves approximately 7 million passengers in north San Diego County. NCTD operates fixed-route and rapid-bus service throughout the region, commuter rail service connecting Oceanside to Downtown San Diego, and light rail service linking Oceanside to Escondido. It also operates paratransit and on-demand services in certain areas. Metrolink OC Line passengers possessing a valid Metrolink pass may use NCTD BREEZE bus routes and SPRINTER light rail services at no additional charge.

3.7 OCTA TRANSIT PERFORMANCE STATISTICS

As mentioned above, OCTA operates OC Bus fixed-route service, OC ACCESS paratransit service and OC Vanpool service. While most transit service consists of OC Bus (70 percent of revenue service hours in FY 2023), and OC Bus accounts for an even larger majority of all boardings (96 percent in 2023), other modes account for a large share of costs: 23 percent in FY 2023. As a result, costs per boarding are higher for other modes, such as paratransit which had a cost per boarding of $70 in FY 2023, compared to $6.93 for vanpool, and $7.91 for fixed-route.

The figures below compare historic (FY2015) and recent (FY2023) performance for each mode using different indicators of cost, utility, and cost-effectiveness. Most figures are from the National Transit Database. Commuter rail figures for Orange County are not included as the system is operated by Metrolink.

FIGURE 17 TOTAL OPERATING EXPENSES

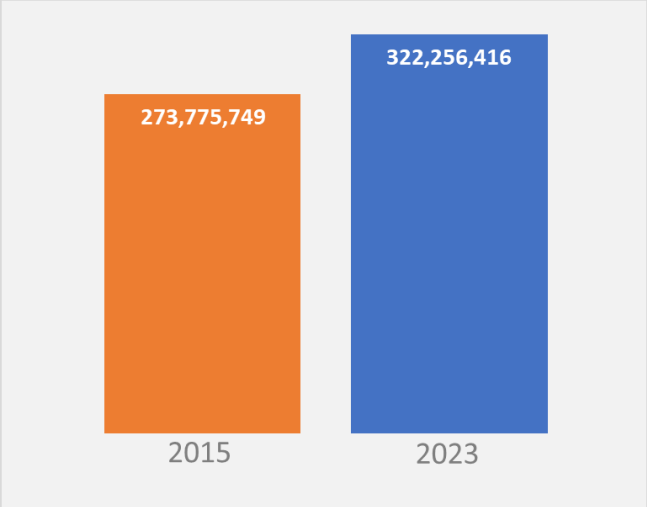


FIGURE 18 SERVICE AREA SIZE (SQUARE MILES)

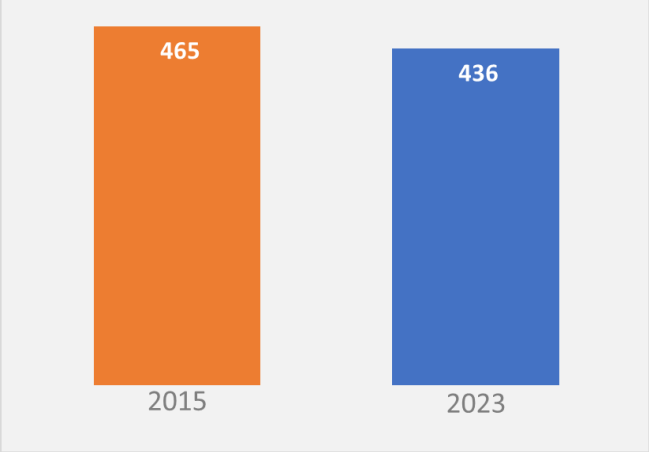


FIGURE 19 SERVICE AREA POPULATION

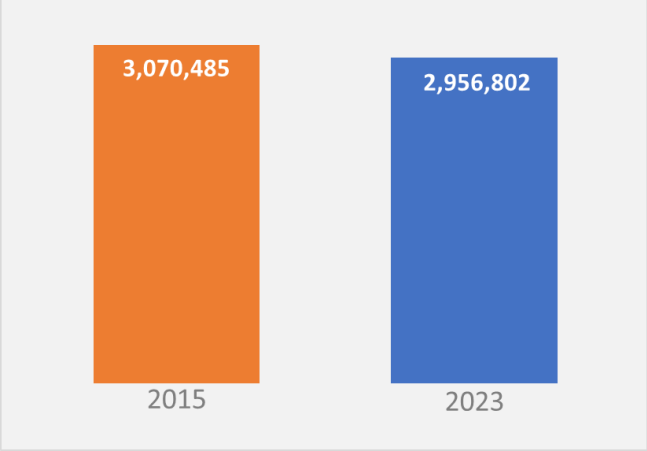


FIGURE 20 ALL BOARDINGS

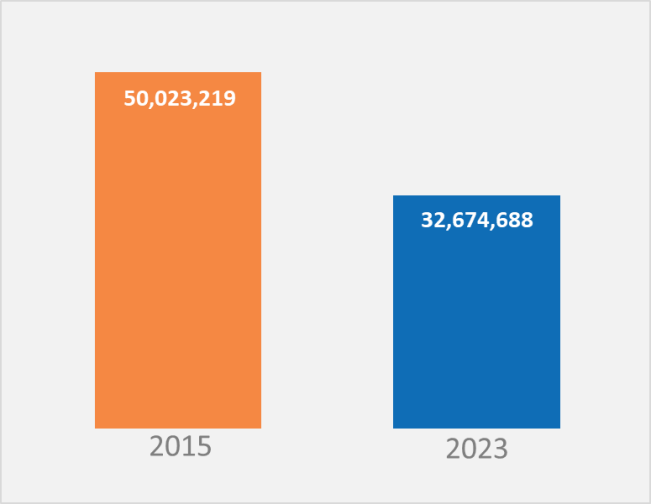


FIGURE 21 BOARDINGS BY MODE

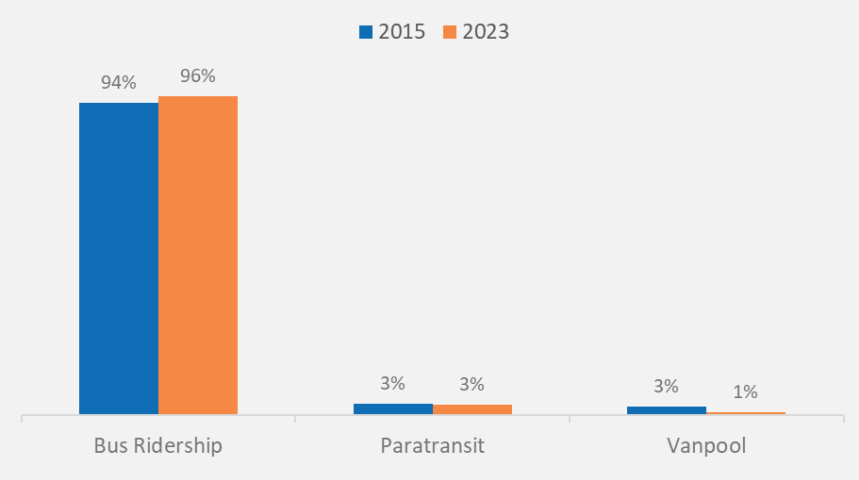


FIGURE 22 PASSENGER MILES (ALL MODES)

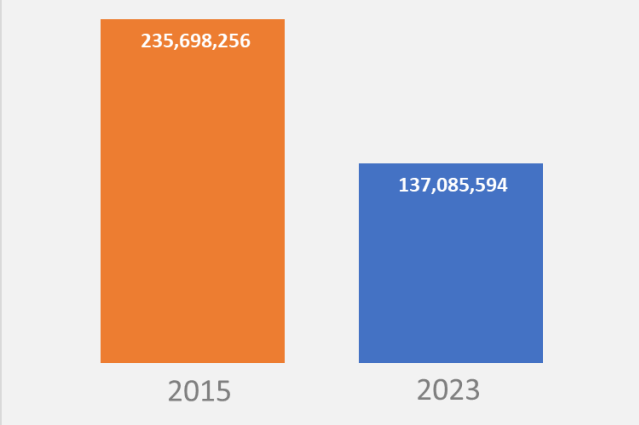


FIGURE 23 PASSENGER MILES (BY MODE)

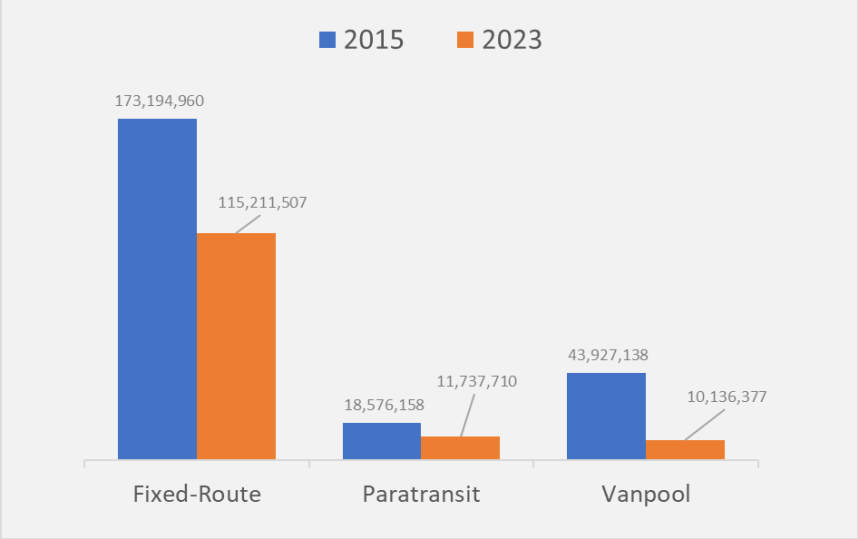


FIGURE 24 AVERAGE TRIP LENGTH (MILES)

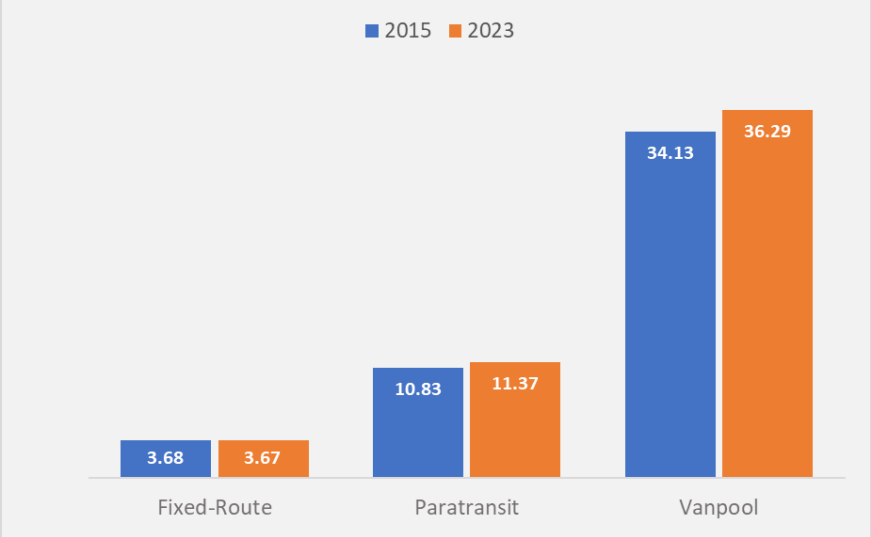


FIGURE 25 REVENUE HOURS (ALL MODES)

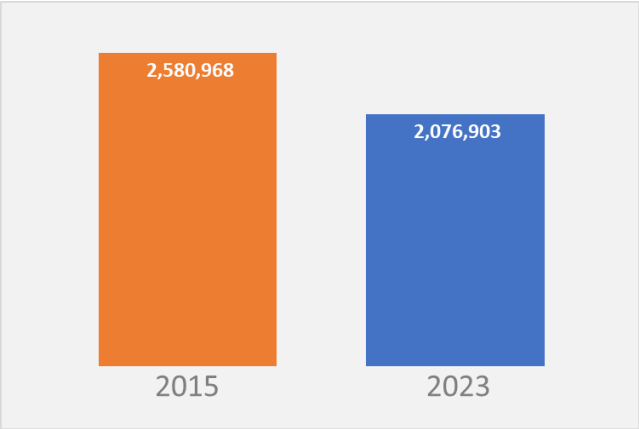


FIGURE 26 REVENUE MILES (ALL MODES)

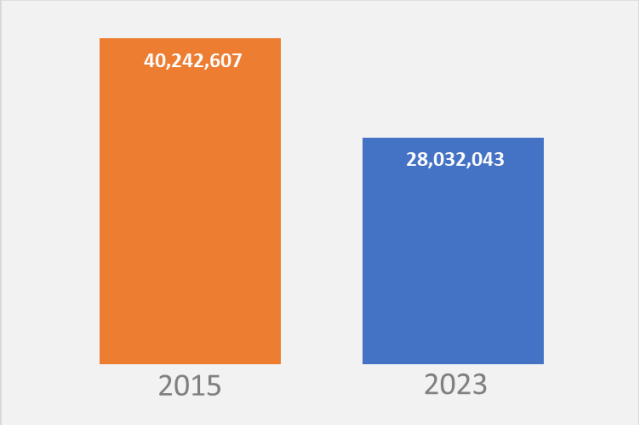


FIGURE 27 COST PER BOARDING

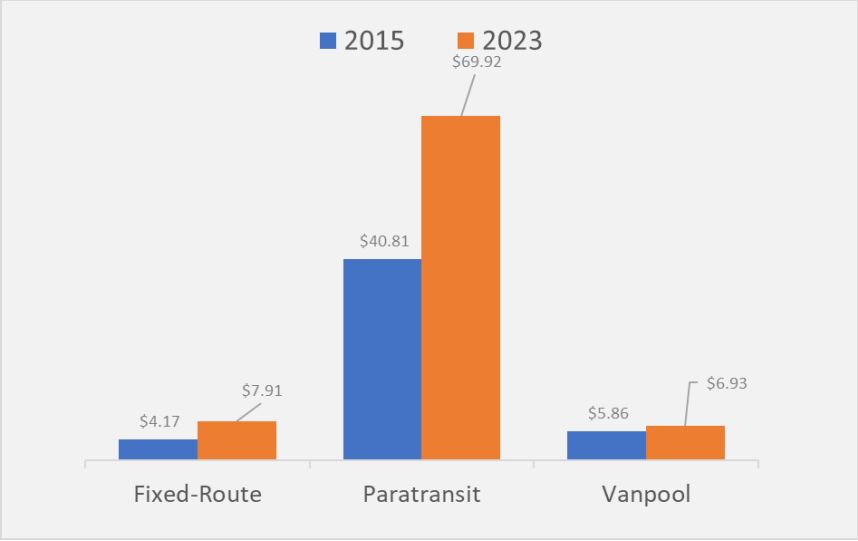
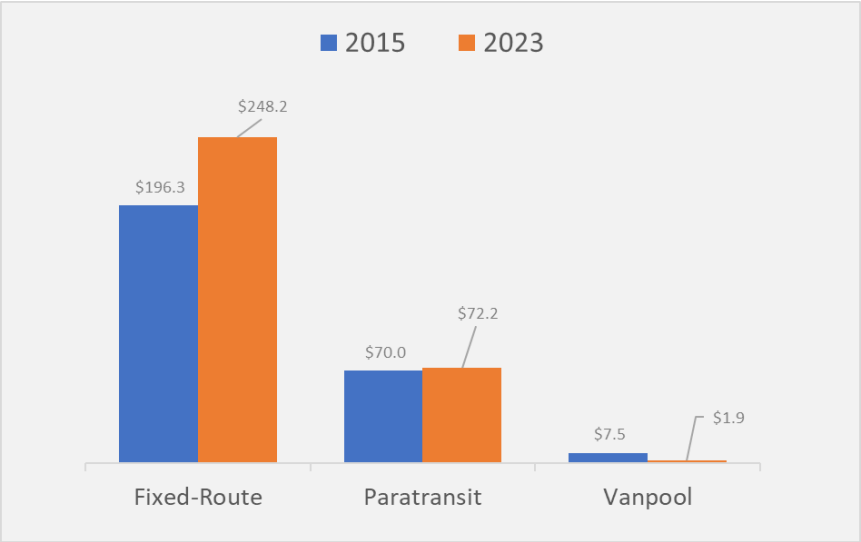
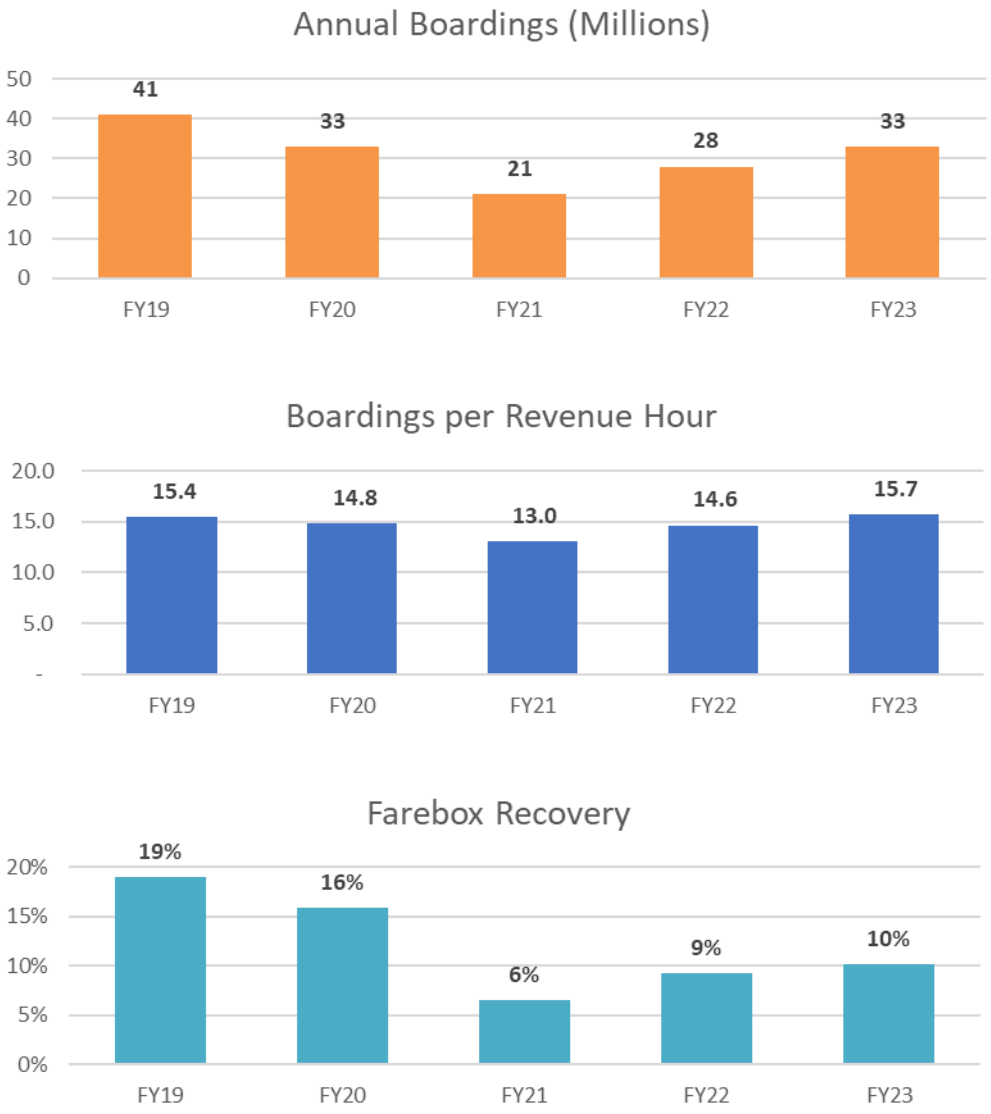


FIGURE 28 OPERATING COST (MILLIONS)



OC Bus ridership was nearly holding steady in the 40 million range annually prior to the coronavirus pandemic, then dropped significantly over 2020 and into 2021 to about half the level of pre-pandemic boardings. Boardings per revenue hour dropped as well, though only by about 16 percent, as some pandemic era service reductions were implemented, going from 15.4 to 13 boardings per revenue hour. Farebox recovery was actually ticking up before the pandemic but declined significantly to 6% in 2021 from a high of 19% in 2019. (Figure 29). Systemwide performance has slowly recovered since the pandemic.

FIGURE 29 SYSTEMWIDE PERFORMANCE TRENDS (FY19-FY23)



SECTION

4

TRANSIT FACILITIES

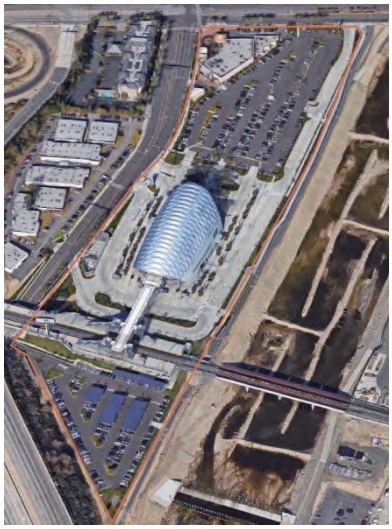
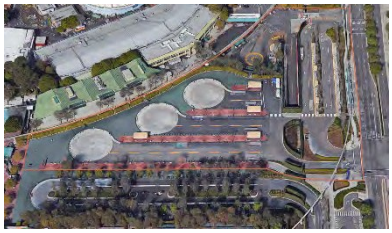
4.1 TRANSIT ACCESSIBILITY

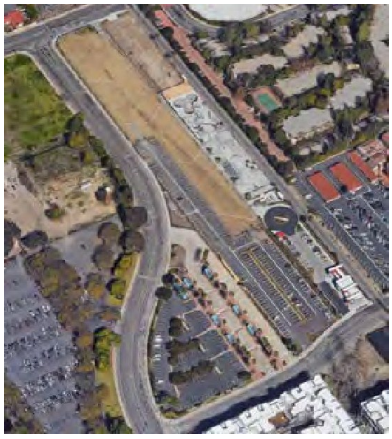
To function as efficiently and effectively as possible, transit must be integrated into the larger transportation network. This means providing high-quality, multimodal access to stops and stations. No transit trip takes place solely aboard buses or trains, or at stops or stations; each trip includes first-/last-mile connections from origins and to destinations.

This section describes major transit hubs in Orange County. These primarily consist of Metrolink stations, OCTA park-and-rides, and off-street bus transfer centers. These facilities serve as a major point of connectivity between transit routes and between transit and other modes. They are owned by various entities, including OCTA, cities and Caltrans.

TABLE 10 ORANGE COUNTY CAPITAL FACILITIES MATRIX

Facility	Metrolink	Transit Center	Park-and-Ride	Regional Connection	Parking Spaces	Bus Bays	Adjacent Bus Stops	Other Amenities
Anaheim Canyon Metrolink Station 	●	●	●		157	4	–	○ Bicycle parking ○ Shelters ○ Seating ○ 16 bicycle lockers

Facility	Metrolink	Transit Center	Park-and-Ride	Regional Connection	Parking Spaces	Bus Bays	Adjacent Bus Stops	Other Amenities
Anaheim Regional Transportation Intermodal Center (ARTIC) 	●	●	●		1,059	13	–	○ Bicycle parking ○ 24 bicycle lockers ○ Restrooms ○ Wi-Fi and charging stations
Buena Park Metrolink Station 	●	●	●		313	3	–	○ Restrooms ○ Sheltered seating ○ 6 bicycle lockers
Disneyland 		●		●	–	4	–	○ Sheltered seating ○ Pedestrian esplanade ○ Unsheltered seating
Fullerton Park-and-Ride 		●	●	●	764	14	5	○ Sheltered seating ○ Transit system information
Fullerton Transportation Center 	●	●	●		1,361	6	3	○ Sheltered seating ○ Bicycle parking ○ 48 bicycle lockers ○ Transit system information

Facility	Metrolink	Transit Center	Park-and-Ride	Regional Connection	Parking Spaces	Bus Bays	Adjacent Bus Stops	Other Amenities
Goldenwest Transportation Center 		●	●		321	10	2	○ Unsheltered and sheltered seating ○ Restrooms ○ Bicycle parking ○ Transit system information
Irvine Station 	●	●	●		1,650	8	3	○ Bicycle parking ○ 54 bicycle lockers ○ Restrooms ○ Indoor waiting/seating area
Laguna Hills Transportation Center 		●	●		168	12	3	○ Unsheltered and sheltered seating ○ Bicycle parking ○ Transit system information

Facility	Metrolink	Transit Center	Park-and-Ride	Regional Connection	Parking Spaces	Bus Bays	Adjacent Bus Stops	Other Amenities
Laguna Niguel/Mission Viejo Metrolink Station 	●	●	●		469	–	–	○ Shelter ○ Unsheltered seating ○ 20 bicycle lockers
Newport Transportation Center 		●	●		75	9	–	○ Sheltered seating ○ Bicycle parking ○ Transit system information

Facility	Metrolink	Transit Center	Park-and-Ride	Regional Connection	Parking Spaces	Bus Bays	Adjacent Bus Stops	Other Amenities
Orange Transportation Center 	●	●	●		500	3	–	○ Unsheltered seating ○ Shelter ○ Bicycle parking ○ 24 bicycle lockers
San Clemente Station 	●	●	●		155	–	3	○ Pedestrian shelter

Facility	Metrolink	Transit Center	Park-and-Ride	Regional Connection	Parking Spaces	Bus Bays	Adjacent Bus Stops	Other Amenities
San Clemente Pier Station 	●	●	●		150	–	1	○ Restrooms
San Juan Capistrano Metrolink Station 	●	●	●		355	–	2	○ Restroom ○ Sheltered seating

Facility	Metrolink	Transit Center	Park-and-Ride	Regional Connection	Parking Spaces	Bus Bays	Adjacent Bus Stops	Other Amenities
Santa Ana Regional Transportation Center 	●	●	●		591	10	2	○ Indoor waiting/seating area ○ Restrooms ○ 15 bicycle lockers ○ 12 additional bicycle stalls in bike hut
Tustin Metrolink Station 	●	●	●		940	8	–	○ Sheltered seating ○ Bicycle parking ○ 20 bicycle lockers

4.2 PEDESTRIAN ACCESSIBILITY

Most trips in Orange County are made by private car, but most trips to transit stops and stations are made on foot. In OCTA's most recent passenger survey, 81 percent of respondents walked to their stops, and 83 percent said they would walk from the bus to their final destination.[3] (The proportion of trips started by walking varies depending on context: most access to OCTA park-and-rides is by car, and train stations attract travelers from farther away, including those making connections from other transit services, biking, or driving longer distances.)

Walking to and from bus stops in Orange County can be difficult due to the largely auto-oriented nature of the built environment. This difficulty manifests itself in several ways:

- The street network in much of the county, particularly in South County where there is a limited street grid, is generally not as well connected as in more traditional walkable neighborhoods. The result is indirect pedestrian pathways and more out-of-direction travel. (This also impacts bus routes themselves, as fewer direct paths are available between neighborhoods; instead, South County streets are designed primarily to deliver cars to the freeway.)
- There are long distances between marked crossings on major streets, and long waits to cross at signals.
- The pedestrian experience is negatively impacted by speeding traffic, vehicle fumes, residential noise walls that create barriers, large parking lots fronting the sidewalk, and missing or poor-quality sidewalks.
- Similarly, pedestrian safety is compromised by high-speed traffic at pedestrian crossings and by intersection designs allowing for high-speed turns.

[3] OCTA Onboard Survey Administration and Data Processing Final Report

FIGURE 30 TYPICAL PEDESTRIAN CONDITIONS IN ORANGE COUNTY (BRISTOL STREET, SANTA ANA)

4.3 BICYCLE ACCESSIBILITY

OCTA provides bicycle racks on the front of every bus (available on a first-come, first-served basis), and allows folding bikes on board. The county's bikeway network, created and maintained through a partnership between OCTA and local cities, features more than 1,000 miles of designated bike routes. Bicycle accommodations on routes vary between streets that require lane sharing between cyclists and motorists, and streets that offer dedicated lanes for cyclists. The number of bikeways available to residents is expected to increase with the expansion of the OC Loop Plan, which calls for 66 miles of seamless connections between destinations both inland and along the coast. Currently, nearly 58 miles use existing off-street trails along the San Gabriel River, Coyote Creek, Santa Ana River, and the Coastal/Beach Trail.

4.4 PARK-AND-RIDES

While most bus stops do not have vehicle parking, OCTA and others maintain a number of park-and-ride facilities. These lots may include designated pick-up and drop-off areas for motorists, taxis, and ride-hailing services like Uber and Lyft.

SECTION

5

PLAN AND POLICY REVIEW

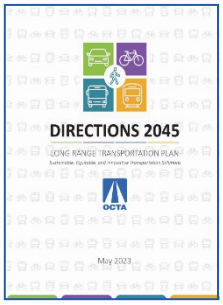
This chapter reviews plans, programs, and ongoing projects that affect the current and future state of transit and transportation in Orange County, focusing on points of emphasis and gaps or conflicts between the plans. Organized by geographic scope, the chapter identifies how each plan, program, and project support the expansion of existing and development of new transit services.

5.1 REGIONAL AND COUNTYWIDE PLANS AND POLICIES

Southern California Association of Governments (SCAG) Regional Transportation Plan / Connect SoCal (Proposed Final Complete Report, 2024)

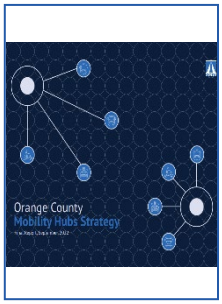
Rooted in the 2020 RTP/SCS plans, Connect SoCal's *Core Vision* centers on maintaining and better managing the transportation network we have for moving people and goods, while expanding mobility choices by locating housing, jobs and transit closer together and increasing investment in transit and complete streets. The proposed final Connect SoCal 2024 outlines a vision for a healthy, prosperous, accessible and connected region for a more resilient and equitable future that incorporates shared policies and strategies for the region through 2050. The goals for this vision were developed with input from a wide range of constituents and stakeholders from six counties in the SCAG region – Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. Connect SoCal 2024 focuses on the four core categories that are mutually reinforcing – mobility, community, environment, and economy. In addition, the report outlines challenges facing the SCAG region, shared goals and policies, and the transportation investments and land use strategies needed to chart a path toward a brighter future.

OCTA Long-Range Transportation Plan (2023)



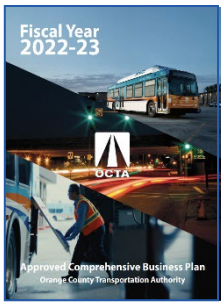
By 2045 the Orange County population is expected to increase by 9%. Without continuous analysis and planning, congestion delay and other transportation challenges will likely worsen. Therefore, the Long-Range Transportation Plan (LRTP) is developed every four years to define a vision for Orange County that aims to address future mobility needs. This vision considers a forecast of available revenues, changing demographics, and any other significant trends.

Mobility Hubs Study (2023)



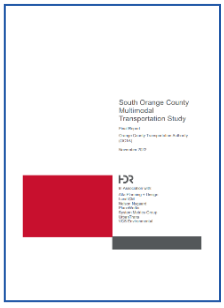
Mobility hubs improve connectivity and convenience by allowing people to easily switch between transportation services including bus, bike and e-scooters, ridesharing, and rail. This study assesses areas of high potential for mobility hubs based on mode shift and VMT impacts. Candidate locations are identified via a four-step process which involved leveraging the "OC Mobility Hub Suitability Mapping Tool" to support candidate location identification, clustering locations into sub-areas, then prioritizing and evaluating by mode shift and VMT reduction potential. An implementation plan is suggested, considering the key steps for successful delivery.

OCTA Comprehensive Business Plan (2023)



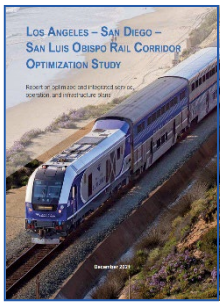
The Comprehensive Business Plan (CBP) is a business planning tool designed to assist OCTA in implementing its strategic goals and objectives. The CBP encapsulates OCTA's programs and outlines their goals and objectives, as articulated by the Board of Directors. It is a financial document that is updated annually in response to changing social, political, and economic environments. It summarizes the objectives of the 6 business lines: (1) The Bus Operations Program, (2) Regional Rail Program, (3) Measure M2 Program, (4) Express Lanes, (5) Non-Program Specific Projects, and (6) Motorist Services.

South Orange County Multimodal Transportation Study (2022)



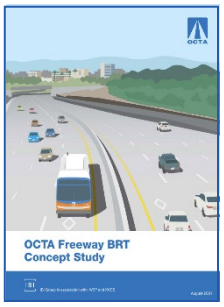
This document serves as an update to the 2008 South Orange County Major Investment Study. It proposes a long-range vision for the transportation system in South Orange County by recommending potential multimodal network improvements and adopting a new Locally Preferred Strategy. OCTA held public engagement roundtables and townhalls in the winter and spring of 2022. The study then asserts several community needs in order to allow for a more pronounced shift away from personal vehicles. These needs were to (A) Make public transit, bicycling and walking more convenient and accessible; (B) Decrease the overall number of trips made each day and improve safety and efficiency; (C) Protect the environment and preserve transportation infrastructure; and (D) Adapt to new transportation technologies and services.

LOSSAN Rail Corridor Optimization Study (2021)



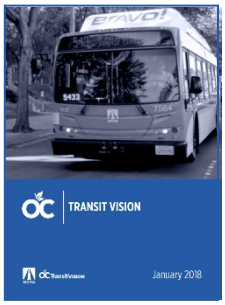
Los Angeles - San Diego - San Luis Obispo (LOSSAN) Study from 2021 integrates prior and ongoing planning initiatives along the rail corridor. The vision is to have the LOSSAN Rail Corridor operate in an integrated manner using coordinated schedules with seamless transfers between services. The first step is to adopt the pulse schedules outlined in the State Rail Plan in 2018. This is seen as the largest improvement in the near-term horizon. The mid-term horizon recommends a prioritized set of projects to in-fill service gaps and maximize service delivery as the first through-tracks at Los Angeles Union Station become available. The long-term plan details the level of service that could operate in an integrated manner through the identified investment projects from all agencies along the Corridor.

OCTA Freeway BRT Concept Study (2021)



OCTA, in partnership with Caltrans District 12, studied the development of two Freeway Bus Rapid Transit (BRT) routes on Interstate 5 (I-5) and State Route 55 (SR-55). The Freeway Bus Rapid Transit Concept Study identified improvements to infrastructure and transportation solutions for potential Bus Rapid Transit (BRT) routes and identified stops along each corridor. The study built upon prior studies conducted by Caltrans and the Southern California Association of Governments (SCAG) and developed solutions which can benefit transit, high-occupancy vehicles, and toll users. Key study objectives included identifying best practices for "Freeway BRT", developing recommendations for route alignment and station locations, improving freeway traffic flow, identifying long-term solutions to connect underserved and emerging populations, and determining need for freeway transit stations, access ramps, and parking required to maximize transit and ridesharing in the corridors.

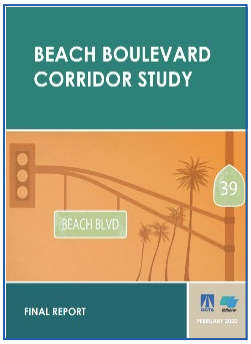
OC Transit Vision (2018)



The previous version of the OC Transit Vision Master Plan for enhancing and expanding public transit service in Orange County. This document establishes a vision, goals, and defines a framework for future transit investments. It then identifies the most promising corridors for enhanced transit. It issues transit-related recommendations in areas ranging from existing fixed-routes to on-demand services. Finally, it offers transit policy guidance to cities, developers, and other partners and provides an action plan laying out immediate next steps for OCTA.

5.2 LOCAL PLANS AND POLICIES

Beach Boulevard Corridor Study (2020)

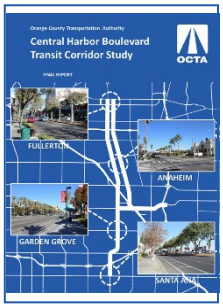


Beach Blvd is the longest continuous North-South corridor in Orange County. A study to improve the corridor from La Habra to Huntington Beach was conducted by OCTA and Caltrans in April 2020. It assessed existing conditions, forecasted projections of future growth, and developed solutions ranging from enhanced pedestrian, bicycle, and transit facilities to improve signal synchronization. OCTA and Caltrans worked closely with the corridor cities and the County of Orange throughout the study. Two phases of public outreach were also conducted to get the public's feedback on the corridor's existing conditions and specific improvements, collecting more than 2,350 surveys. A detailed evaluation was conducted for the final list of potential improvements for consideration for the Project Corridor.

Connect OC-LA Transit Study (2020)

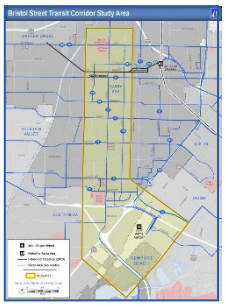
This lays out a plan to improve transit connections between Orange County and Los Angeles County, both in the short and long term. Ten corridors were short-listed for improvement through a refining process, which were then scored on various criteria and recommendations subsequently given. The report is broken up into sub-reports. The first is the Existing and Planned Services Report, which includes an analysis of travel and transfer patterns, transit ridership, and community and stakeholder outreach processes. The second is the Corridor Evaluation and Recommendations Report, covering corridor identification, screening, and evaluation, as well as intercounty transit service improvement strategies and the transit considerations during the 2028 Olympics.

Central Harbor Boulevard Transit Corridor Study (2019)



Harbor Blvd is Orange County's busiest north-south corridor, acting as a transit spine for the region. This study looks at the section between Fullerton Transportation Center and Westminster Avenue, while also evaluating connections on parallel corridors. Through preliminary technical studies, collaboration with the four corridor cities (Fullerton, Anaheim, Garden Grove and Santa Ana), as well as stakeholder feedback, 12 conceptual alternatives in the Harbor corridor area were developed and evaluated to improve transit choices and routes in accordance with travel demands, mobility needs, and performance measures. The alternatives included various streetcar, BRT, bus, and rapid streetcar performance enhancements through infrastructure, rerouting, and rescheduling. Each alternative was rated based on its predicted transit performance, impacts on land use and connectivity, corridor constraints, the user experience, cost-effectiveness, and community input.

OCTA Bristol Street Transit Corridor Study (2019)



Located in central Orange County, the Bristol Street Corridor has become a critical north-south connection, linking residents, businesses, schools, and key destinations in Santa Ana, Costa Mesa, Newport Beach, and Irvine. The study identified solutions to improve public transportation and traffic conditions such as improving frequency, service, and reliability; more connections with key crosstown routes and the OC Streetcar project; supporting first/last mile connections to jobs, services, retail centers, and multi-family/mixed use developments; and enhancing the customer experience.

Orange County Complete Streets Initiative (OCCSI) Design Handbook (2016)

The primary goal of the handbook was to provide jurisdictions with draft complete streets policies that could be incorporated into the circulation element of their general plans, meeting the requirements of Assembly Bill 1358, the California Complete Streets Act. The Design Handbook provided a menu of complete streets policies ranging from basic to advanced, allowing jurisdictions to tailor a complete-streets approach that addressed their individual needs and took existing infrastructure into account. The OCCSI Design Handbook created nine street classifications, assigned a designation to all major Orange County streets, and provided design guidelines for "movement corridors," or streets that are suitable for transit and multimodal improvements.

Summary

This review of previous plans and existing policies helps to set a foundation for the 2024 OC Transit Vision by establishing the context for current work and identifying recurring themes in regional and local documents:

- The **importance of collaboration** between agencies and the public and between agencies at all levels of government, from the regional level to countywide and individual cities.
- The role transit can play in helping to **reduce greenhouse gas emissions**.
- The need for a **broad range of convenient travel choices**. In the late 20th century, Orange County was built around the automobile but has reached the point at which roadway expansions are both more difficult and offer diminishing returns.
- The importance of **integrating transportation with land use planning**, to ensure the transportation network and built environment are mutually supportive and that efforts to achieve broader local and regional goals are as robust and effective as possible.
- The likelihood of continuing constraints on funding, and the need for jurisdictions, agencies, and policymakers to be **cost-effective and creative** in response to those constraints.
- The fundamental reality of geography, from **space constraints in heavily trafficked corridors** to dispersed housing and employment patterns.
- The need for **multimodal connectivity** within the transportation network, including first-/last-mile connections to transit.

SECTION

5

TRANSIT RIDERSHIP TRENDS

Many factors impact transit ridership, but it is useful to think of them in two categories: *internal* versus *external*, and *incentives* versus *disincentives*. Internal factors are those a transit agency can control such as fares, service levels, and quality (although funding constrains an agency's ability to control its service levels and quality). A broader range of external factors impact ridership: land use, demographics, access to stops, limited incomes, congestion, and economic conditions, to name a few.

TABLE 11 INTERNAL AND EXTERNAL FACTORS THAT AFFECT RIDERSHIP

Internal Factors		External Factors	
Fares	Speed	Access	Gas and parking costs
Frequency	Reliability	Demographics	Unemployment
Hours of service	Comfort	Incomes	Technology
		Traffic congestion	Emergencies

Then there are incentives and disincentives. Clearly, low fares are an incentive to use transit, while higher fares can be a disincentive. Other factors may not be so obvious. Low gas prices and free parking can incentivize driving, while the need to cross wide streets full of high-speed traffic discourages people from walking to bus stops.

Some factors are more malleable than others. Much of the research into OCTA's ridership decline before the pandemic and similar declines elsewhere in Southern California and across the nation has focused on internal and external factors. Recent analysis by the Southern California Association of Governments (SCAG) and others have identified a number of potential factors: rising employment (which increases the number of people commuting but also increases the number of people who can afford to purchase and maintain personal cars), lower gas prices, and the rise of ride-hailing companies such as Uber and Lyft. Some of these factors are cyclical in nature, while others may represent longer-term, structural changes. Pre-pandemic trends in Orange County show that while population increased 4.7 percent between 2009 and 2015, registered drivers increased by 9.9 percent and registered vehicles increased by 16.9 percent.

A recent study by researchers at the Mineta Transportation Institute in San Jose "Investigating the Determining Factors for Transit Travel Demand by Bus Mode in US Metropolitan Statistical Areas found that:

> *... seven internal factors, which the transit managers and operators have control over, and only one external variable, namely gas price, (are shown) to have significant impacts on transit travel demand by*

*bus mode. **Transit supply, transit fare, average headway, transit coverage, service intensity, revenue hours, and safety** are the contributing internal factors for transit demand by bus. This indicates that the mechanisms to increase … transit ridership patronage are in the hands of the transit authorities, which further indicates that they do not need to depend on (the) outside world to attract more ridership but can do so by adjusting the influential internal factors that are under their control.*

6.1 CULTURAL, TECHNOLOGICAL, AND TRANSPORTATION TRENDS

Recent social, demographic, technological, and transportation trends that may significantly influence the future of transit both nationally and in Orange County are discussed below.

Cultural Trends

Hybrid work since the coronavirus pandemic. According to the American Community Survey (ACS), remote work increased dramatically across all major industries between 2019 and 2021. This shift has prompted companies to rethink traditional office structures, leading to the widespread adoption of hybrid models.

People driving less overall. Starting in 2008, national vehicle miles traveled (VMT) began to trend downward. This trend suggests that people are looking for alternatives to driving and are more open to alternative modes than before.

In particular, younger generations are driving less. Younger people are waiting longer to get driver's licenses and are showing a strong preference for alternative modes of transportation. These trends suggest that, in the future, vehicle ownership and driving may not be as valued as they were in the past.

Renewed desire to live in urban areas. Younger generations like having the world at their fingertips. With the resurgence of urban and denser suburban neighborhoods as centers of economic energy and vitality, many millennials and Gen Z are opting to live in more urban areas over sprawling suburbs or rural communities. Sixty-two percent of millennials indicate a preference for living in the type of mixed-use communities typically found in urban areas, where they can be close to shops, restaurants, and offices. Millennials and Gen Z are currently living in these areas at a higher rate than any other generation, and 40 percent say they would like to live in an urban area in the future. For the first time since the 1920s, U.S. cities are growing faster than the rest of the country. Orange County, however, is experiencing Millennial out-migration, due in part to high housing costs.

More single households. Younger generations are also waiting longer to marry and have children. Housing preferences and travel patterns associated with traditional nuclear-family households are not as dominant as in previous decades.

Aging population. While younger generations are driving less, they are more likely than previous generations to live in urban areas and are forming families later. The baby boomers that came before them are reaching retirement age and driving less as well. While some empty nester couples with grown children may choose to trade their large suburban homes for smaller, easy-to-maintain apartments in more walkable areas, surveys have found that most would prefer to age in place. They will need accessible and convenient transportation options to do so.

Diversifying population. Orange County and California have been at the forefront of America's racial diversification: a minority of Orange County residents are now non-Hispanic white. Many non-white residents are immigrants from countries where transit use is more prevalent, and in general, non-white Americans tend to use transit at higher rates than white Americans.

Increasing housing costs. While other demographic trends should favor transit use over the long term, one trend in Orange County (and in other desirable communities in coastal California) runs counter to this: rapidly increasing housing costs. Increasingly unaffordable housing is pushing low-income and even some middle-class residents, including Millennials and Gen Z with less job experience and earning power, out of Orange County or to areas of the county that are more difficult to serve with transit. High housing costs are also increasing commute distances as people seek lower-cost housing in less expensive areas such as Riverside County. For many of these longer trips, transit is a less viable option than driving.

Impacts of technology. Smartphone-based ride-hailing services such as Uber and Lyft (see next section) provide alternative mobility options. These services provide a quick and relatively affordable alternative for short trips, although there are barriers to use, such as access to a credit card and mobile technology.

Changes to shopping behaviors. As internet shopping soars, people are making fewer trips to stores. While this necessarily means an increase in deliveries, it also likely means a decrease in personal shopping trips. For Orange County, online shopping also has a negative impact on sales tax revenues, which support transit operations. This is because many online retailers ship to Orange County from warehouses in neighboring counties, which receive the sales tax.

Taking another look at transportation demand management. Finally, transportation demand management (TDM) measures such as variable roadway and parking pricing and employer-based transit benefits are essential tools for transportation planning that were widely used locally in the 1990s, declined somewhat in recent years, but are now on the rise nationally. TDM turns the traditional paradigm of increasing supply and capacity to meet demand on its head, suggesting instead that it may be possible to manage travel demand cost-effectively without increasing supply.

Technological Trends

Twenty-first century technologies have rapidly changed how people connect and where and how they choose to live, work, and travel. Newly developed technologies have changed the expectations of transit riders. Dynamic, flexible, and real-time information now informs travel decisions and behavior. The following section addresses mobility options that rely on smartphone apps, as well as technologies important to both transit operators and the riding public.

Smartphone Applications. Smartphone apps can be used to look up wait times for buses and trains, figure out where a route goes, and even to pay fares. Multimodal mapping services such as Google Maps, Apple Maps, and the Transit app provide information on stop locations, routes serving those stops, wait times, and travel times. Transit agencies also deploy proprietary apps to distribute system maps, schedules, and rider alerts.

Websites and Social Media. Before smartphone apps provided real-time travel information, transit agency websites offered custom trip planners, many of which were somewhat difficult to use. Websites are still around, of course, but they have evolved into multiplatform resources available on desktops as well as mobile devices. Agency websites are now also just one element of larger, multichannel information distribution strategies that exploit social media outlets such as Facebook and X to widely and easily distribute service alerts, meeting notices, and other timely information.

Real-Time Arrival Information. Research has found that time spent waiting on transit may be perceived as 50 percent or even 100 percent longer than it actually is. Simply letting riders know not just when their buses or trains are scheduled to arrive, but when they actually arrive can greatly improve the transit-riding experience. Transit agencies can make real-time information on vehicle locations and projected arrival times widely available for use in platforms ranging from Google Maps to agency-specific smartphone apps.

Mobile Ticketing. Fare payment options have greatly expanded in the last 20 years. First, stored-value smart cards replaced tokens and eventually paper passes. Customers load cash or prepaid passes onto these cards online, at transit vending machines, and sometimes at local grocery and convenience stores. An example of this is the TAP Card in Los Angeles County. More recently, smart cards have started to give way to mobile ticketing apps (such as OCTA's OC Bus app) that allow users to pay using their smartphones rather than having to acquire and physically reload smart cards.

IN ORANGE COUNTY AND ELSEWHERE, THE MENU OF MOBILITY OPTIONS HAS ALSO BEEN EVOLVING RAPIDLY.

Vehicle Technologies. Transit operators have recently incorporated a number of new techniques into their operations, from automated passenger counters aboard vehicles to dispatch software platforms for demand-responsive services. But the most significant advancement may be new methods of vehicle propulsion, most notably the rise of battery-powered electric buses and streetcars. Battery life has been greatly extended in the last few years, and it is now reaching the point where it may be a viable, reliable option for everyday operations. OCTA is already putting electric and hydrogen fuel cell buses into service on a trial basis. (It should be noted, however, that new technologies can be more expensive to operate.)

Transportation Trends

Shared Mobility

These options generally fall into the category of shared mobility services, or ways of making private vehicles more efficient by ride sharing or car sharing. Many alternatives blur the line between private and public transportation. All of them have context-dependent applications and utility. Some will likely compete with transit, while others will prove complementary. Bike sharing and ride sharing, for example, can help traditional fixed-route transit overcome the "first-/last-mile" problem of accessing stops. Below is a quick snapshot of both newer and older nontraditional mobility offerings. Most of these options already exist in Orange County, although some remain limited to more urban areas.

Car sharing

Round-trip (Traditional) and one-way. Round-trip car-sharing services offer membership-based short-term car rentals that typically charge by the hour. Reservations are made online or via mobile app; cars are unlocked with the app or membership card. Cars are located in both on-street and off-street spaces throughout a service area and must be returned to the pickup location. The services allow people to occasionally use a car when needed during their otherwise car-free lifestyle. One-way car-sharing services operate similarly to round-trip car-sharing but allow

members to park and leave cars at most legal parking spots in the service area. Generally designed to provide shorter trips, one-way services charge by the minute.

Peer-to-peer. This system connects car owners with potential renters via an online interface. Owners list their vehicles online and install hardware in the vehicle to allow immediate access to renters. Reservations for vehicles are made online, and vehicles are returned to the pickup location (or a nearby location) when trips are completed.

Closed network. This system is a private car-share service for a specific development. While closed network services operate similarly to traditional car-sharing services, the car is managed by a property owner and available only to tenants.

Bike sharing

Dock-based. A dock-based bike-share system allows people to check out a bike from a station using a credit card or membership card. Bicycles can be returned to other docks within the system. A typical rental is 30 minutes or less, and most systems offer a variety of memberships and passes.

Dockless. Relying on GPS locators and smartphone technology, this system allows people to reserve a nearby bicycle. Bicycles can be picked up and returned at any ordinary bike rack within a service area, which significantly expands access points and simplifies the return process.

Ride hailing and ride sharing

Taxis and Limos. Taxis and limousines are the original private shared mobility services. Both provide for-hire vehicles staffed by professional drivers licensed to transport passengers.

Transportation Network Companies (TNCs). These companies use an online or mobile platform to connect passengers to drivers. Drivers use their personal vehicles and do not need a special license to transport passengers. Typically, more affordable than taxis except during demand surges, such services make it easier for people to leave their vehicles at home but do require a credit or debit card and smartphone. The speed and smooth user interface for many of these services make them attractive options.

Carpooling. Carpooling is an arrangement between multiple people to make a trip in a single vehicle. The classic example of carpooling is coworkers who live near each other organizing to share a vehicle to work.

Vanpooling. Vanpooling services are typically fee-based operations operated by a third party. Driven by one of the commuters, the van travels on an agreed-upon schedule to pickup and drop-off locations.

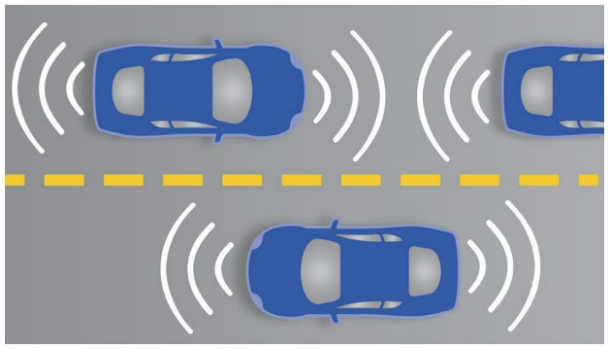
Vanpooling Subscription Services. These services require payment for each trip, providing door-to-door commuting service to people outside of traditional transit service areas or hours. Trips must be booked in advance, and subsidies may be used by lower-income passengers. This service can help to fulfill travel needs not met by transit networks.

Dynamic Ride Sharing

Dynamic ride sharing connects passengers and drivers through an online system, pairing individuals making a similar trip. Passengers agree upon and pay a share of the trip's cost. By providing drivers and passengers with an expanded pool of potential travel partners, dynamic ride sharing takes the traditional carpool to a new level.

Autonomous Vehicles

Curiosity about autonomous vehicles has intensified in recent years. As transportation technology continues to evolve rapidly, major benefits such as improved safety, increased mobility, and maximized efficiency may be on the horizon. However, autonomous vehicles will bring new challenges for jurisdictions as technology is slowly integrated with existing infrastructure and human drivers.



Though autonomous vehicles are expected to provide safety improvements, it will take decades for roadways to become fully automated, potentially resulting in friction between autonomous and human drivers. In addition, there are concerns that autonomous vehicles might increase VMT, congestion, and emissions levels. This can result from empty cars traveling long distances to cheaper parking, and commuters traveling longer distances in an attempt at finding cheaper housing.

Additionally, this technology has the potential to increase the capacity of existing roadways through more efficient signal timing and tighter vehicle spacing, reducing congestion concerns and encouraging people to use their own vehicles rather than public transit services. Policies to curtail increased VMT due to autonomous

vehicles could play an important role in preventing such concerns from materializing. Potential policies include the following:

- Pay per mile
- Facilitating and encouraging the sharing economy
- Establish autonomous vehicles as support for transit and active modes, not a replacement
- Ensure high quality transit is available, especially along major corridors, as quality will be increasingly important to encourage ridership

Parking is also likely to be impacted as autonomous vehicles emerge. A system of shared autonomous vehicles could reduce the significant amount of land dedicated to parking (if vehicles are shared; if not, parking needs could stay the same or even increase). This presents a tremendous opportunity to recapture highly underutilized land currently dedicated to storing cars. With technology expected to eventually support complete autonomous capability, places like Orange County should begin to plan for reduced parking in the near term, especially given the lengthy development process and life span of parking structures.[4]

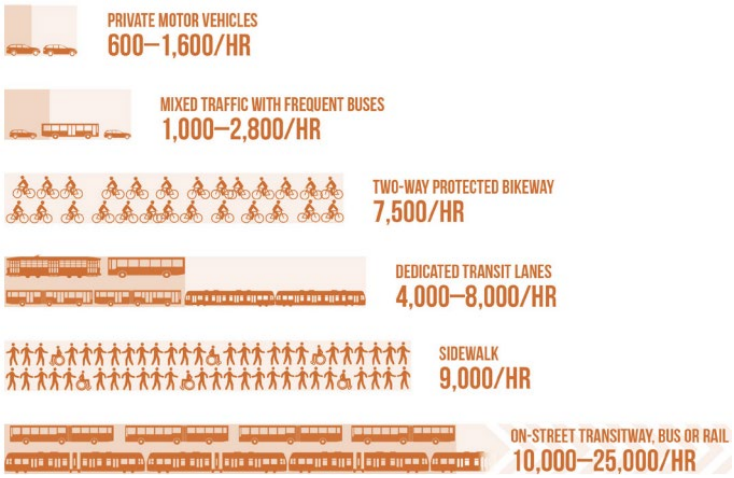
Finally, autonomous vehicles could reduce the cost of providing transit service, if driverless buses are used. However, this is unlikely to occur for some time, if ever, as transit agencies such as OCTA employ thousands of bus operators.

As autonomous technologies begin to emerge, Orange County will need to update infrastructure to maximize capacity and network safety while simultaneously looking ahead to address the potential challenges of managing new technologies.

[4] Morgan Stanley. (2013). "Autonomous Cars: Self-Driving the New Auto Industry Paradigm." Retrieved from: http://orfe.princeton.edu/~alaink/SmartDrivingCars/PDFs/Nov2013MORGAN-STANLEY-BLUE-PAPER-AUTONOMOUS- CARS%EF%BC%9A-SELF-DRIVING-THE-NEW-AUTO-INDUSTRY-PARADIGM.pdf

Summary

These are interesting times for both transit providers and riders. Transit operators are being pulled in multiple directions: on the one hand, cultural, technological, and larger transportation trends are encouraging people to use buses and trains. At the same time, factors such as improved automobile fuel efficiency and remote work are reducing transit ridership. Some transit operators see new transportation options and autonomous vehicles as existential threats—but in some ways, they are proving complementary to transit. Transit riders, meanwhile, are encountering an unprecedented range of new travel tools and options.



The capacity of a single 10-foot lane (or equivalent width) by mode at peak conditions with normal operations.

Source: NACTO Transit Street Design Guide

Whatever the future holds in terms of transportation technology, a few simple facts remain:

- High-capacity transit is a space-efficient (and potentially cost-efficient) way to move large volumes of people in constrained corridors, freeing space for other uses.
- Transit will still have an important role to play in reducing greenhouse gas emissions. Even if electric vehicles become the norm, electricity comes from external sources that are for the most part decades away (at best) from being fully renewable. Transit's ability to use less energy on a per-capita basis matters for the foreseeable future.
- The rise of autonomous vehicles holds the potential to reduce operating costs for transit, making it more cost-effective. Tomorrow's transit network may not look like today's—it is likely to include smaller vehicles and more on-demand operations—but there will still be a transit network featuring high-capacity corridors for decades to come.

SECTION

7

BEST PRACTICES

The 2018 State of OC Transit outlined best practices for planning high-capacity transit within the Orange County context. Since then, the principles of planning best practices remain in place. Chapter 5 of the 2018 OC Transit Vision included three sections that showcased best practices for high-capacity transit, including high-capacity and rapid transit modes, access and land use for high-capacity and rapid transit, and transit funding. A summary of key takeaways from the 2018 Plan includes the following:

High-capacity transit modes include light rail transit, streetcar, bus rapid transit (BRT), and rapid (limited stop) bus. Each mode consists of four elements: (1) right-of-way design and management, (2) stop design, (3) service model and operating plan, and (4) vehicle type. Each element can have a varying impact on performance outcomes such as speed, reliability, capacity, and rider comfort. For high-capacity and rapid transit modes, the capacity and speed of transit are both highly dependent on the transit mode. Transit mode is different from transit vehicles, as it includes other elements such as the right-of-way design and management, stop or station design and access requirements, and a service model or operating plan.

The modes that are included in the 2024 State of OC Transit report include rapid bus and bus rapid transit, since they will be the modes considered in the 2024 OC Transit Vision. Other modes such as streetcar, light rail, commuter rail, and heavy rail are not included in this report, but can be found in the 2018 State of OC Transit. Figure 31 demonstrates the difference between regular bus, rapid bus, and bus rapid transit (BRT). Figure 32 includes typical elements of a BRT station, and Figure 33 shows how complete streets may complement transit.

FIGURE 31 REGULAR BUS VS. RAPID BUS VS. BUS RAPID TRANSIT

FIGURE 32 ELEMENTS OF A TYPICAL BRT STATION

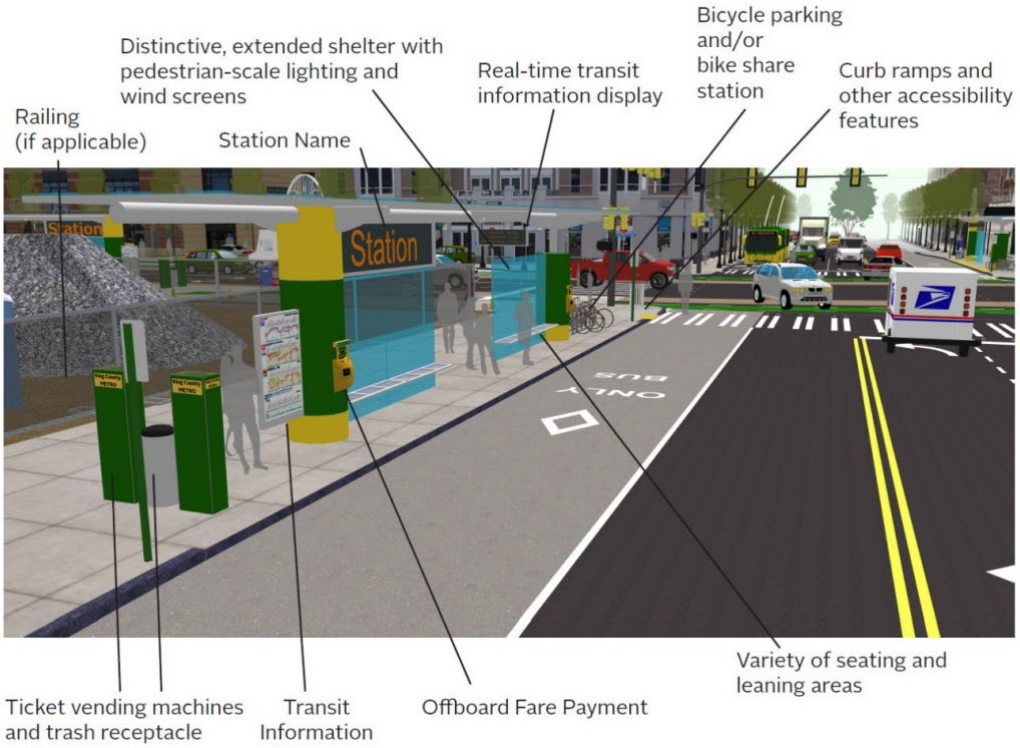


FIGURE 33 ELEMENTS OF COMPLETE STREETS (LEE COUNTY, FL)

7.1 TRANSIT FUNDING

The 2024 OC Transit Vision will recommend new transit projects, potentially including rapid bus and bus rapid transit lines with significant capital costs, which may require funding from a variety of sources.

Following are brief summaries of potential capital funding sources, including existing sources used in Orange County. Note that the funding context may change over time; state funding sources have evolved dramatically in recent years.

Federal Sources

On November 18, 2021, the Infrastructure Investment and Jobs Act (IIJA) Act was signed into law. The IIJA Act authorizes up to $108 billion for public transportation through 2026, "the largest federal investment in public transportation in the nation's history"[5]. The following sections highlight a number of federal programs that could be used to support transit service in Orange County.

The Federal Transit Administration (FTA) administers the **Section 5309 Capital Investment Grant (CIG) Program.** This program is the primary source of federal funding for major fixed-guideway transit capital investments, such as new and expanded rapid rail, commuter rail, light rail, streetcar, and bus rapid transit. This discretionary program requires projects to proceed through a multi-step, multi-year process to be eligible for funding with FTA evaluation and rating required at various points in the process. The first step is called Project Development, the second Engineering, and the third a Full Funding Grant Agreement for construction.

[5] https://www.transit.dot.gov/IIJA

There are four categories of eligible projects under the FTA Section 5309 program: New Starts, Small Starts, Core Capacity, and Programs of Interrelated Projects. The program can fund up to 60 percent of total project costs for New Starts projects, and up to 80 percent of Small Starts, Core Capacity, and Programs of Interrelated Projects.

- New Starts projects are new fixed-guideway projects or extensions to existing fixed-guideway systems with a total estimated capital cost of $400 million or more that are seeking $150 million or more in Section 5309 CIG program funds.
- Small Starts projects are new fixed guideway projects, extensions to existing fixed-guideway systems, or corridor-based bus rapid transit projects with a total estimated capital cost of less than $400 million that are seeking less than $150 million in Section 5309 CIG program funds.
- Core Capacity projects are substantial corridor-based capital investments in existing fixed-guideway systems that increase capacity by not less than 10 percent in corridors that are at capacity today or will be in five years. Core capacity projects may not include elements designed to maintain a state of good repair.
- Programs of Interrelated Projects are comprised of any combination of two or more New Starts, Small Starts, or Core Capacity projects. The projects in the program must have logical connectivity to one another and all must begin construction within a reasonable timeframe.

FTA Section 5307 Urbanized Area Formula Grants provide transit capital and operating assistance and transportation-related planning in urbanized areas of 50,000 residents or more. Eligible purposes include the following:

- Planning, engineering design, and evaluation of transit projects and other technical transportation-related studies.
- Capital investments in bus and bus-related activities such as replacement of buses, overhaul of buses, and rebuilding of buses.
- Crime prevention and security equipment.
- Construction of maintenance and passenger facilities.
- Capital investments in new and existing fixed guideway systems including rolling stock, overhaul and rebuilding of vehicles, track, signals, communications, and computer hardware and software.
- All preventive maintenance.
- Some Americans with Disabilities Act complementary paratransit service costs.

FTA Section 5307 funds can be used for up to 80 percent of capital expenses, and up to 90 percent of the cost of vehicle-related equipment attributable to compliance with the Americans with Disabilities Act and the Clean Air Act.

For large urbanized areas with populations of 200,000 or more, such as Orange County, funds are apportioned and flow directly to a local designated recipient. These funds are allocated to areas with populations of 200,000

and more, based on a combination of bus revenue vehicle miles, bus passenger miles, fixed guideway revenue vehicle miles, and fixed guideway route miles as well as population and population density. Thus, as OCTA expands services, the amount of Section 5307 funds that it receives may increase. (However, since local funds are distributed by formula among agencies in Los Angeles, San Bernardino, and Riverside counties, it is difficult to know whether funds will increase without knowing the federal government's budget and other agencies' service level and performance.)

In the Los Angeles-Long Beach-Santa Ana urbanized area, which includes all of Orange County, SCAG is the designated recipient and allocates funds to OCTA. OCTA uses these funds largely for preventative maintenance and paratransit purposes.

FTA Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities funds may be used for paratransit capital and operating costs as well as for other projects that serve the special transportation needs of seniors and individuals with disabilities, including projects to improve access to fixed-route transit. These funds are apportioned to states for rural and small urban areas and designated recipients chosen by the governor of the state for large urban areas or to state or local governmental entities that operate a public transportation service. The federal share is 80 percent for capital projects, and 50 percent for operating assistance.

FTA Section 5337 State of Good Repair is dedicated to the repair and upgrade of existing fixed guideway and motorbus systems. Funding may be used for projects that maintain, rehabilitate, and replace capital assets, as well as projects that implement transit asset management plans. OCTA has been allocated Section 5337 funding for Metrolink.

FTA Section 5339 Bus and Bus Facilities program provides capital assistance for new and replacement buses, related equipment, and facilities. Eligible bus expenses include purchasing buses for fleet and service expansion, purchasing replacement vehicles, bus rebuilds, and bus preventive maintenance. Eligible facilities include bus maintenance and administrative facilities, transfer facilities, bus malls, transportation centers, intermodal terminals, park-and-ride stations, and passenger amenities such as shelters and bus stop signs. Eligible equipment includes accessory and miscellaneous equipment such as mobile radio units, supervisory vehicles, fare boxes, computers, and shop and garage equipment. OCTA uses Section 5339 funds for these purposes, and as the agency's service expands it will likely be able to leverage more of these funds.

The Federal Highway Administration (FHWA) Surface Transportation Block Grant Program is a flexible funding source for many types of transportation projects, including a set-aside specifically for walking, bicycling, and enhancement projects. The program allows state departments of transportation to shift some of these funds to transit projects, moving funds into one or more of the FTA funding programs described above.

The FHWA Congestion Mitigation and Air Quality Improvement Program (CMAQ) provides funding to state transportation departments to reduce congestion and improve air quality. Areas eligible for investment include those that do not meet the National Ambient Air Quality Standards (nonattainment areas) and former nonattainment areas that are now in compliance (maintenance areas). Eligible activities under CMAQ include transit system capital expansion and improvements that are projected to realize an increase in ridership; travel

demand management strategies and shared ride services; pedestrian and bicycle facilities; and promotional activities that encourage bicycle commuting.

Funds are distributed by state transportation departments based on an area's population by county and the severity of its ozone and carbon monoxide problems within the nonattainment or maintenance area, with greater weight given to areas that are both carbon monoxide and ozone nonattainment/maintenance areas. There are funding set-asides for State Planning and Research and nonattainment or maintenance areas.

Butter Utilizing Investments to Leverage Development (BUILD) is a discretionary U.S. Department of Transportation grant program that allows the agency to invest in road, rail, transit, and port projects. Funding varies annually based on congressional allocations, and grants are awarded on a competitive basis.

The Transportation Infrastructure Finance and Innovation Act (TIFIA) provides federal secured loans, loan guarantees, and lines of credit to national and regionally significant surface transportation projects, including bus and rail transit. The program is designed to fill market gaps and leverage substantial private match (or co-development) funds by providing supplemental debt financing. The amount of a TIFIA line of credit cannot exceed 33 percent of the total capital cost of a project; TIFIA loans cannot exceed 49 percent of the total project cost. The loans are backed by federal revenues.

The Railroad Rehabilitation and Improvement Financing (RRIF) program provides direct federal loans and loan guarantees to finance the development of railroad infrastructure. The Department of Transportation contains several provisions intended to streamline the loan approval process, increase access to the program, and fund a wider array of projects. It also makes transit-oriented development elements of passenger rail station projects eligible for RRIF.

State Sources

Cap and Trade Funds. The California State Transportation Agency distributes proceeds from the state's Cap-and-Trade Program, established under AB32, the Global Warming Solutions Act.

Cap-and-Trade grants are distributed on both a formula basis (the Low Carbon Transit Operations Program, or LCTOP) as well as on a competitive basis (through the Transit and Intercity Rail Capital and Affordable Housing and Sustainable Communities Programs). The agency auctions off permits to emit greenhouse gases on a quarterly basis. Proceeds have varied widely, so the amount of funding available through the program is unpredictable. Programs funded by Cap-and-Trade revenues must provide benefits to disadvantaged communities.

State Infrastructure Bank. Public transit projects are eligible for loans, lines of credit, and other capital funding support from the California Infrastructure and Economic Development Bank. A number of projects in Orange County have been partly funded through this source, including the Segerstrom Center for the Arts, which received a $42 million 501(c)(3) tax-exempt loan in June 2016.

The **Transportation Development Act (TDA)** provides two major sources of funding for public transportation: the Local Transportation Fund (LTF) and the State Transit Assistance fund (STA). LTF is derived from a quarter-cent of the general sales tax collected statewide and STA is derived from the statewide sales tax on diesel fuel.

State Transportation Improvement Program (STIP) formula-based revenues from the state's excise tax on gasoline are allocated primarily to road projects but may be used for projects eligible for funding under Article XIX of the State Constitution, including fixed-guideway transit capital projects.

County and Local Sources

Local Sales Taxes. Orange County is a self-help county under California law, or a county with a share of its local sales tax dedicated to transportation operations and capital funding. The most recent renewal of Measure M passed in 2006 and will remain in effect through 2042. Sales-tax measures require two-thirds approval from voters. Measure M is likely to remain Orange County's primary source of local funding for transit capital projects.

Parcel Taxes. Parcel taxes are common tools used by California cities to raise money for specific projects in an era when general property tax rates cannot be raised because of Proposition 13. Parcel taxes can be bonded to accelerate projects and can be used for both capital and operating funding. The distinction between a parcel tax and a property levy within a district is that a parcel tax is citywide and requires a two-thirds vote of residents. The majority of successful parcel taxes in California are for schools, libraries, and other projects of citywide importance.

Motor Vehicle Fuel/Gas Taxes. In California, the state charges an excise tax on fuel sales, a portion of which it distributes to local transportation projects. Cities, in turn, charge sales taxes on gasoline. Under California law, counties may also add their own fuel taxes.

Vehicle Registration Fees and Excise Taxes. In California, cities and counties may levy vehicle registration fees.

Real Estate Transaction Fees. In a few cases, real estate transaction fees are used to fund transit.

Community Facilities District. A Mello-Roos Community Facilities District (CFD) is a tool available for assessing a property tax levy on properties that benefit from a local facility. Funds raised through a community facilities district may be used for capital, loan repayment, or as operating funds to support a local project.

Developer Fees and Agreements. San Francisco currently levies impact fees on new development as a condition of approval.

Real Estate Transfer Fees. A real estate transfer fee is paid by property buyers at the time of transaction. Local fees can be increased only with a two-thirds supermajority of voters. Given the trend of increasing real estate costs in coastal California communities (including Orange County), the amounts generated by such fees are likely to continue to increase over time.

Rental Car and Hotel Taxes. Rental car and hotel taxes tend to be more acceptable to voters than other types of taxes, as they fall largely on non-residents. In an area with a large tourism sector such as Orange County, these types of taxes represent a substantial source of potential funding.

Commercial Parking Taxes. Many cities charge a commercial parking tax: the cities of San Francisco and Seattle, for example, have commercial parking tax rates of 25 percent and 14.5 percent, respectively. In those examples, portions of the revenue stream are allocated for major capital projects, with an emphasis on multimodal projects that reduce the demand for parking expansion. There is no statutory limit to the tax, and it can be used for a wide variety of transportation projects and programs, including bonding to pay for capital projects. Commercial parking tax funds are subject to competing priorities, including general fund uses. However, depending on the rate they have the potential to provide needed capital and operating funds.

Parking Benefit Districts. In a parking benefit district, municipalities spend a portion of parking meter revenue collected in the district on local priorities. Parking revenues can also be bonded to accelerate a capital project. The City of Pasadena has employed this funding mechanism in its Old Town district.

General Obligation Voter-Approved Bonds. Voter approval would be required to levy an assessment on real property, payable by property owners. Such *Unlimited Tax GO bonds* must be approved by a majority of voters and can be used for capital projects. Bonds are usually raised against a specific asset or revenue source. Voters are generally more supportive of bonding more than taxing.

City General Funds. City general funds are composed of a number of funding sources, such as property tax revenues, sales tax revenues, fees, and fines. Cities may elect to fund a portion of a local transit project's capital or operating needs from their general funds. Because any allocation from the general fund would compete directly with other citywide needs, this is a resource that can be difficult to tap for transit projects.

Other Local Sources. A wide variety of other taxes and fees are less commonly used for transit:

- **Alcoholic Drinks in Bars.** Allegheny County, Pennsylvania (Pittsburgh) levies a 7 percent tax on poured drinks in restaurants and bars.
- **Payroll Taxes.** A few jurisdictions levy payroll taxes for transit. One example is the state of Oregon, which levies a payroll tax on employers in areas served by TriMet (Portland) and Lane Transit District.
- **Tolls.** Bridge or high occupancy toll (HOT) lane tolls are another potential source of transit funding. Bridge tolls are a major source of transit funding in the Bay Area, and Metro operates two HOT lanes in Los

Angeles County that help fund transportation projects. In Orange County, the 91 Express Lanes and 405 Express Lanes are owned and operated by OCTA. New transit projects in these corridors are eligible for excess toll/managed lane revenues.

Private Sources

Community Benefit District/Business Improvement District (CBD/BID). CBD/BID formation requires the support of property owners who agree to a special assessment of their property tax in exchange for benefits the city would not otherwise provide. In California, a CBD currently lasts up to 10 years and ultimately requires a simple majority to implement. Funding for a transit project could come from an expansion, extension, or reallocation of these funds, subject to a vote of the membership.

Funds from a CBD can be used for both capital and operating purposes, and can be bonded to accelerate project delivery. Expenditures are guided by a management plan detailing how collected funds can be used.

Note that while CBD/BID funding of streetcar projects is relatively common, CBDs are generally not formed in support of bus projects. It is unlikely that both a CFD and CBD would be implemented in the same area, since they are both tools for generating a property tax levy in a confined area.

Value Capture. The concept of value capture is based on the anticipated development and commercial activity a transit investment is projected to spur over a reasonable period of time. Economic and land development will result in added value along the project segment, generating incremental property taxes and other fees that may be used for transit. There are numerous mechanisms, such as different kinds of assessment districts, for carrying out value capture.

Naming Rights. For streetcar projects in particular, sponsorship of stops and vehicles is a common source of funding. Stop sponsorships, which brand the panels at shelters, have been sold in many cities implementing streetcar or shuttle projects. Some systems, such as Tampa's TECO Trolley, have also sold naming rights for the entire system. This practice builds on the more standard practice of selling advertising at stations and on vehicles and allows stations to remain ad-free while still generating revenue.

Public-Private Sources

Public-Private Partnerships (P3's)

P3s are an increasingly common way to finance, construct, and operate transportation infrastructure. In a P3, the sponsoring agency partners with a private firm or firms to reduce the risk of cost and schedule overruns (as the private partner agrees to deliver the project on a fixed schedule, for a fixed price). The partnership reduces initial costs, as the private partner typically contributes part of the capital cost. It also reduces lifecycle costs by taking advantage of private sector efficiencies: the partnering firm may be unencumbered by regulations that apply to public agencies, such as Buy America requirements, or by political pressure to add unnecessary elements to projects.

Depending on how the P3 is structured, the private partner may take on (with public oversight) various roles that would typically be the responsibility of the sponsoring agency. For example, in a design-build-finance-operate-maintain (DBFOM) arrangement, the private partner would design, build, finance, operate, and maintain the project. Such arrangements are common internationally including in Canada and are often used for toll roads in the United States, including in Orange County. They are increasingly common for transit projects, including a $2.2 billion commuter rail project in Denver, a light rail project in Maryland, and streetcar projects in Washington, D.C., and Detroit.

Congress has encouraged more widespread application of P3s to transit projects, yet there are challenges with implementation in many cases. While often criticized for perceived privatization of public assets, P3s are typically structured so that the public maintains ownership and control over assets and key aspects of operations, such as service levels and fares. Private partners are also typically subject to performance standards. However, P3s may ultimately cost taxpayers more over the long term.

Moreover, sponsoring agencies accustomed to traditional contracting processes may be unprepared for the special requirements associated with a P3, from both a legal and administrative perspective.[6] Finally, private partners will only invest in the expectation of a return. Future projects pursuing P3 arrangements would require much more detailed financial and revenue forecasting analysis.

SUMMARY

An important purpose of the 2024 OC Transit Vision will be to develop recommendations for new high-capacity transit lines in high-demand corridors. This will require careful, comprehensive thinking about transit modes, including design of the right-of-way, stops/stations, service, and vehicles. It will also require thorough thinking about related elements needed to make transit successful, including access to transit and land uses around transit stops and stations. Finally, it will require realistic thinking about potential funding options.

[6] Federal Highway Administration guidance on P3s can be found here: http://www.fhwa.dot.gov/ipd/p3/default.aspx

SECTION

8

TRANSIT PROPENSITY AND MARKET ANALYSIS

This analysis of current and future travel patterns and demand for transit service in Orange County considers the following factors:

- Land use and the built environment, including current and future land uses, current and future population and employment density, and other major trip generators (colleges and universities, for example).
- Demographics.
- Travel patterns and transit demand, including origins and destinations for all modes as well as assessment of transit demand based on regression analysis of the factors most indicative of transit propensity in Orange County.

8.1 LAND USE AND THE BUILT ENVIRONMENT

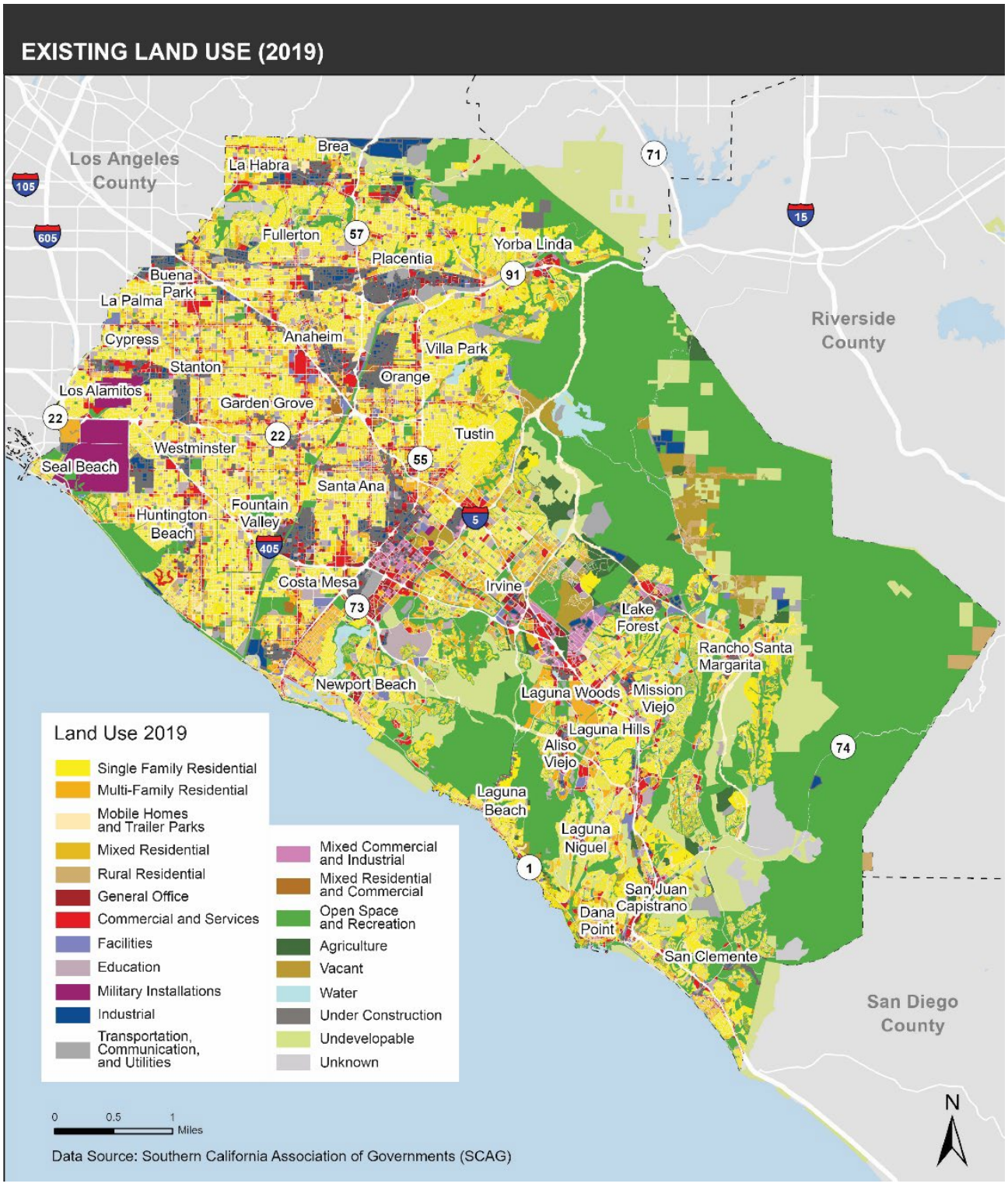
Like many areas of the United States that have developed rapidly since the 1940s, Orange County evolved around the car, with commercial development located primarily in business parks and residential development located largely in single-family subdivisions. In the last few decades, the county and Southern California as a whole have experienced significant demographic shifts that influence land use patterns. Compared to the postwar era, a smaller percentage of households have younger children at home, and the number of households without children is dramatically increasing. The housing market is expected to reflect these trends, increasing demand for smaller-lot single-family homes and multifamily housing closer to jobs, shopping, transit, and other destinations.[7]

8.2 CURRENT LAND USE

Today, single-family homes constitute the largest active land use in Orange County, covering approximately 22 percent of the county. It is the dominant land use in the northern half of the county, supported by commercial businesses on an arterial grid network conducive to transit. Potentially rich transit markets such as multifamily housing and mixed-use properties tend to be clustered throughout the county, making those centers easier to serve by transit. In contrast to the built-up nature of the northern half of the county, South County is predominately suburban development, open/recreational space, and vacant and undevelopable land that does not generate significant transit demand. Where active land uses such as single-family homes occur in South County, development patterns are far more segregated than in the northern half, representing a disjointed patchwork as opposed to a filled-in grid. Existing land use throughout the county is shown in Figure 34.

[7] SCAG Regional Transportation Plan/Sustainable Communities Strategy, 2016.

FIGURE 34 EXISTING LAND USES (2019)

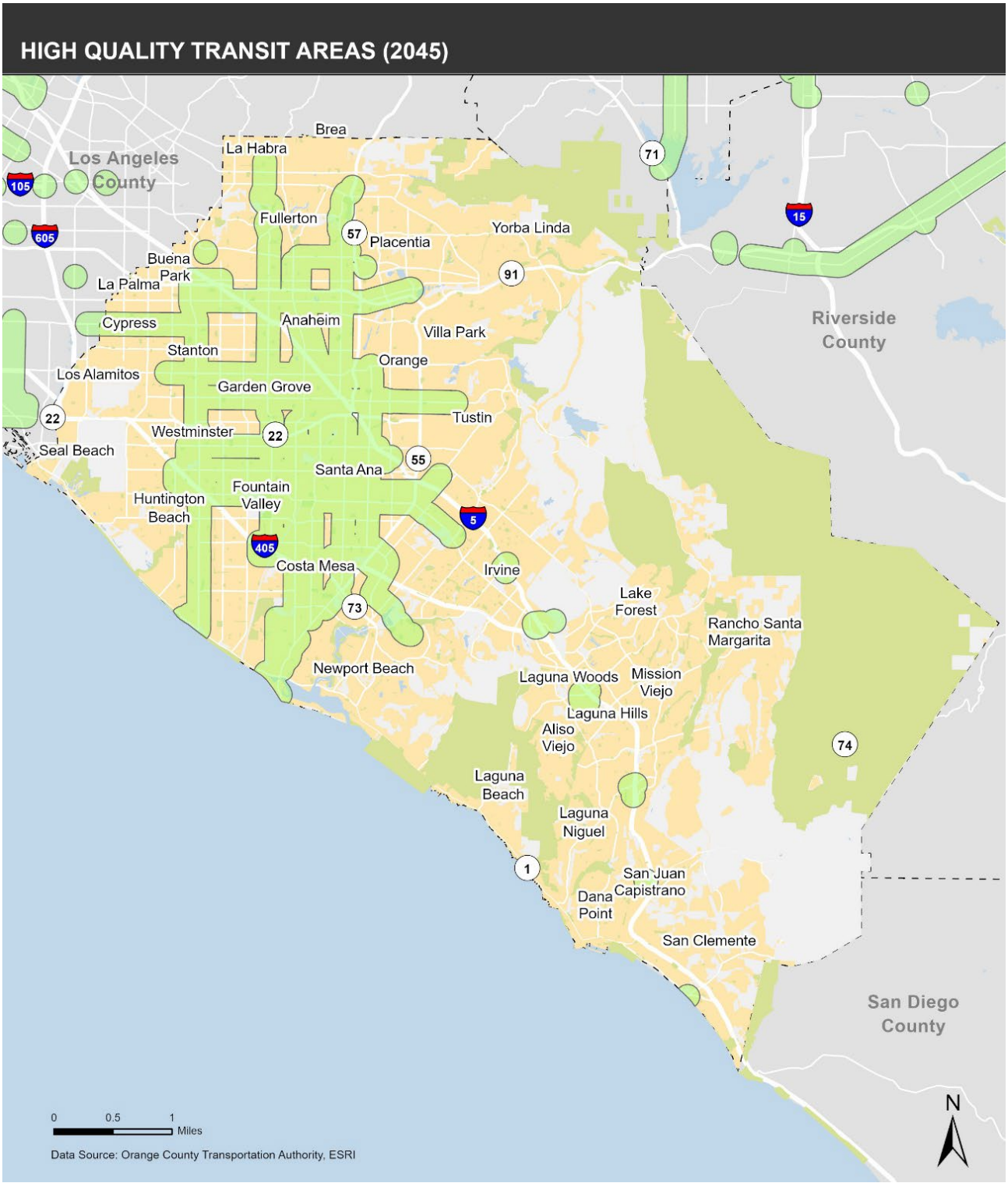


8.3 FUTURE LAND USE

The 2024-2050 SCAG Connect SoCal 2024 plan recognizes that future growth and transportation investment must be linked. With a special emphasis on improving access between housing and jobs, the plan identifies high-quality transit corridors/areas (HQTAs) in which to focus both infill development and investment. Consistent with state guidance, the plan defines HQTAs as areas within one-half mile of a fixed guideway transit stop, a ferry terminal served by either bus or rail service, or a bus corridor with headways of 15 minutes or less during peak commute hours. HQTAs in Orange County as projected for the year 2050 are mapped in Figure 35.

- Given existing high-frequency bus corridors, HQTAs are projected to form a strong grid in the core urban areas of the northern half of the county. While changes are regularly made to OCTA service, there has been little change over the years to corridors with high-frequency service, which are primarily located in the north of the county.
- With the exception of Newport Beach, HQTAs in South County are confined to half-mile buffers around Metrolink stations in communities such as Irvine, Laguna Niguel, San Juan Capistrano, and San Clemente.

FIGURE 35 HIGH QUALITY TRANSIT AREAS (2045)



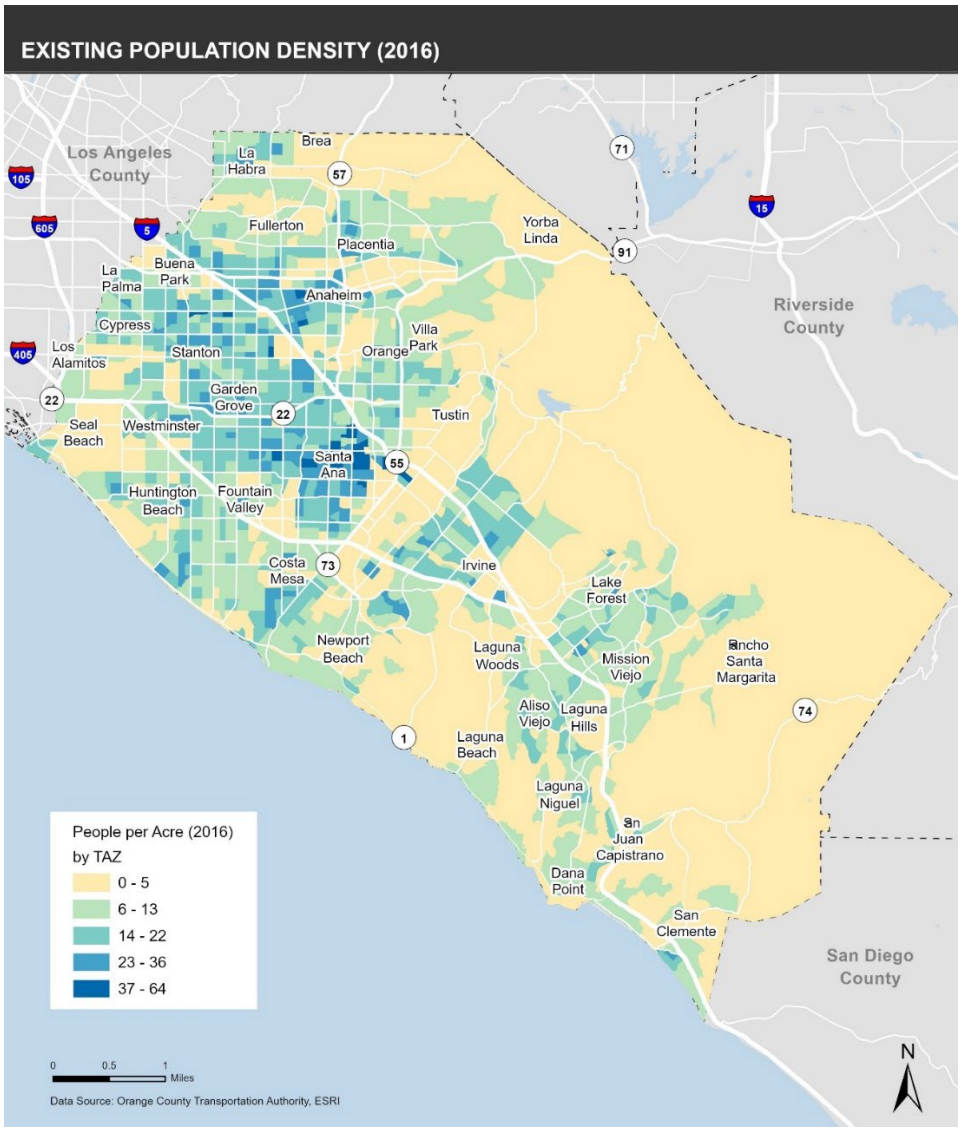
Source: Orange County Transportation Authority, ESRI

8.4 CURRENT POPULATION AND EMPLOYMENT DENSITY

The population of Orange County is just over 3 million people, making it the third most populous county in California following neighboring Los Angeles and San Diego Counties. Countywide population density is shown in Figure 36. Key findings include the following:

- Population density is considerably higher in the northern half of the county.
- The highest population density areas are found throughout Santa Ana and in Anaheim along the state Route 91 corridor.
- Areas with the lowest population densities are primarily a result of geographic constraints (mountains) or restrictive land uses such as the Seal Beach National Wildlife Refuge and John Wayne Airport.

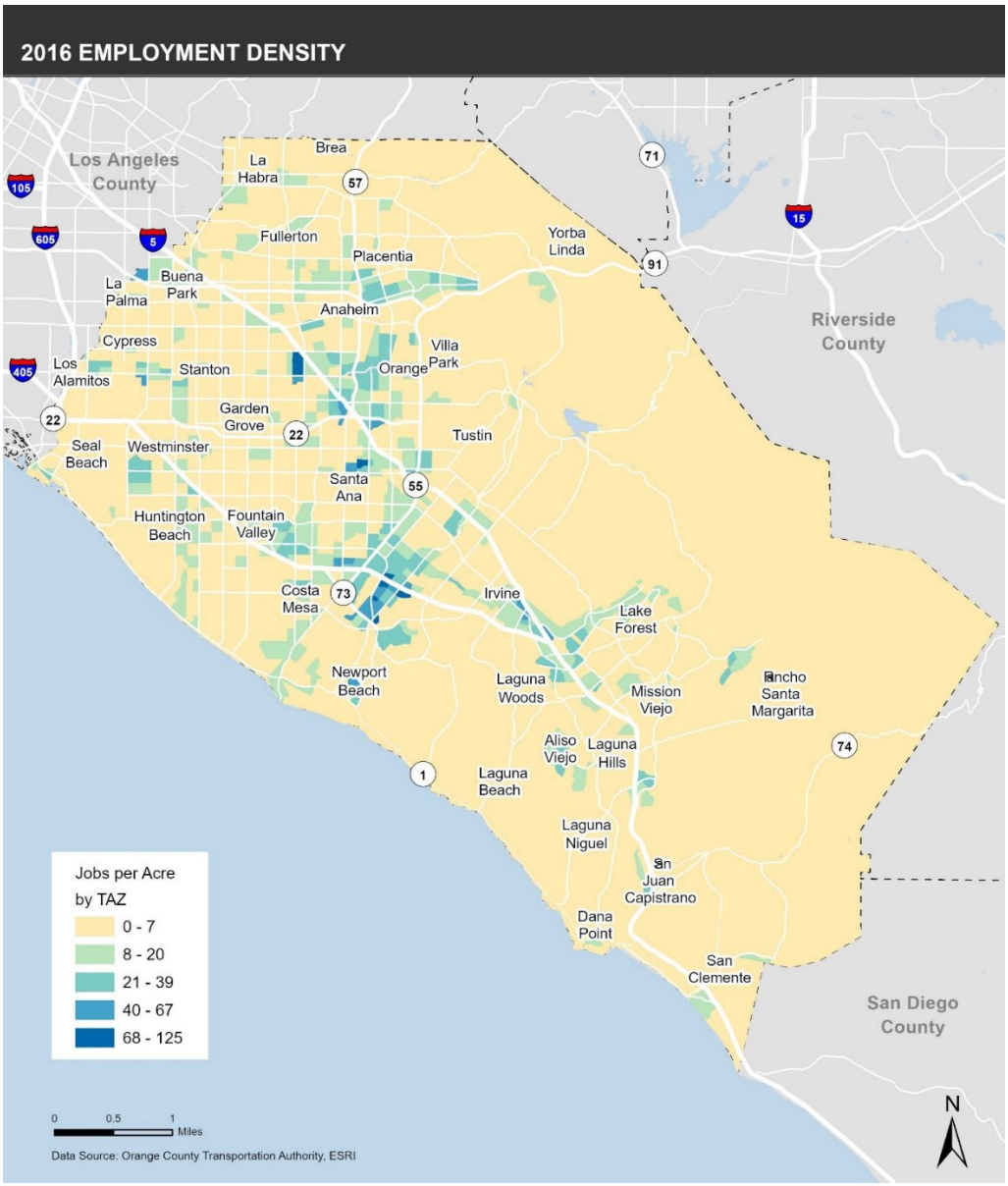
FIGURE 36 POPULATION DENSITY (2016)



Countywide employment density is shown in Figure 37. Key findings include the following:

- Countywide, nodes of high employment density are more confined than nodes of high population density.
- As with population density, employment density is greater in the northern half of the county.
- Because centers of high employment density are more clustered than areas of high population density, these nodes may be easier to serve by transit.
- The Irvine Business Complex and areas directly south of John Wayne Airport have some of the highest employment densities in the county despite having relatively low population density.
- Other nodes of high employment density include major activity sites such as Disneyland, Newport Center (Fashion Island), and Downtown Santa Ana.

FIGURE 37 EMPLOYMENT DENSITY (2016)



8.5 FUTURE POPULATION AND EMPLOYMENT DENSITY

Projected population density and change are shown in Figure 38 and Figure 39. These figures illustrate the following:

- Neighborhoods with major projected increases in population density are fairly limited. Exceptions include the Platinum Triangle in Anaheim, Downtown Fullerton, and Irvine.
- Areas with low existing population density projected to see moderate growth include Lake Forest and a few areas in South County.

- Patterns of projected population density, particularly in areas with the highest density, are relatively unchanged from existing patterns.
- As with existing population density, areas with the highest projected population density are found throughout Santa Ana and in Anaheim along State Route 91.
- The Platinum Triangle in southeast Anaheim (surrounding Angel Stadium and Anaheim-ARTIC Station) is projected to transition from low to medium existing population density to higher density.

Projected (2045) employment density and change (2019-2050) are shown in Figure 40 and Figure 41 respectively. These maps illustrate the following findings:

- To a higher degree than population density, patterns of projected employment density are relatively unchanged from existing patterns.
- Areas with the highest projected employment density include the Irvine Business Complex, Downtown Santa Ana, and major activity sites like Disneyland and large shopping centers.
- Areas with low employment density projected to transition to medium or high density include the Platinum Triangle, southeastern Irvine around the Irvine Medical and Science Complex, and less developed areas surrounding UC Irvine and the Irvine Business Complex.
- Areas with major projected increases in employment density are limited, with the exception of the areas highlighted previously: the Platinum Triangle and areas near the Irvine Business Complex, UC Irvine, and the Irvine Medical and Science Complex.

FIGURE 38 PROJECTED POPULATION DENSITY (2045)

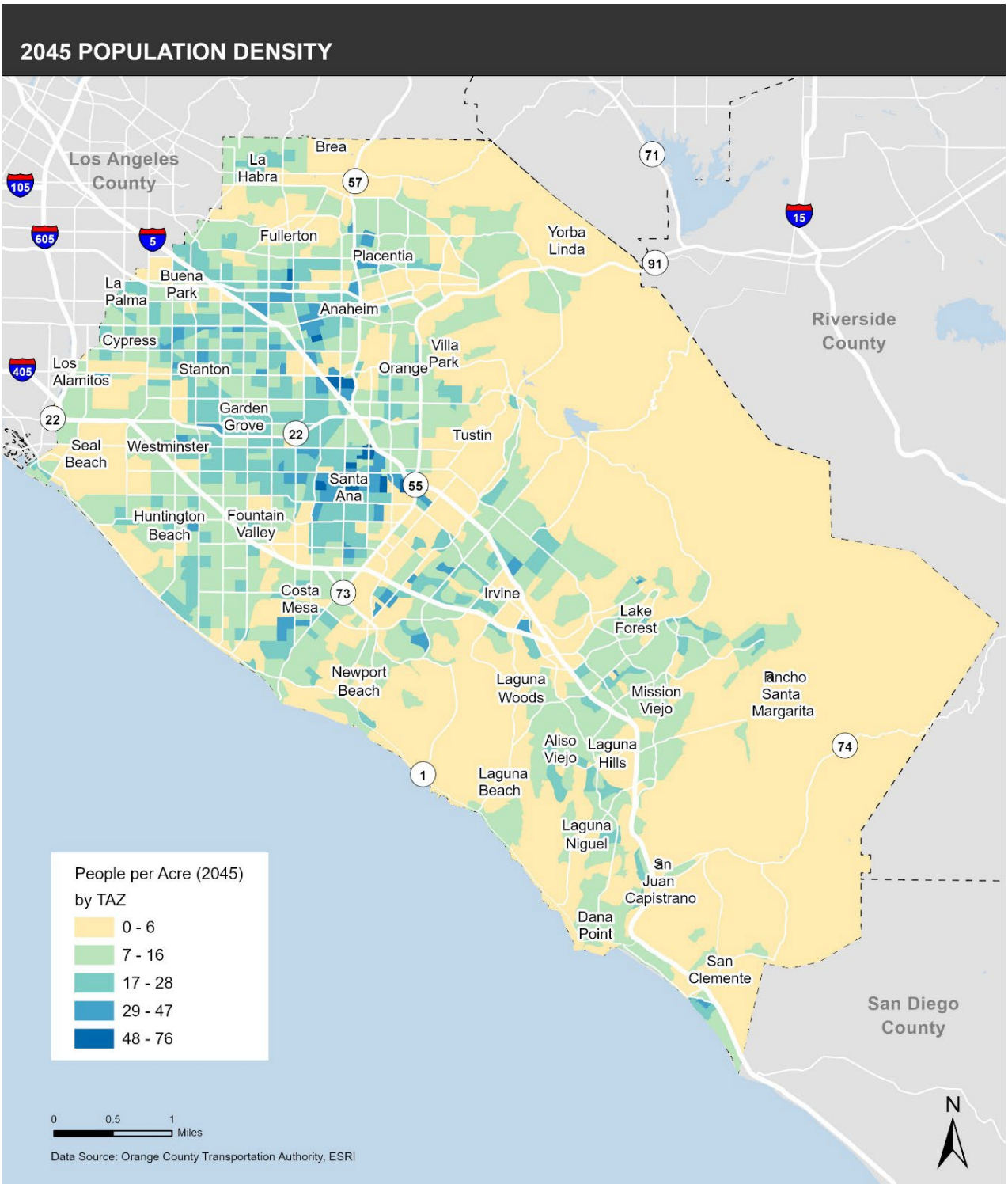


FIGURE 39 PROJECTED CHANGE IN POPULATION DENSITY (2016 – 2045)

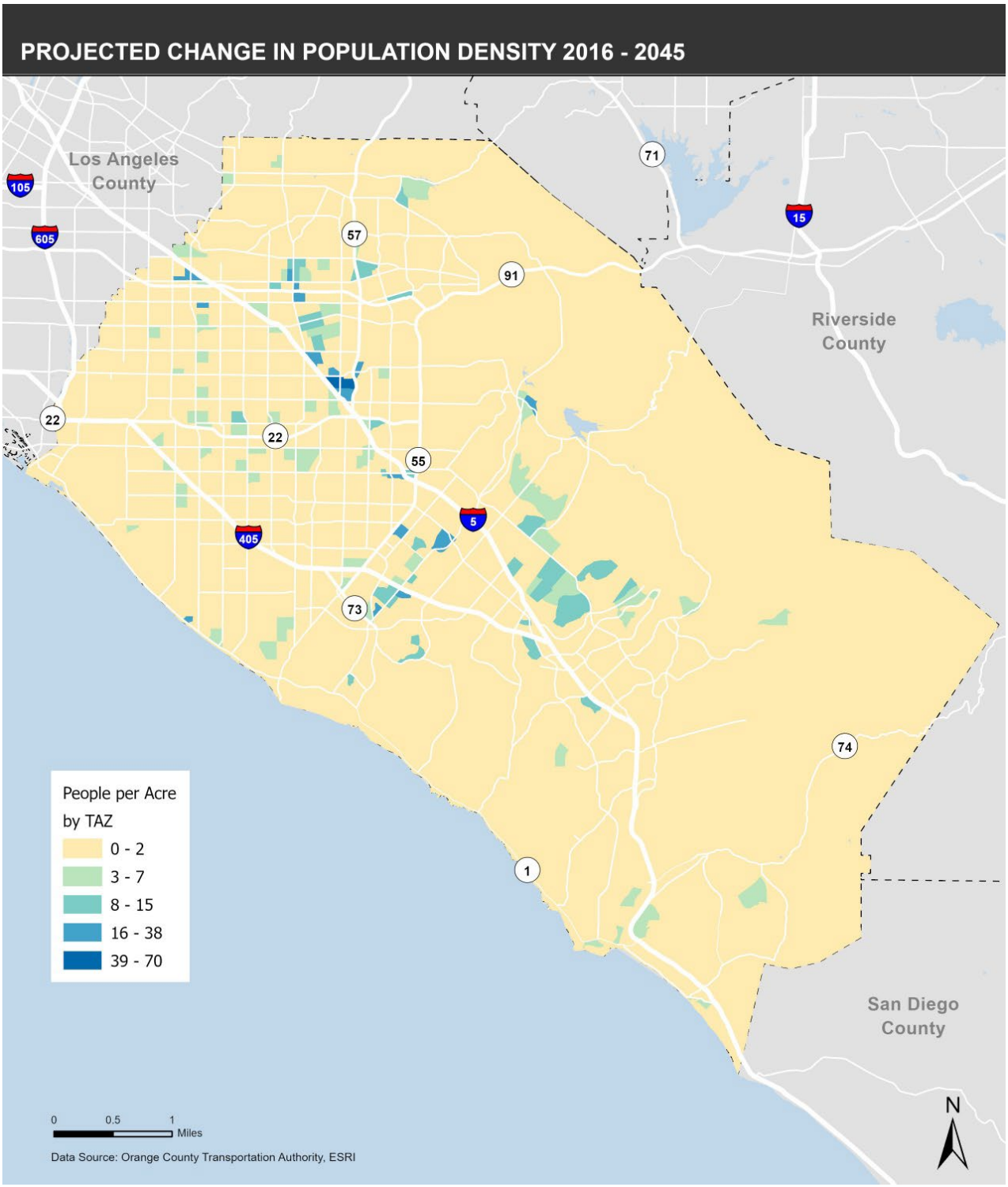


FIGURE 40 PROJECTED EMPLOYMENT DENSITY (2045)

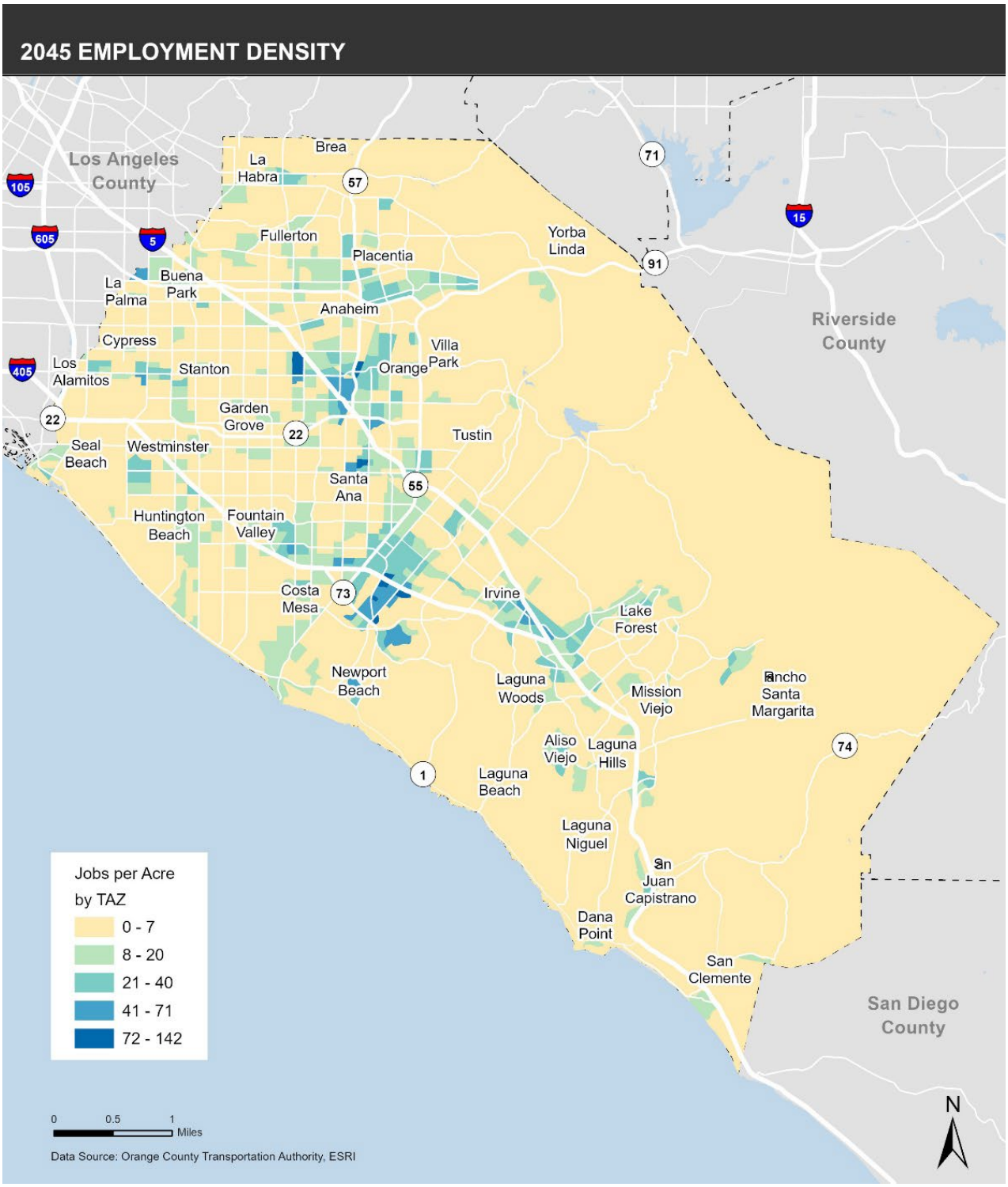
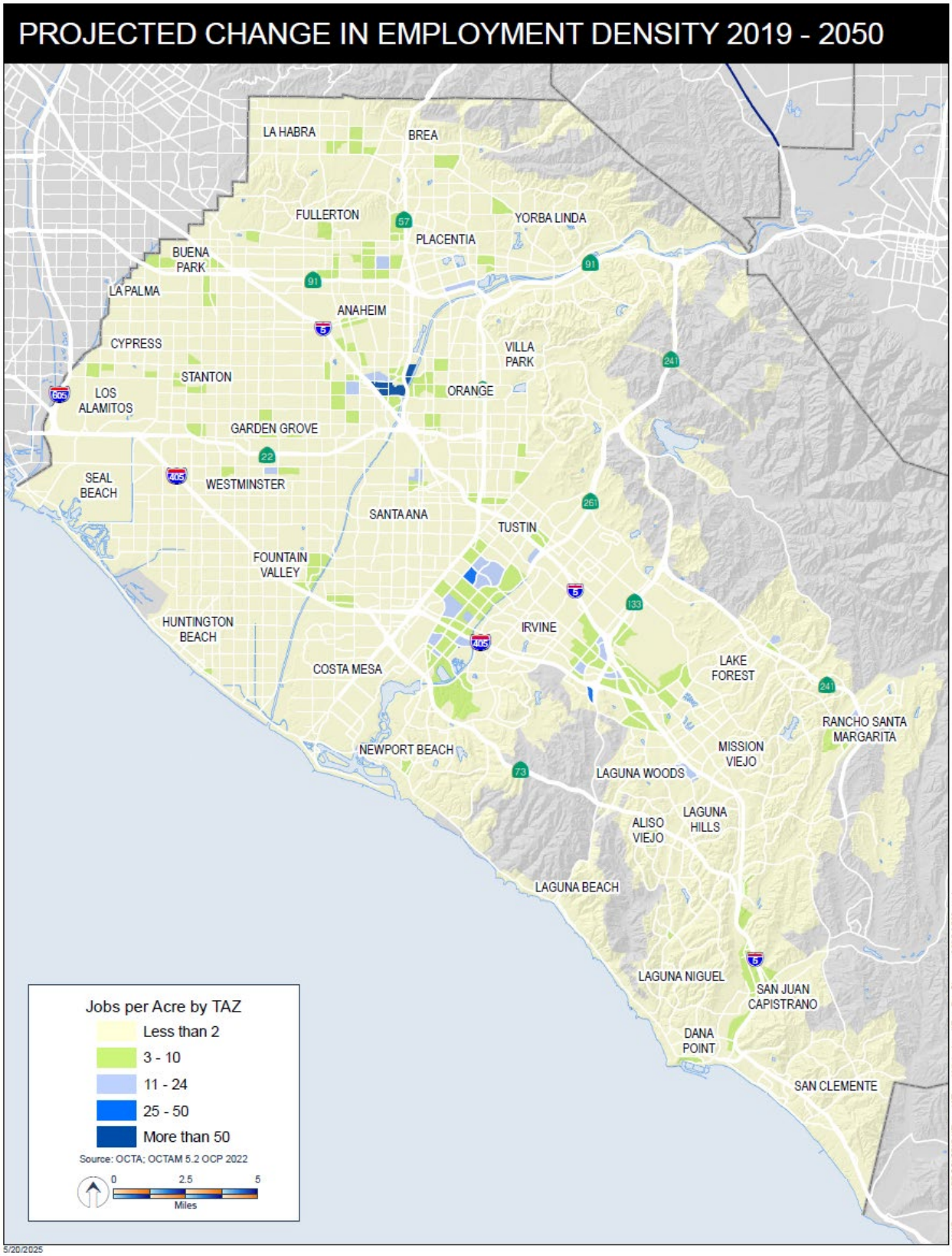


FIGURE 41 PROJECTED CHANGE IN EMPLOYMENT DENSITY (2019 – 2050)



8.6 OTHER TRIP GENERATORS

Colleges and Universities

Orange County is home to numerous colleges and universities. With their generally young and lower-income student bodies, these institutions represent a major potential source of transit ridership. College and university transit ridership can be further increased when the transit operator partners with a school to provide discounted fares, as OCTA has done in many cases, or when campuses offer their own service such as UC Irvine's Anteater Express shuttle. Colleges and universities also generate all-day demand for transit—well beyond the peak hours—although demand fluctuates seasonally.

Major Retail and Medical Facilities

Like colleges and universities, malls and shopping centers are major job centers and major generators of non-work trips; they are also sources of all-day demand. A majority of the retail centers are sited along major corridors in the roadway network such as Interstate 405 and Interstate 5. In addition to being major destinations for shoppers, some of the largest facilities, such as Fashion Island in Newport Beach and MainPlace in Santa Ana, are areas of the county with high employment density.

In general, the distribution of major medical facilities correlates to population distribution, with most facilities located in the urbanized areas of the northern half of the county and facilities in the less populated southern half sited along the I-405 and I-5 corridors.

Other Major Attractions

In addition to schools, shopping malls, and hospitals, the following are also major trip generators: theme parks, stadiums, and arenas. Orange County's most notable major attractions are in the northern half of the county, often near the intersections of major freeways.

Disneyland, which draws visitors from all over the world, also represents a node of high employment density. Venues like Angel Stadium and Honda Center, which host sporting events and concerts, are important given the sheer volume of trips they attract at specific times.

8.7 DEMOGRAPHICS

Demographic characteristics such as age, gender, ethnicity, and income tend to correlate with transit use. Figure 42 through Figure 54 illustrate a broader range of demographic inputs, as well as how Orange County populations with a tendency toward transit use (such as low-income and youth populations) overlap spatially. Transit demand generally is expected to be higher in these areas.

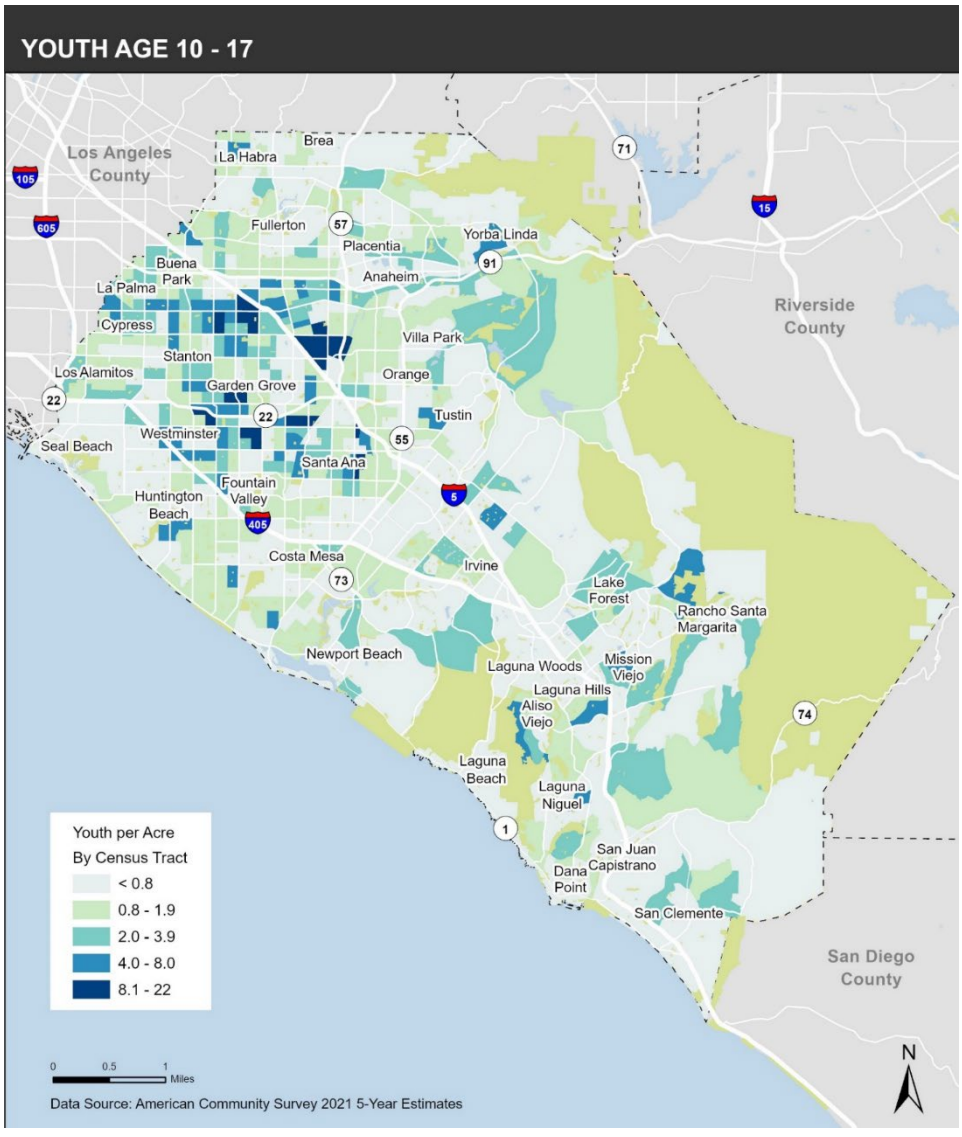
Population Characteristics

Youth

People under 18 are a strong ridership group in many communities. Young people will use transit if it is affordable and meets their educational and recreational transportation needs. Figure 42 represents the density of youth living in Orange County:

- The northern half of the county, particularly around Santa Ana and Anaheim, has clusters of higher density youth populations.
- Areas with higher density youth populations correspond to areas with higher rates of low-income households, households speaking limited English, and large average household size.

FIGURE 42 DENSITY OF YOUTH POPULATION



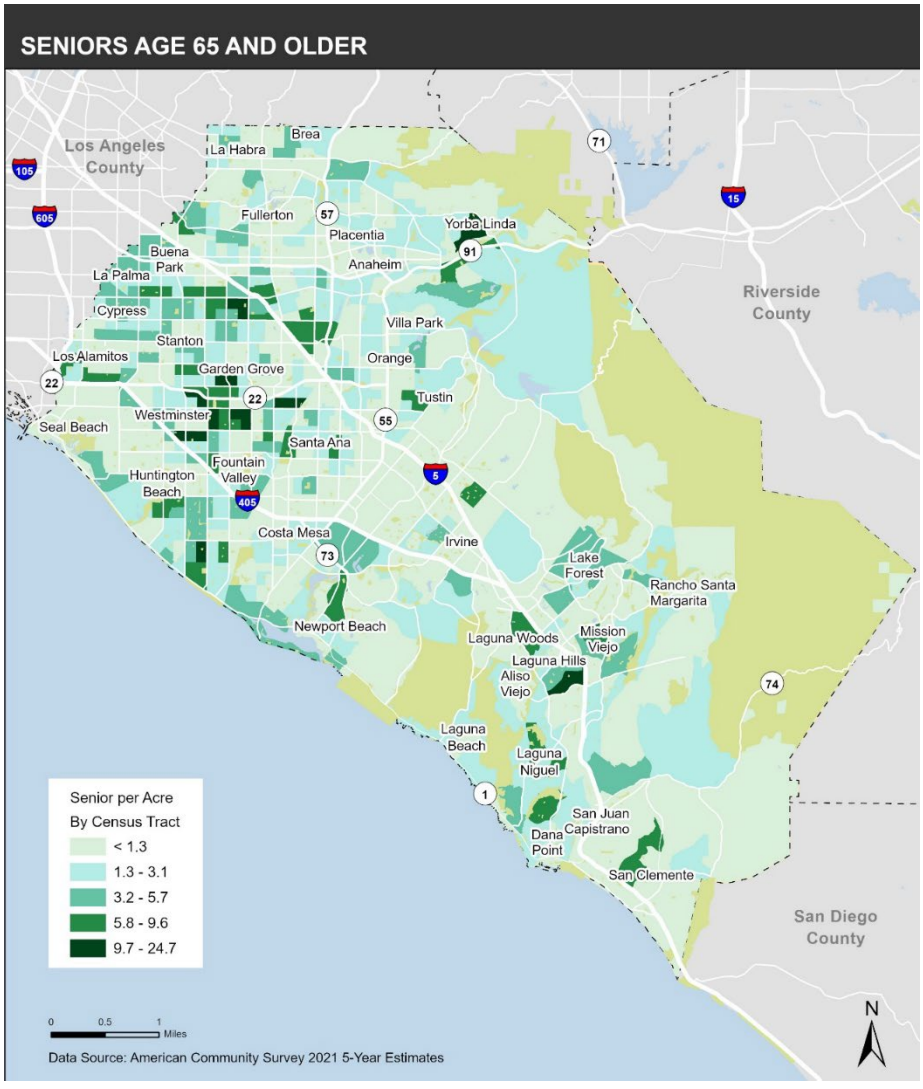
Older Adults

As people age, they often become less comfortable driving or less able to operate a vehicle. Costs associated with auto operation and maintenance can also be a burden as older adults transition to fixed incomes. Transit offers older adults the freedom to stay in their homes, or age in place, even as they transition away from driving.

Recent surveys have shown that the baby boomer generation desires a more active retirement lifestyle than previous generations. Boomers are living longer, staying more active, and seeking out neighborhoods that are walkable and served by transit. Figure 43 represents the density of seniors living within Orange County:

- The largest senior populations are found in a few distinct clusters, such as communities surrounding Garden Grove, Westminster, Yorba Linda, Laguna Woods and Laguna Hills.
- Areas of moderate senior population density are widely dispersed throughout the residential parts of the county.

FIGURE 43 DENSITY OF SENIOR POPULATION

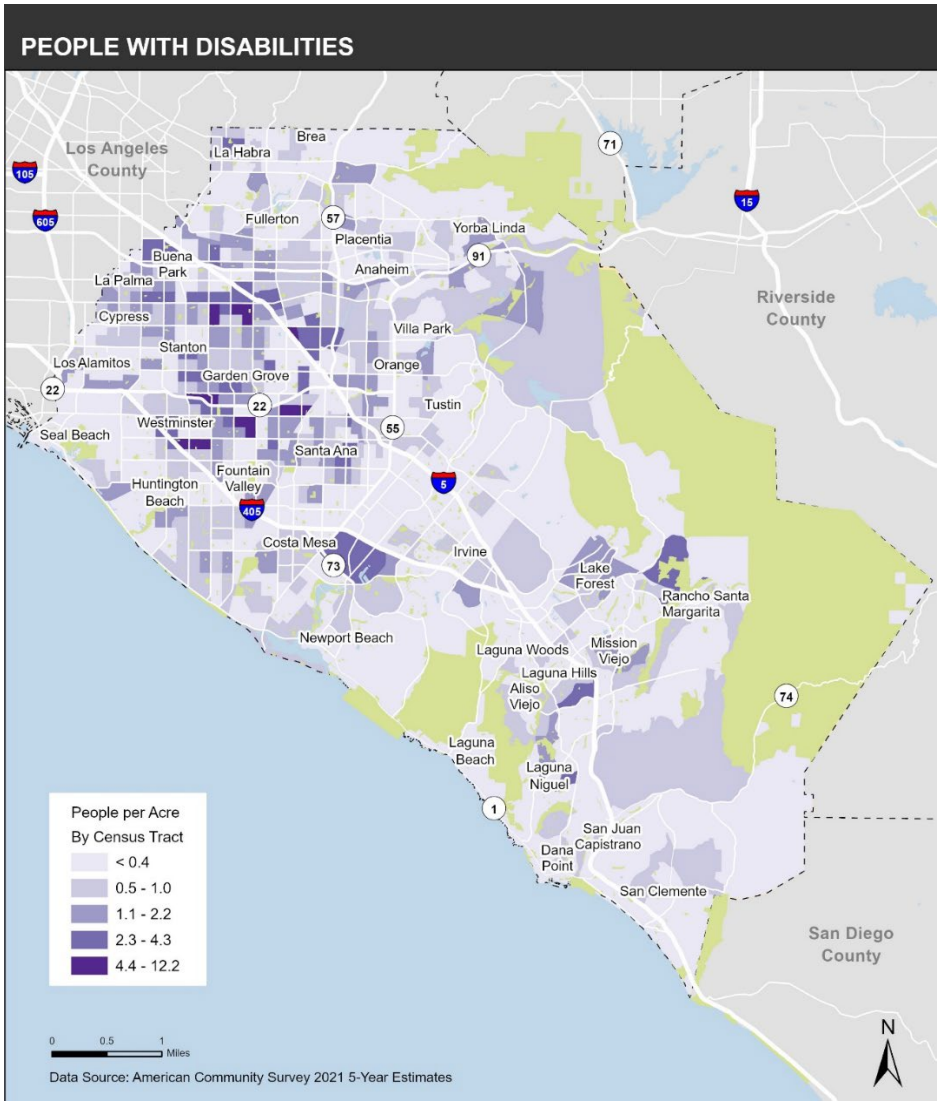


People with Disabilities

People with disabilities often depend on transit for their daily mobility needs. Public transit, including specialized paratransit services, is an essential resource to ensure people with disabilities are able to remain active members of the community. Figure 44 represents the density of persons with a disability living within Orange County. Key findings include the following:

- Clusters of people with disabilities correlate to areas of the county with higher population density, such as Santa Ana and the surrounding communities such as Garden Grove and Westminster.
- Areas with the highest density of people with disabilities do correspond to areas of the county with the highest density of seniors.
- Overall, most census block groups throughout the county have fewer than one resident with a disability per acre.

FIGURE 44 DENSITY OF POPULATIONS WITH DISABILITIES

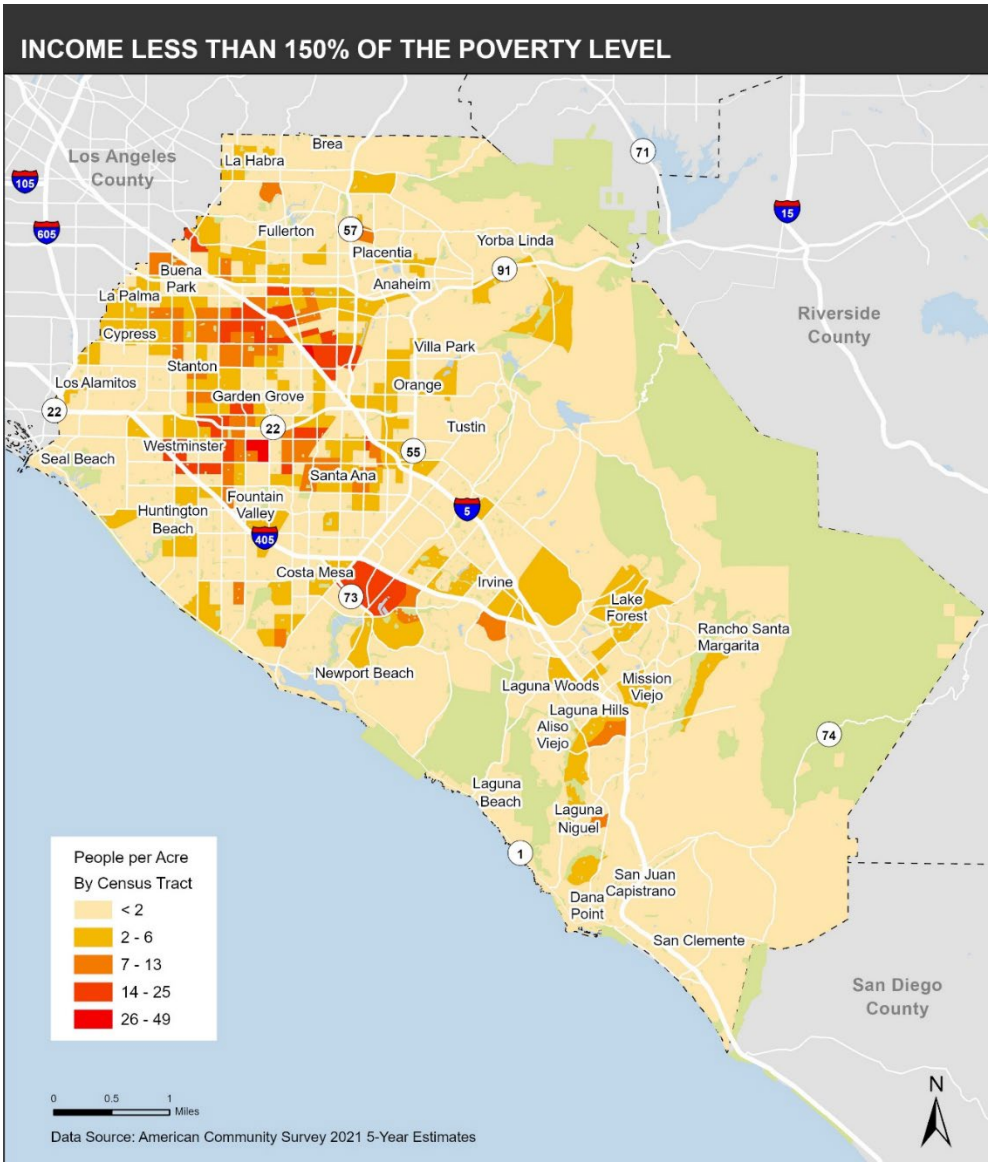


Income

Households with low incomes are generally more dependent on transit services than those with higher incomes. Low-income households are those that earn up to 150 percent of the federal poverty level. Figure 45 represents the density of low-income households throughout the county:

- Areas of the county with the highest density of low-income households correspond to the highest population densities.
- In many cases, census blocks with the highest rates of low-income households correlate to census blocks with a high density of non-white populations and large average household size.
- Areas of low-income populations are far more prevalent in the northern half of the county.

FIGURE 45 DENSITY OF LOW-INCOME POPULATIONS

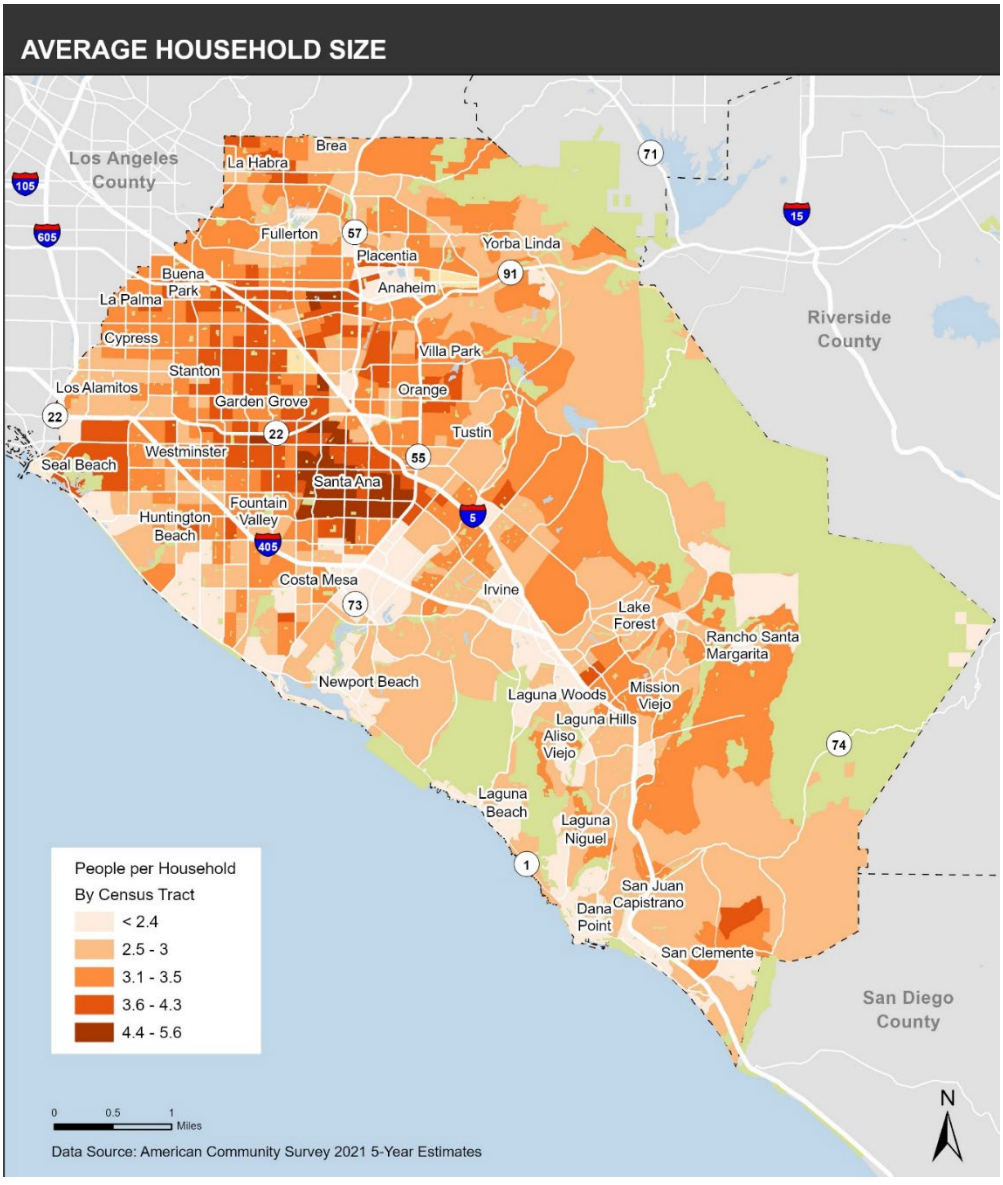


Household Size

Historically, greater household size is an indicator of travel demand commonly observed in lower-income and new immigrant communities. Figure 46 represents the density of people per household throughout Orange County. Key findings include the following:

- The areas with the greatest density of large households (more than five people) are consistent with the areas of highest population density, such as central Santa Ana.
- Areas in the northern half of the county with average household sizes above the county average correspond to areas with high rates of low-income households, youth, Latino populations, and limited English-speaking households.

FIGURE 46 DENSITY OF PEOPLE PER HOUSEHOLD

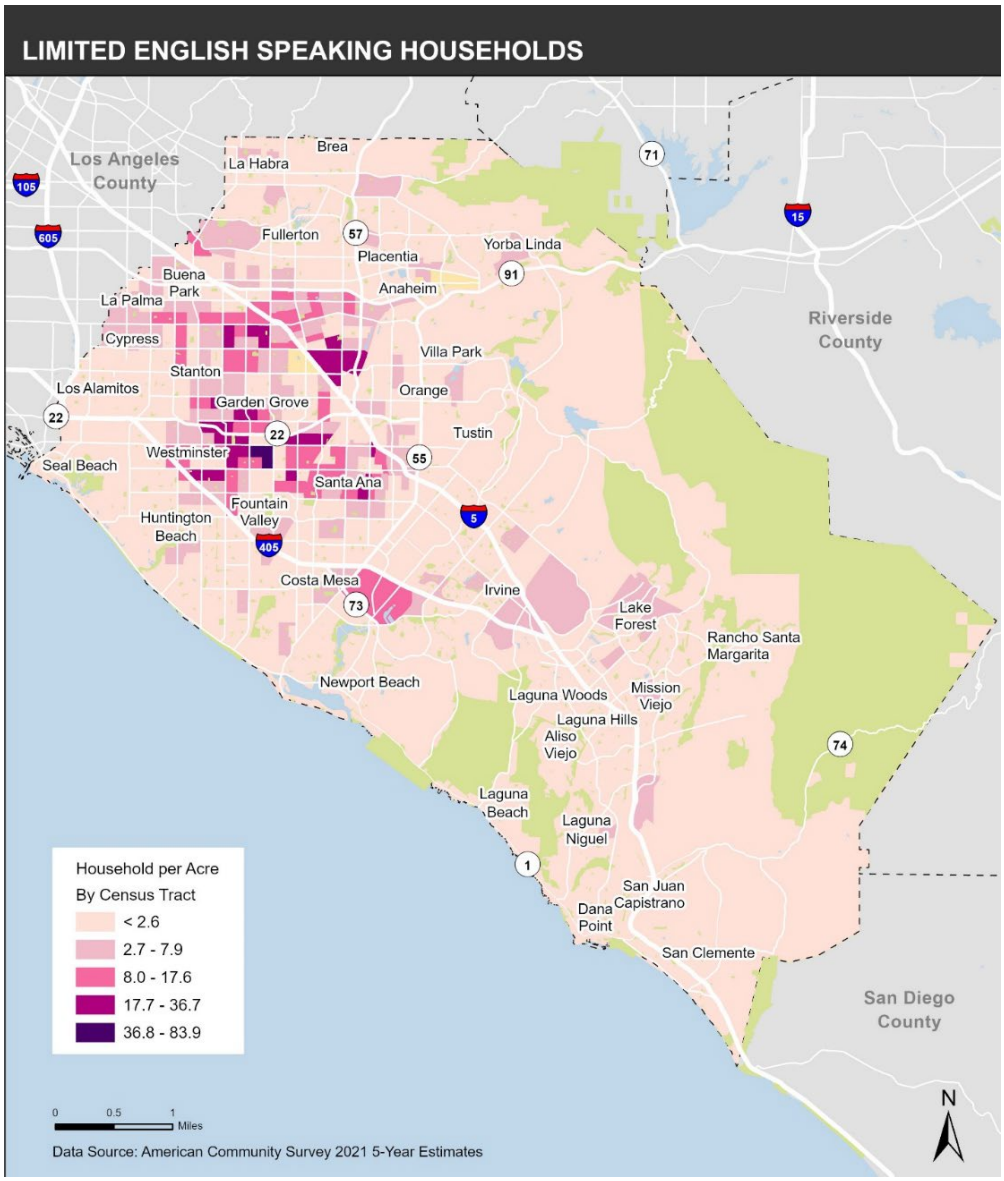


Limited English Proficiency

Individuals who have limited English proficiency (LEP) often have lower incomes because of the barriers that they face in participating in the job market. As a result, LEP populations typically have higher rates of transit use than those of native or fluent English speakers. Figure 47 represents the density of LEP households throughout the county. Key findings include the following:

- The highest density of LEP households is primarily confined to the highest population density areas in the northern half of the county.
- The location of high density LEP areas corresponds to areas with high rates of low-income households and Latino populations.

FIGURE 47 DENSITY OF LIMITED ENGLISH SPEAKING HOUSEHOLDS



Ethnicity

In the United States, non-white populations are generally more likely to use transit (there are, of course, significant variations both among and within groups.)

Figure 48 presents the density of white (non-Hispanic) populations across the county, while Figure 49 through Figure 53 map the density of non-white populations throughout Orange County. The figures represent the following findings:

- The highest density white populations are most prevalent along the coast and in the southern half of the county.
- In general, non-white populations are far more prevalent in the northern half of the county.
- High-density clusters of Latino populations largely correspond to areas of overall high population density, such as Anaheim and Santa Ana.
- Denser populations of Asians or Pacific Islanders are most prevalent in the northwest quadrant of the county, with a considerable cluster forming a triangle between Westminster, Garden Grove, and Santa Ana. In contrast to all other non-white groups, Asian or Pacific Islander populations also have a considerable presence in Irvine.
- The density of African-American and Black populations is low across the county, with the largest population stretching from Los Alamitos to Anaheim in the northwest quadrant of the county.
- Higher density patterns for populations identifying as "other" or mixed race are similar to that of Latino populations but of less intensity outside of core areas.
- The density of American Indian/Alaskan Native populations is low throughout the county.

FIGURE 48 DENSITY OF WHITE (NOT HISPANIC OR LATINO) POPULATIONS

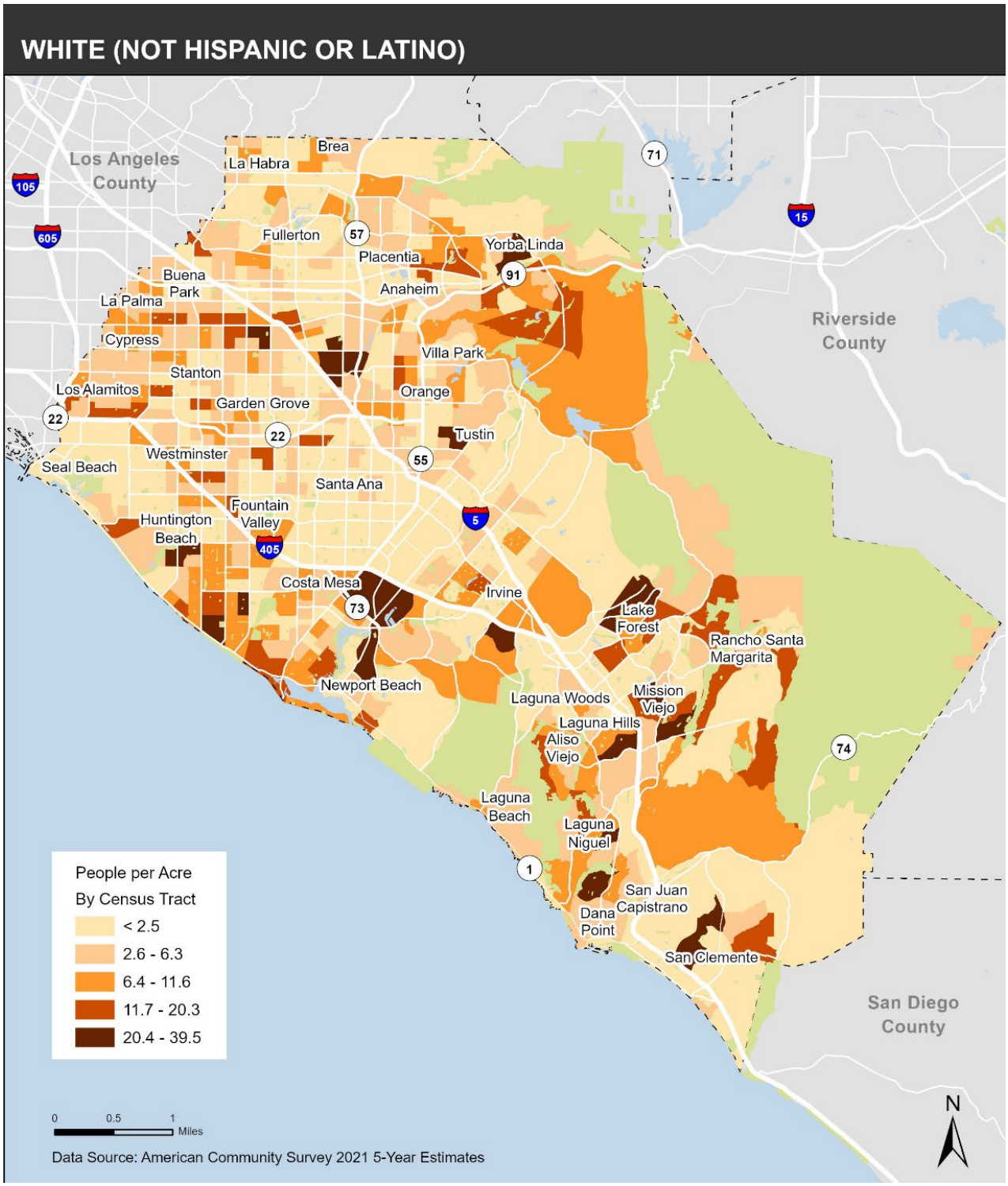


FIGURE 49 DENSITY OF LATINO (NON-WHITE) POPULATIONS

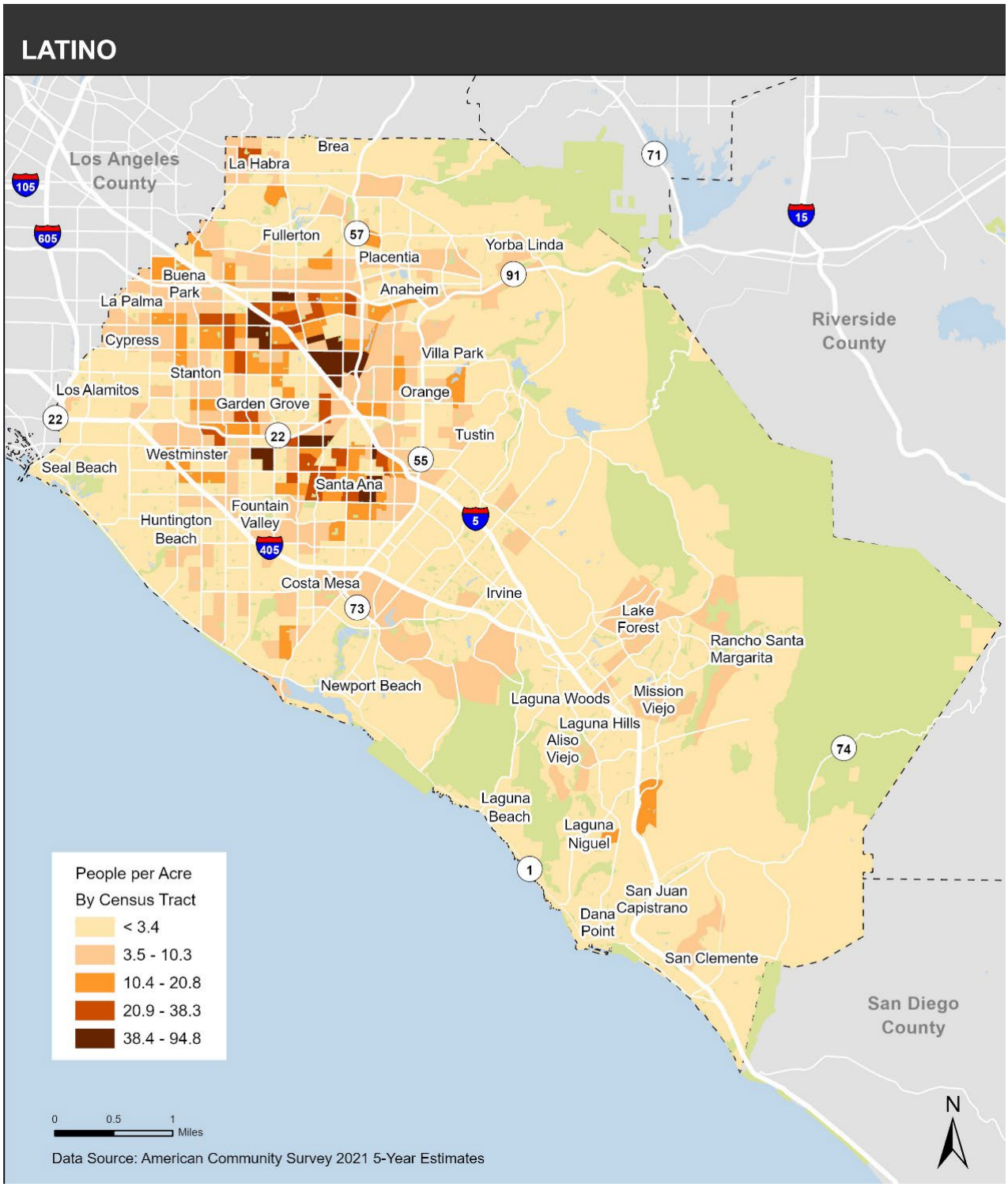


FIGURE 50 DENSITY OF ASIAN OR PACIFIC ISLANDER POPULATIONS

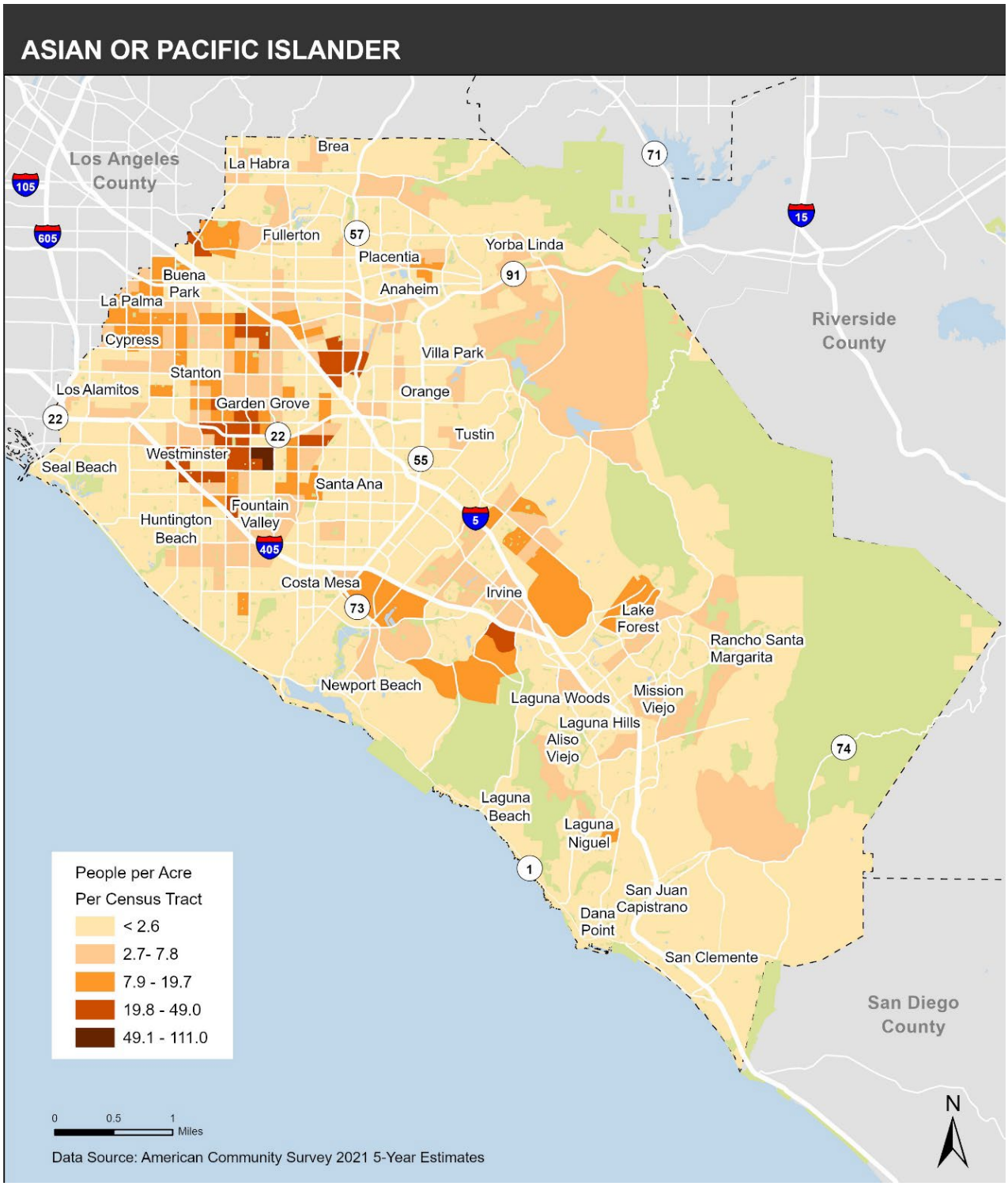


FIGURE 51 DENSITY OF AFRICAN-AMERICAN/BLACK POPULATIONS

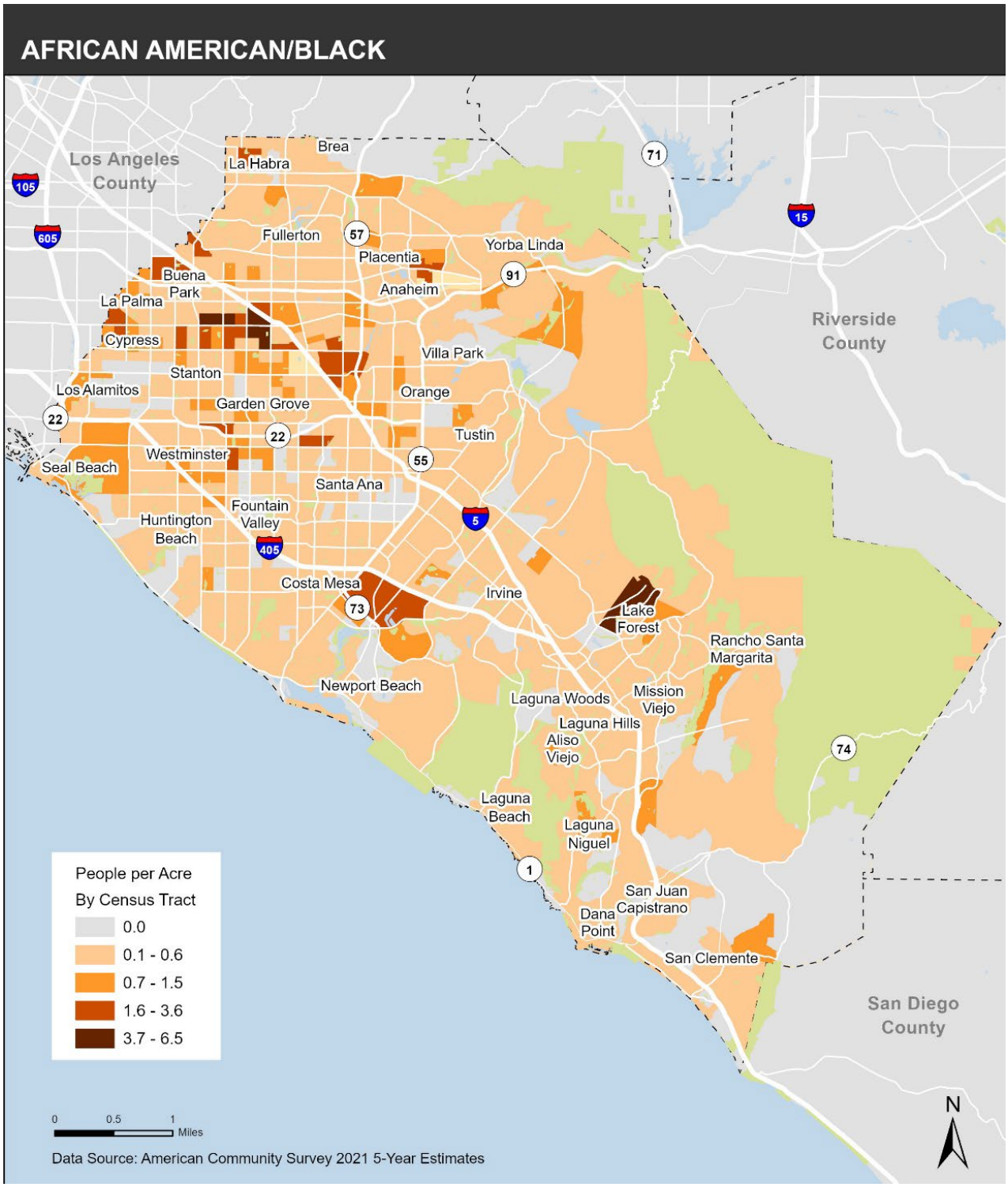


FIGURE 52 DENSITY OF OTHER OR MORE THAN ONE RACE

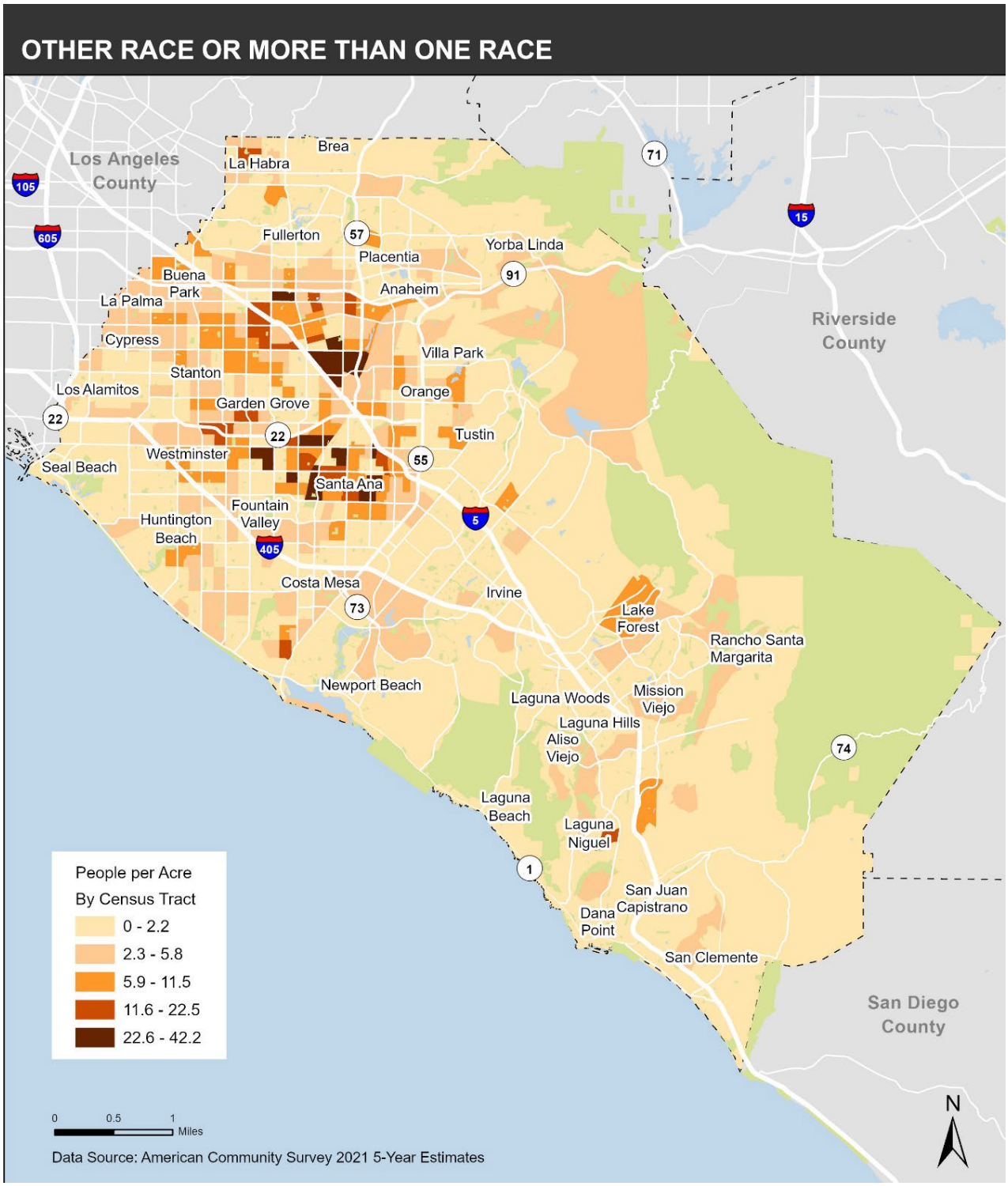
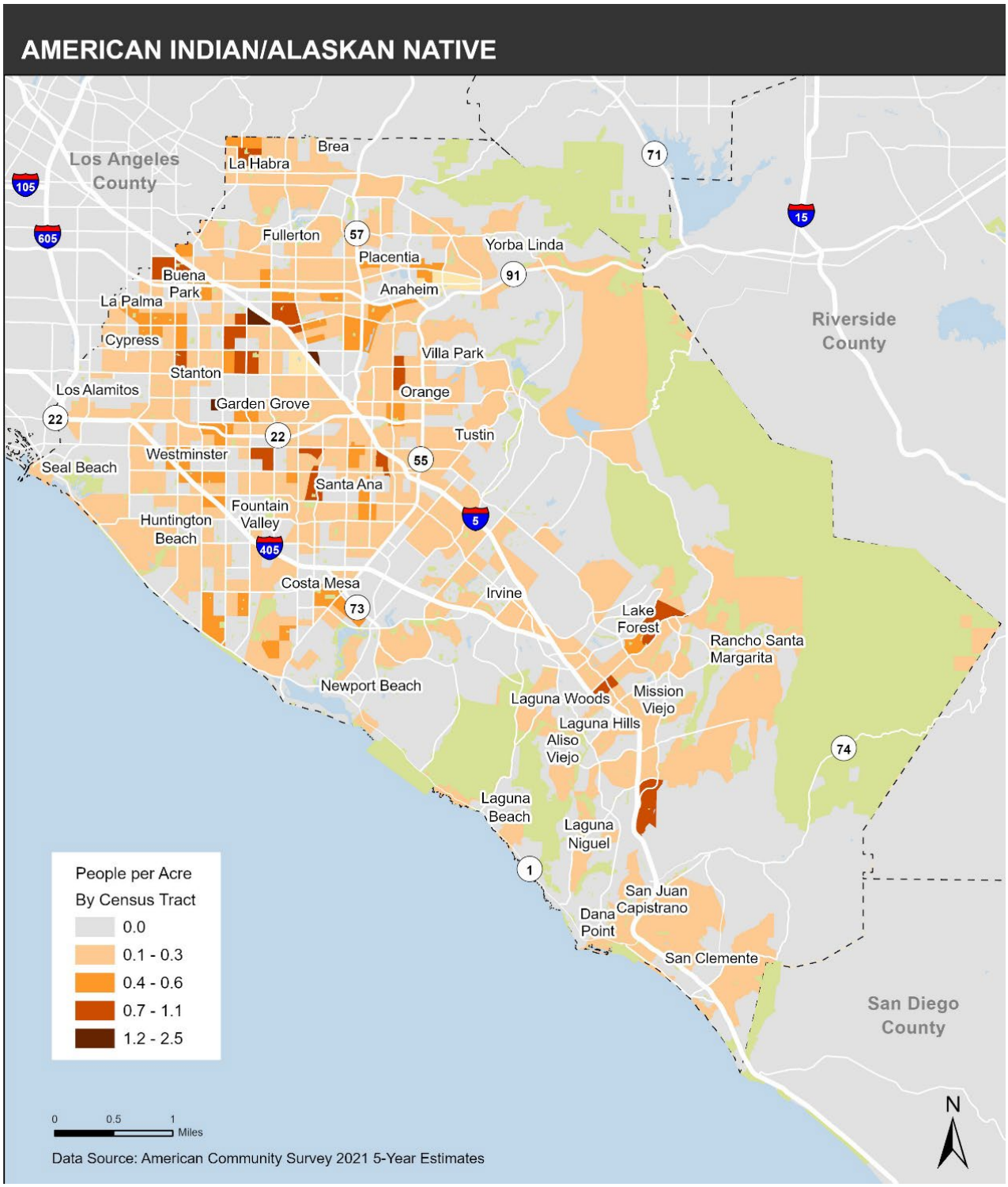


FIGURE 53 DENSITY OF AMERICAN INDIAN/ALASKAN NATIVE POPULATIONS

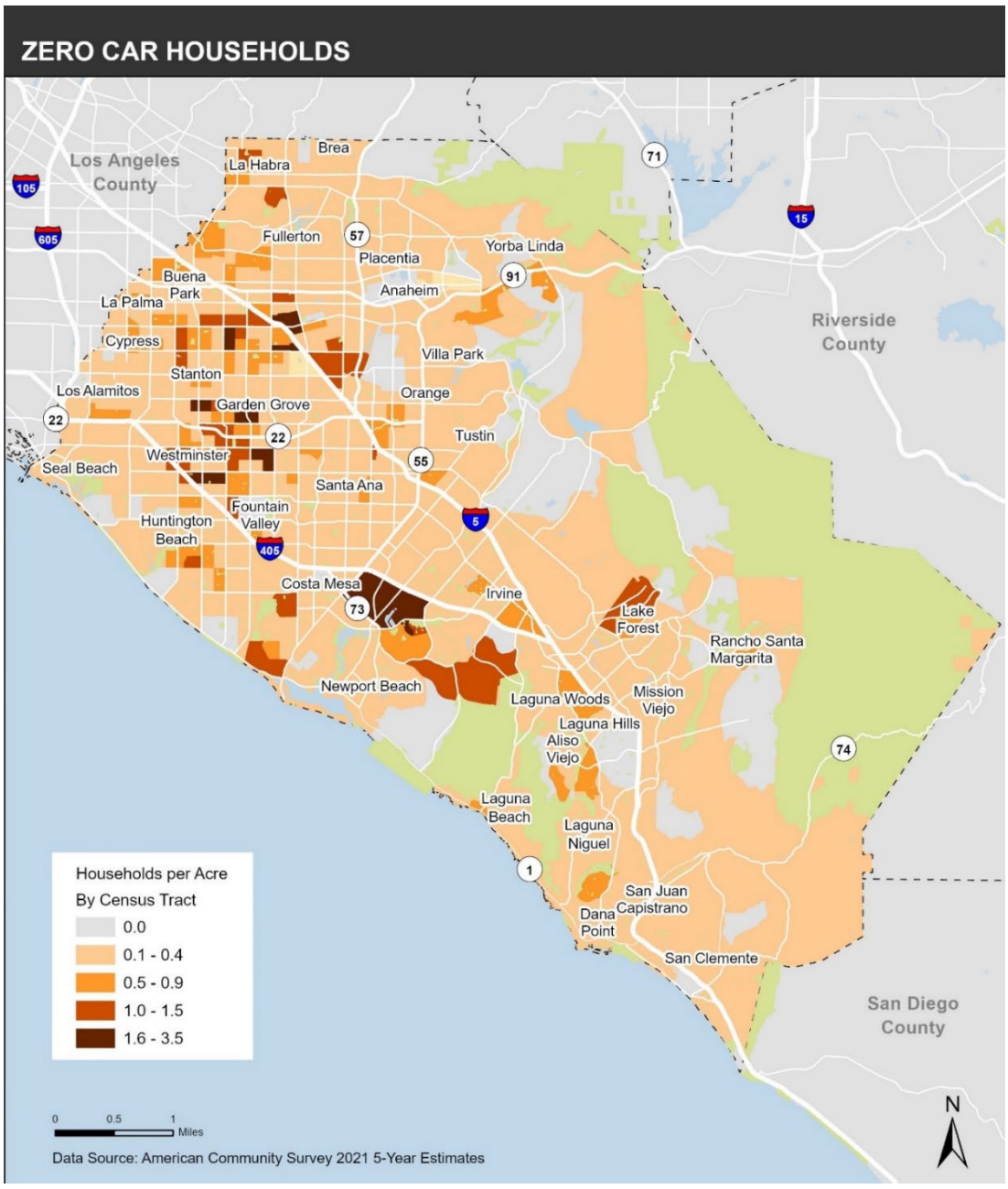


Vehicle Access

In auto-oriented areas with limited transit options, people who can afford a car tend to own a car. Figure 54 represents the density of zero-vehicle households throughout the county:

- The overall density of zero-vehicle households throughout the county is low.
- Census groups with the highest density of zero-vehicle households correlate to areas with high rates of low-income and senior populations.

FIGURE 54 DENSITY OF HOUSEHOLDS WITHOUT A VEHICLE



8.8 TRAVEL AND TRANSIT DEMAND

Travel Patterns Analysis

In addition to socioeconomic, land use, and demographic conditions, understanding travel patterns is essential to assessing transit and overall travel demand throughout Orange County. The following section presents maps of existing (2023) and projected future (2045) average weekday travel flows (daily trips) when schools are in session. The maps show travel flows within the county and to and from neighboring counties.

The data is based on OCTA's travel demand model, with 2045 projections based on the Master Plan of Arterial Highways, which includes planned changes to the roadway network. Travel patterns shown are between incorporated cities and census-designated places (CDPs) in unincorporated areas.[8] Remaining unincorporated areas accounting for relatively small numbers of trips are not included in the analysis. Numbers of trips within and between cities and CDPs are, of course, partly a factor in total numbers of residents and jobs within each; for this reason, cities including Anaheim, Santa Ana, and Irvine are both major origins and destinations.

Daily Trips by Purpose

Figure 55 presents existing daily trips for all purposes and modes (both single occupant and multiple occupants). In general, the northern half of the county has the highest concentration of travel pairs with the highest number of daily trips between them. Areas of the county with high levels of population density, employment, and activity sites—such as Anaheim, Irvine, and Santa Ana—have heavy daily travel flows between them and multiple other communities. In general, the highest levels of daily trips are shorter trips within communities and between neighboring communities. Longer trips to more distant communities and cross-county flows representing longer trips are less prevalent.

Figure 56 show trips by all modes that begin at home (called a *home-based origin*). Commute trips are largely concentrated in the northern part of the county, including Irvine and Newport Beach.

Figure 57 and Figure 58 show travel between non-residential origins and destinations. *Regular-based other trips* are trips that begin or end at the workplace or school, but do not involve a trip home. *Other-based other trips* are trips that involve neither home nor the workplace or school at either end of the trip. Common trip purposes that fall within these categories include shopping, medical, and recreation. Key findings include the following:

- The highest concentration of regular-based other trips is confined to two northern areas: the Fullerton-Anaheim-Orange corridor and a pentagonal zone composed of Irvine, Newport Beach, Costa Mesa, Santa Ana, and Tustin.

[8] CDPs within Orange County include the following: Coto de Caza, Ladera Ranch, Las Flores, Midway City, North Tustin, and Rossmoor.

- The patterns of other-based other trips (those including neither home nor work) are similar to those of regular-based other trips but at higher volumes, with the northern part of the county accounting for most trips.

FIGURE 55 EXISTING TRAVEL FLOWS: ALL PURPOSES AND MODES

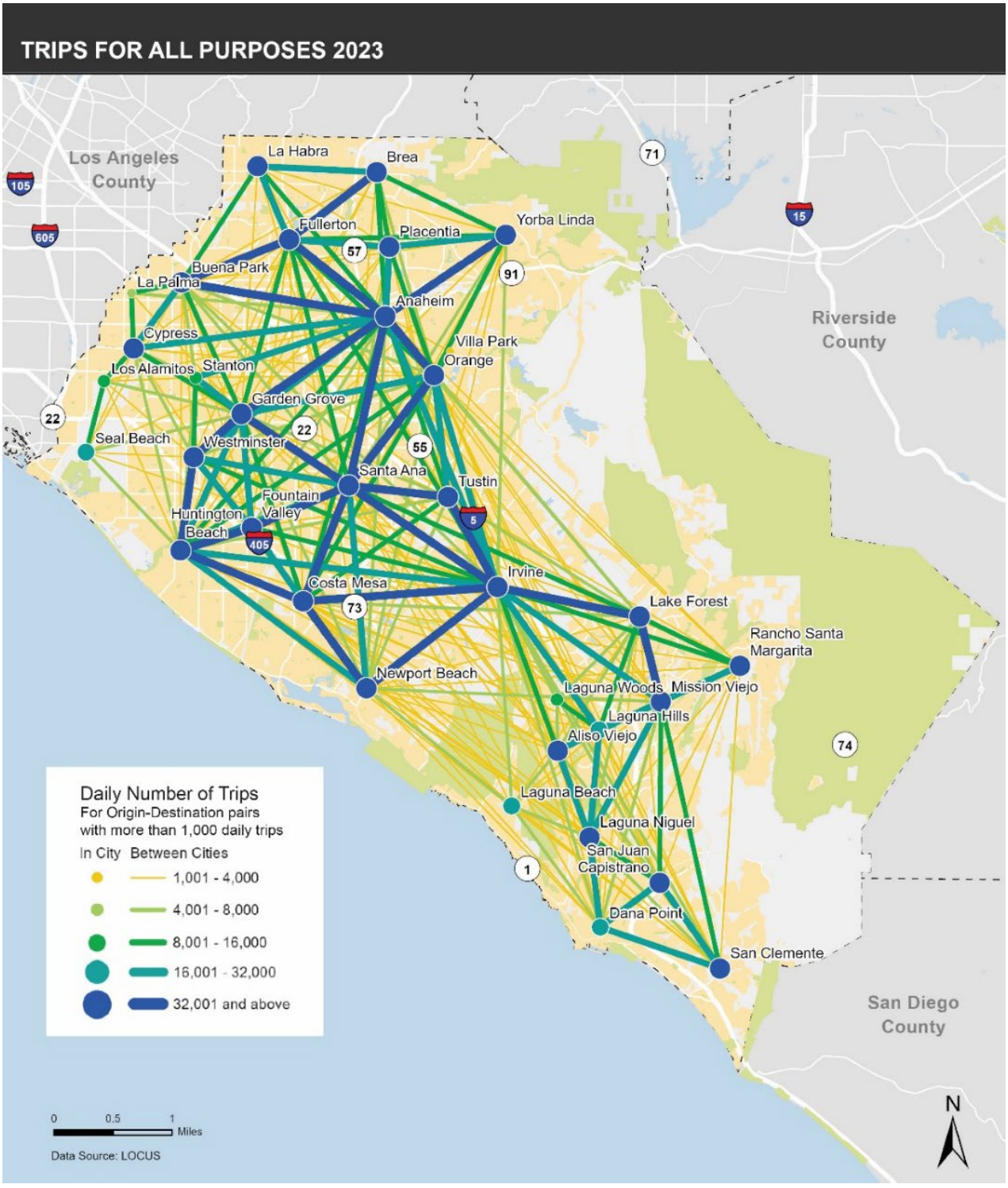


FIGURE 56 EXISTING TRAVEL FLOWS: HOME-BASED REGULAR TRIPS

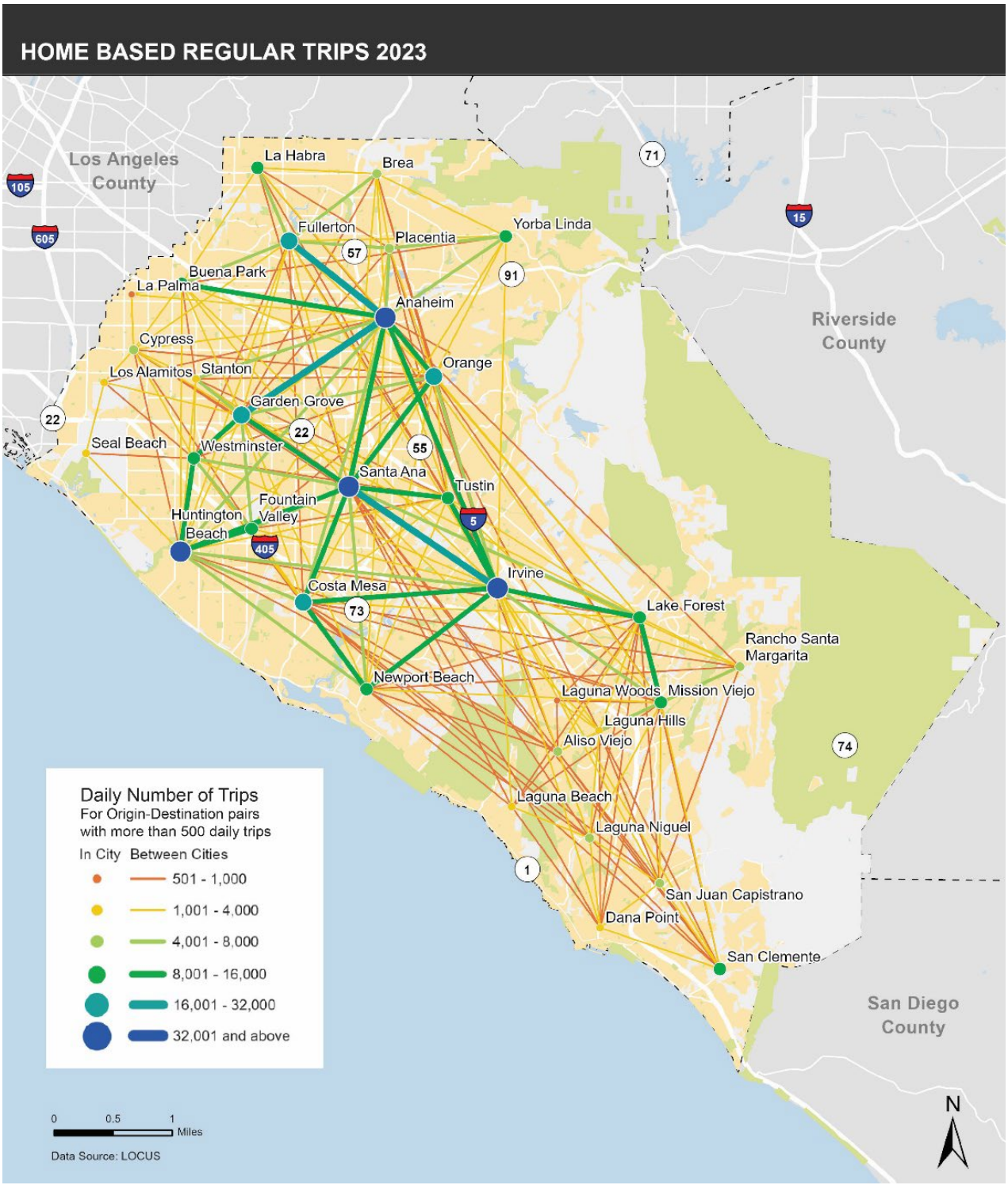


FIGURE 57 EXISTING TRAVEL FLOWS: REGULAR BASED OTHER TRIPS

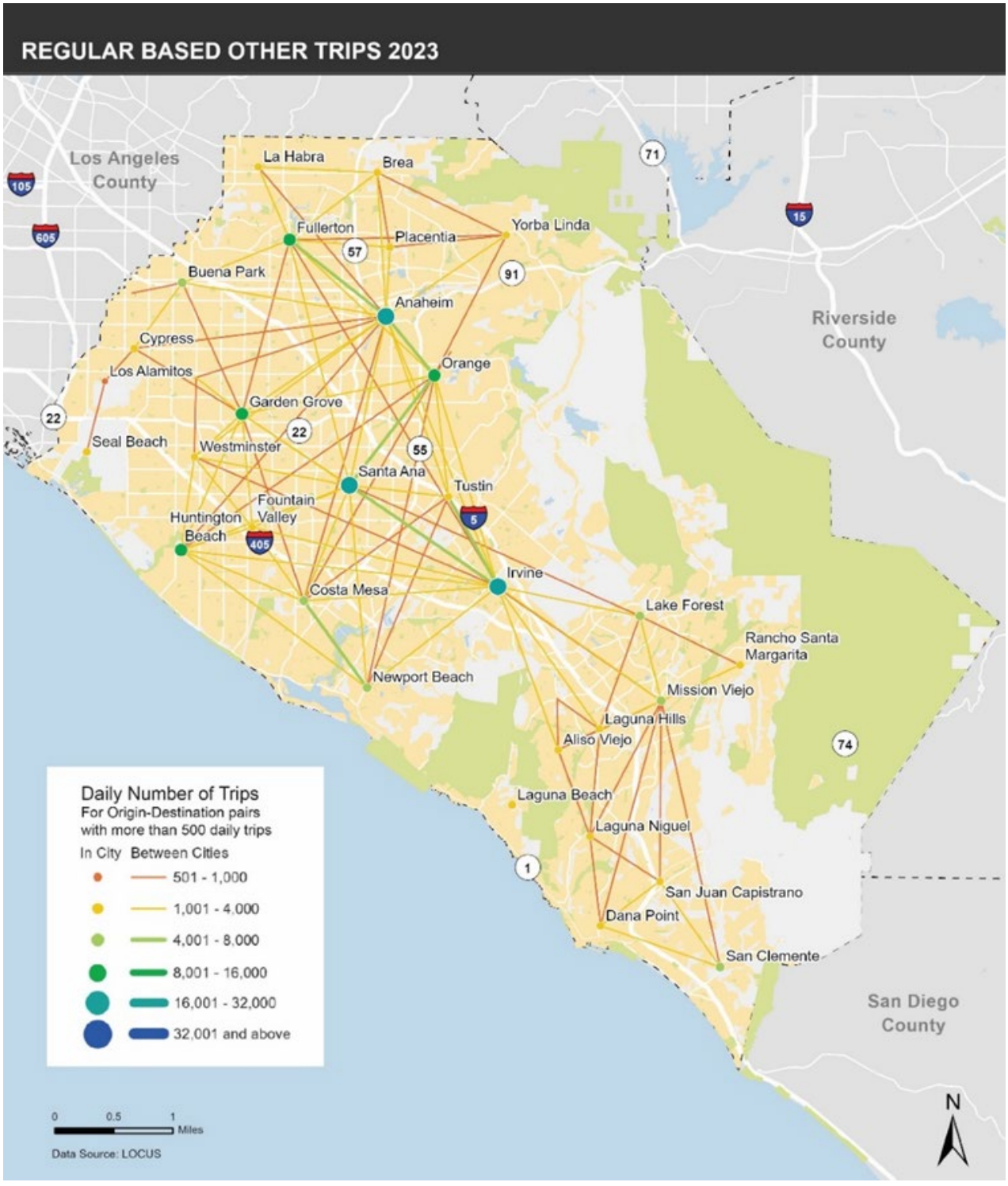
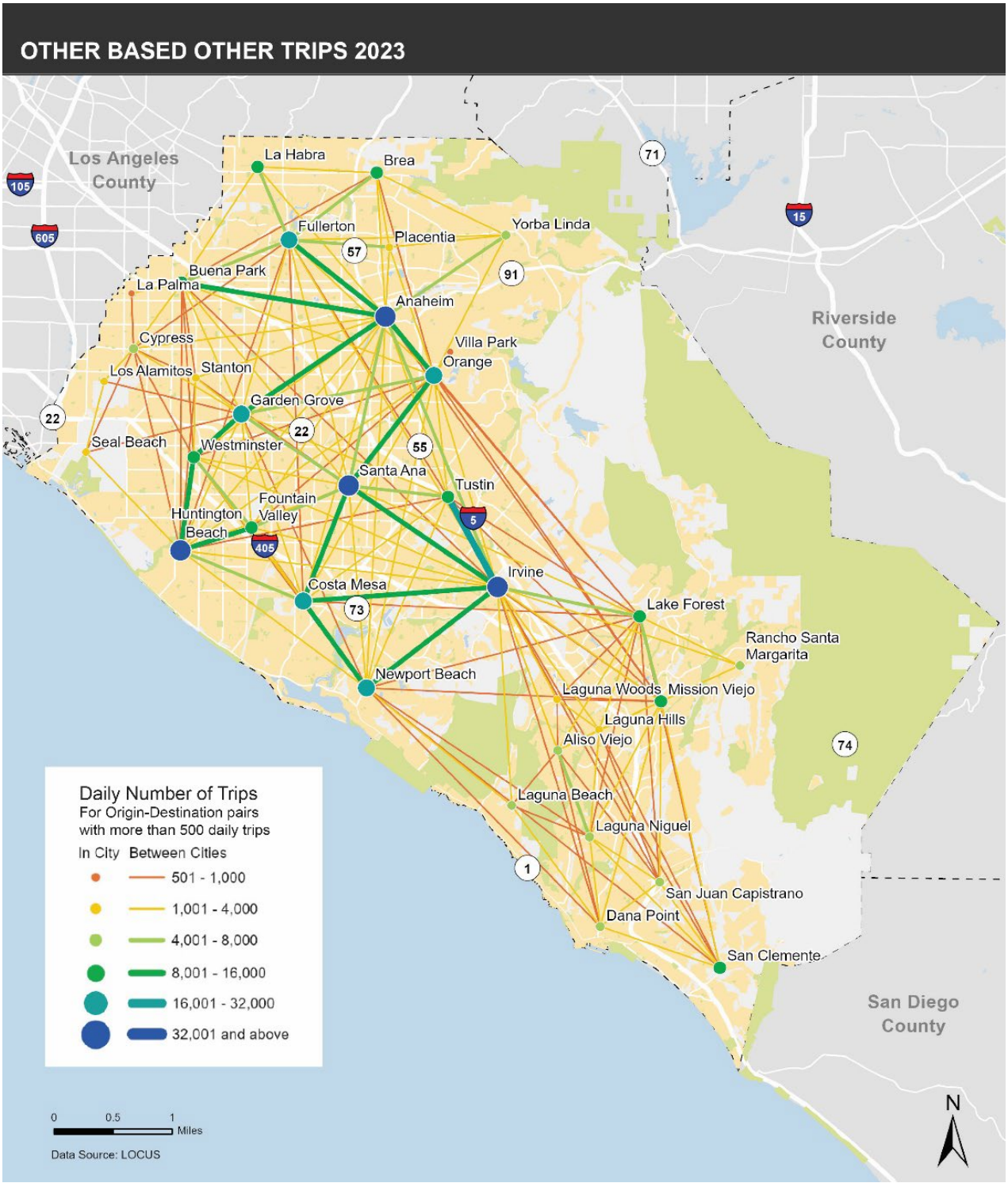


FIGURE 58 EXISTING TRAVEL FLOWS: OTHER BASED OTHER TRIPS



Out of County Trips

Existing travel flows both within Orange County and between Orange County and other counties in Southern California are shown in Figure 59. The vast majority of trips including Orange County both begin and end within the county. However, there are significant numbers of trips made to and from neighboring counties. With more than 1,200,000 daily trips, Los Angeles County accounts for approximately 71 percent of travel to other counties in the region. Riverside County (14 percent) also generates a large number of daily trips.

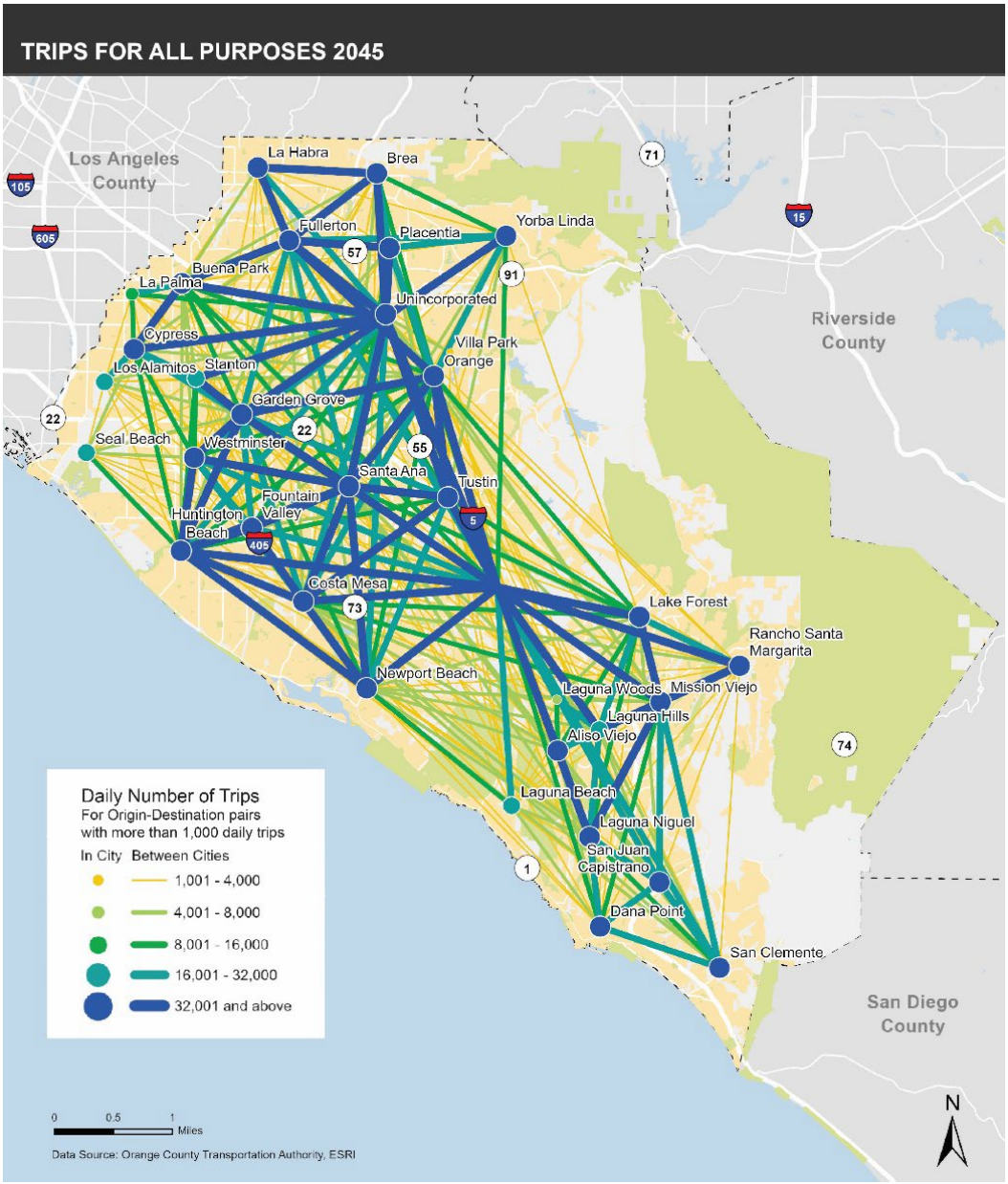
FIGURE 59 EXISTING TRAVEL FLOWS: OTHER COUNTIES

Future Daily Trips

Figure 60 and Figure 61 show projected future weekday average trips, assuming the implementation of planned changes to the transportation network as well as projected population and employment growth.

- Future travel patterns for all trips by all modes are very similar to existing patterns, albeit with an increase in volumes. Most travel will continue to be within the northern part of the county, although large numbers of trips will be made within South County and between other parts of the county.

FIGURE 60 FUTURE TRAVEL FLOWS: ALL PURPOSES AND MODES



- Future travel flows between Orange County and other counties in Southern California are projected to increase to over 2.7 million daily trips by 2045 from 1.7 million trips in 2023. Trips between Orange County and Los Angeles County are projected to account for most of that increase.

FIGURE 61 FUTURE TRAVEL FLOWS: OTHER COUNTIES

8.9 TRANSIT PROPENSITY ANALYSIS

Transit propensity is the likelihood that an individual will use transit for trips. It is based on a range of factors, from the quality of available transit service to surrounding land uses and individual demographic characteristics. OCTA determined that the following six factors best predict Orange County locations with a high concentration of people likely to use transit:

- Per-capita income
- Households making less than $60,000 per year
- Approach volumes at intersections (average daily traffic)
- Intersection density (intersections per square mile)
- Total employment (number of workers)
- Employment density (jobs per acre)

Additionally, the analysis established standardized coefficients that can be used to weight the factors relative to one another, as follows: per-capita income, 0.4; approach volumes, 0.25; employment density, 0.21; total employment, 0.13; household incomes, 0.12; and intersection density, .05.

Figure 62 through Figure 67 map these factors in Orange County. Figure 68 shows an amalgamation of all six factors, indicating areas with the highest overall propensity for transit use. In the figures, darker green areas have the highest ridership potential, while dark red areas have the lowest ridership potential. Key findings include the following:

- Low per-capita incomes are particularly pronounced in the urban core of North/Central County north of the 55 freeway, in cities including Santa Ana, Anaheim, Orange, Garden Grove, Westminster and Buena Park. Higher-income areas are more prevalent to the east in areas including Yorba Linda, Anaheim Hills, Villa Park and parts of Tustin, along the coast in communities including Newport Beach and Laguna Beach, and in South County. There are pockets of lower incomes in South County including student housing at UC-Irvine and mobile home parks and retirement communities closer to I-5. Households with annual incomes below $60,000 follow similar patterns.
- Approach volumes at intersections are an indicator of major destinations and trip generators nearby. Areas with heavy traffic include those near job concentrations, as well as retail areas and major destinations such as theme parks. High approach volumes are particularly pronounced in the Irvine Business Complex and in Anaheim's Platinum Triangle and Resort areas.
- Intersection density is an indicator of both the connectedness of the street network and the presence of small blocks, which combine to reduce walking distances and foster walkable, transit-friendly neighborhoods. There does not appear to be a clear relationship between intersection density and the other variables mapped for this analysis. In addition to the North/Central County areas mentioned above and near freeway corridors in South County, areas with a high density of intersections include Downtown Huntington Beach, the Balboa Peninsula and Balboa Island, and Corona del Mar in Newport Beach, as well as residential parts of Irvine.
- The largest employment clusters, in terms of total numbers of jobs, are found at the Irvine Business Complex and, to a lesser extent, in the Resort area of Anaheim and at the Irvine Spectrum. In addition to these areas, there are high employment densities in Downtown Santa Ana and near the Orange Crush interchange of SR-22, I-5 and SR-57.

FIGURE 62 PER-CAPITA INCOME

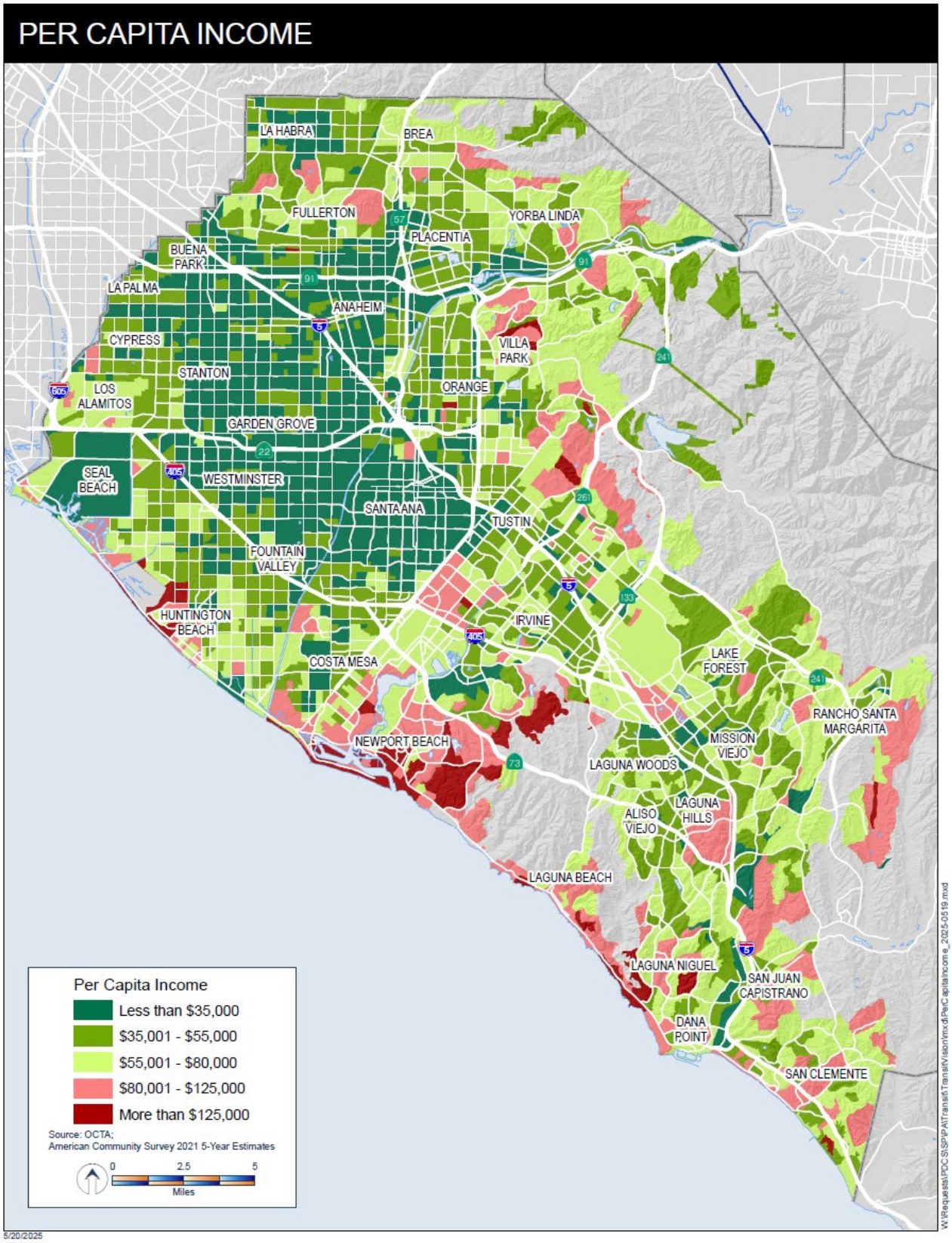


FIGURE 63 ANNUAL HOUSEHOLD INCOME BELOW $60,000

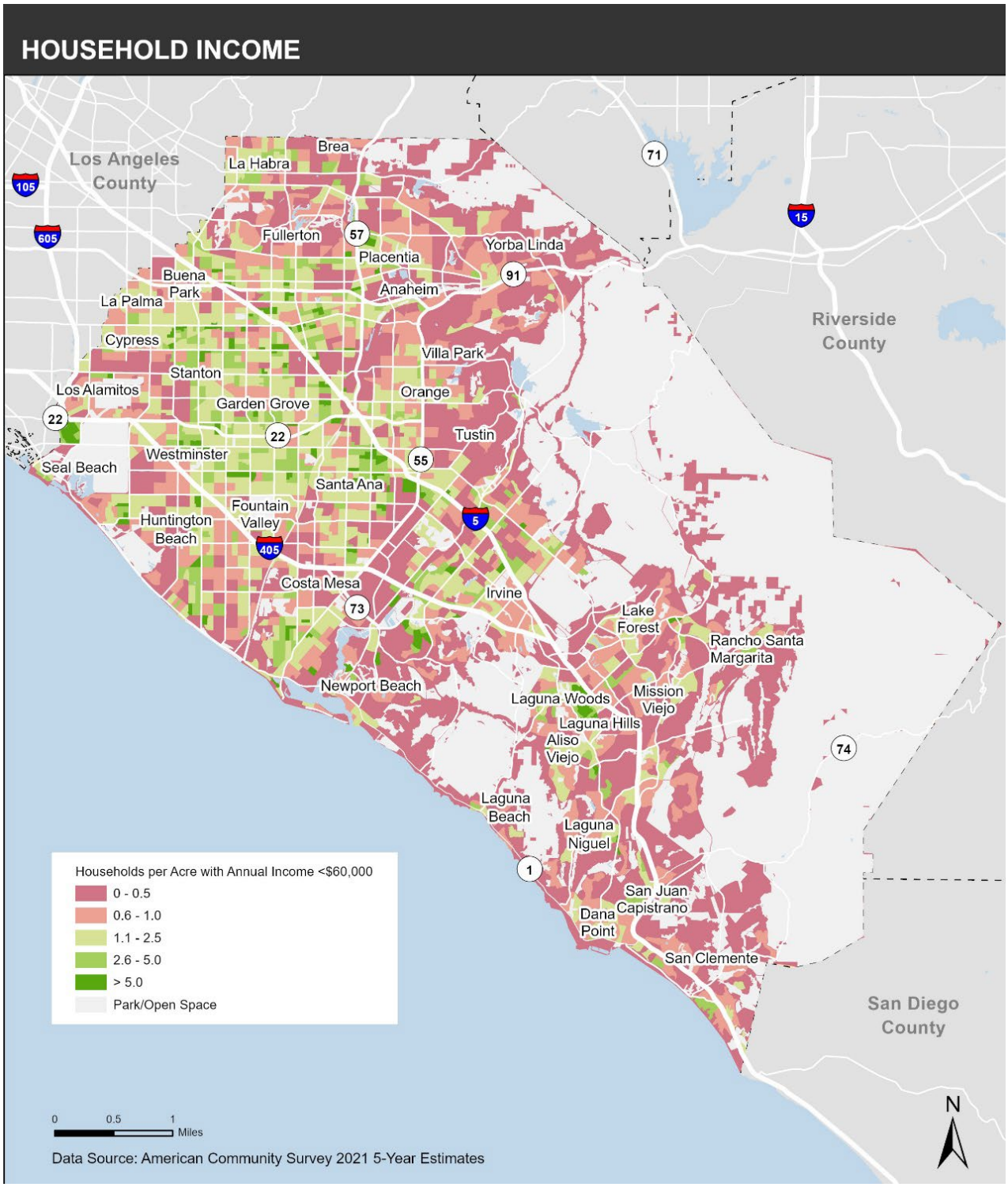


FIGURE 64 APPROACH VOLUMES AT INTERSECTIONS

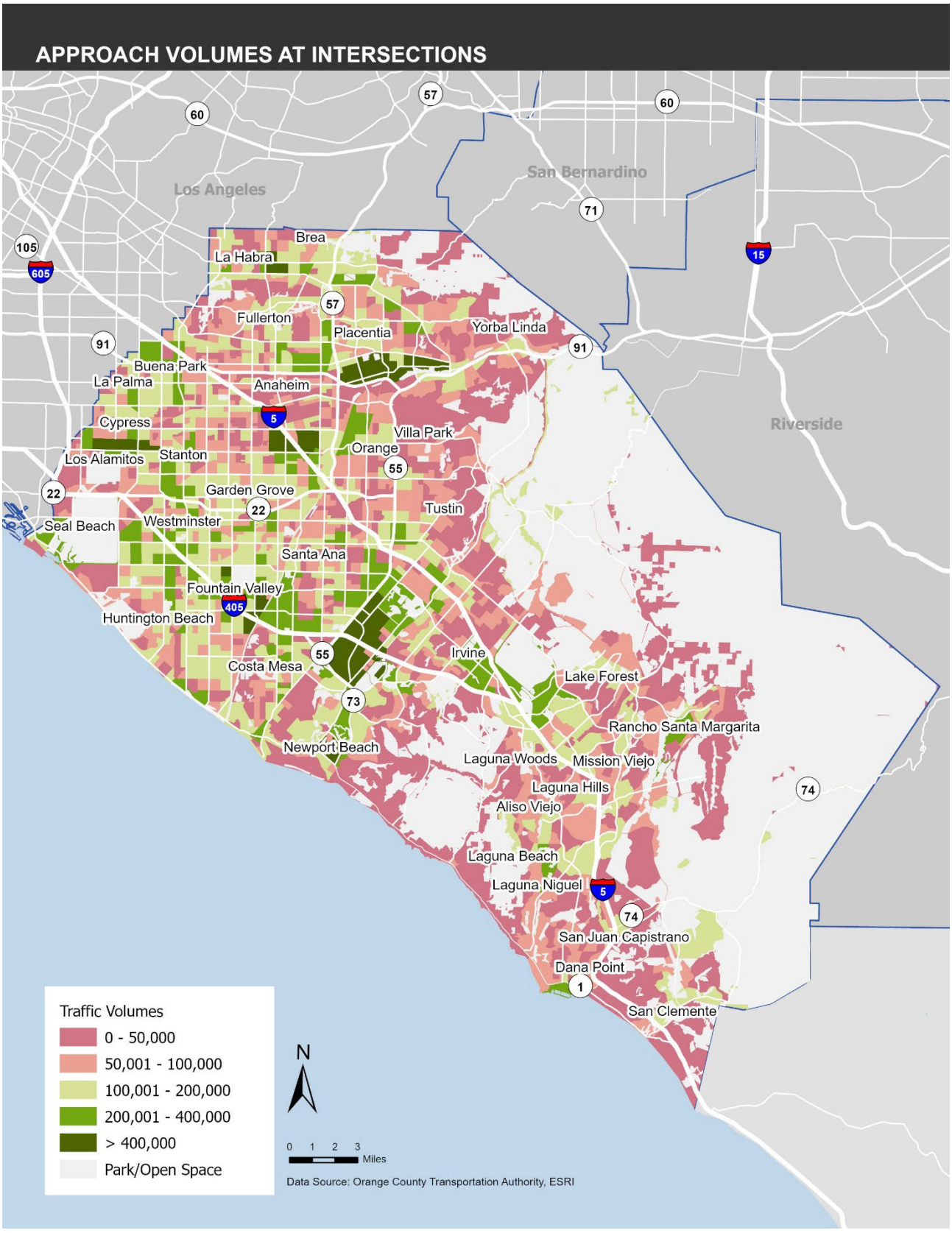


FIGURE 65 INTERSECTION DENSITY

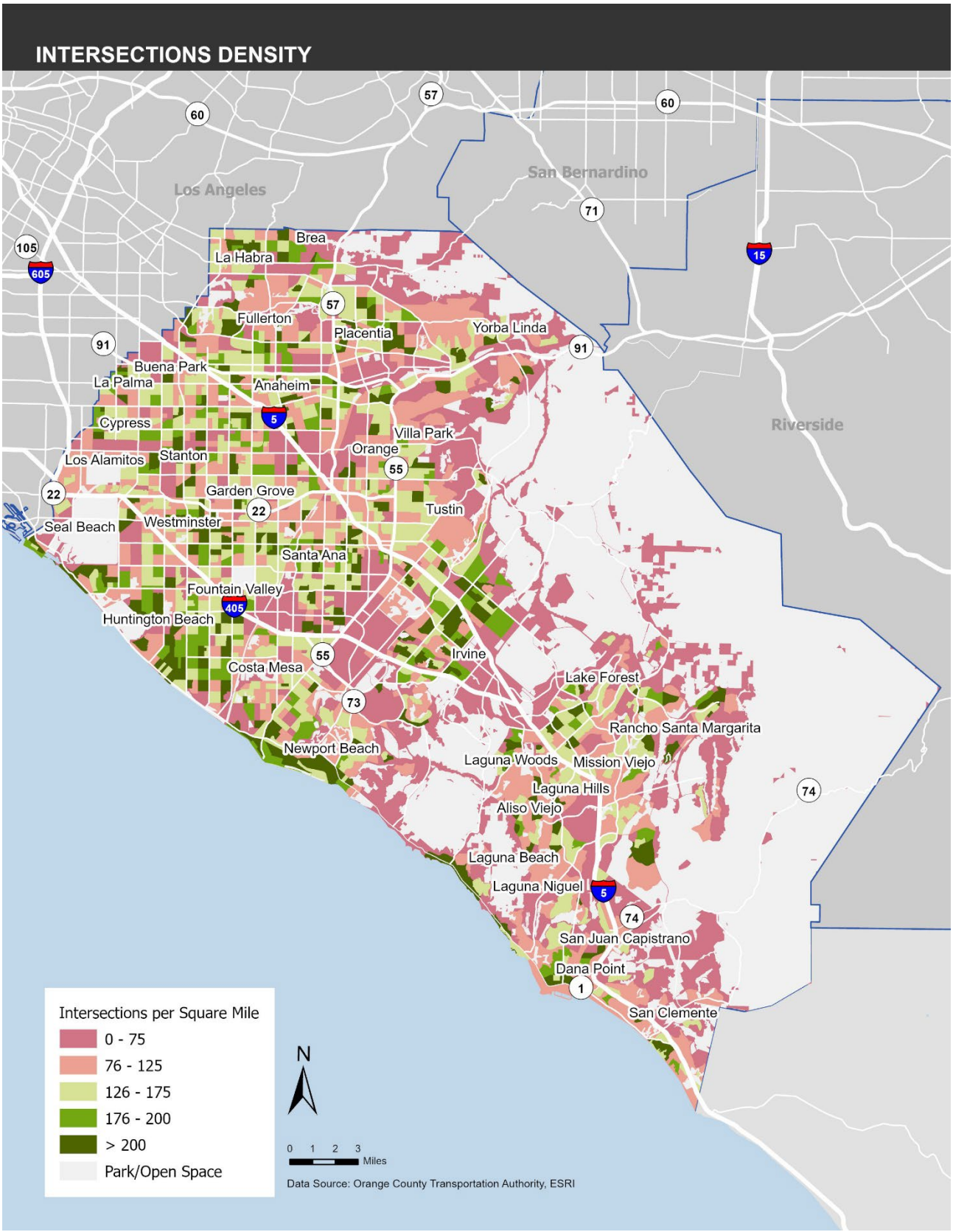


FIGURE 66 TOTAL EMPLOYMENT (NUMBER OF WORKERS)

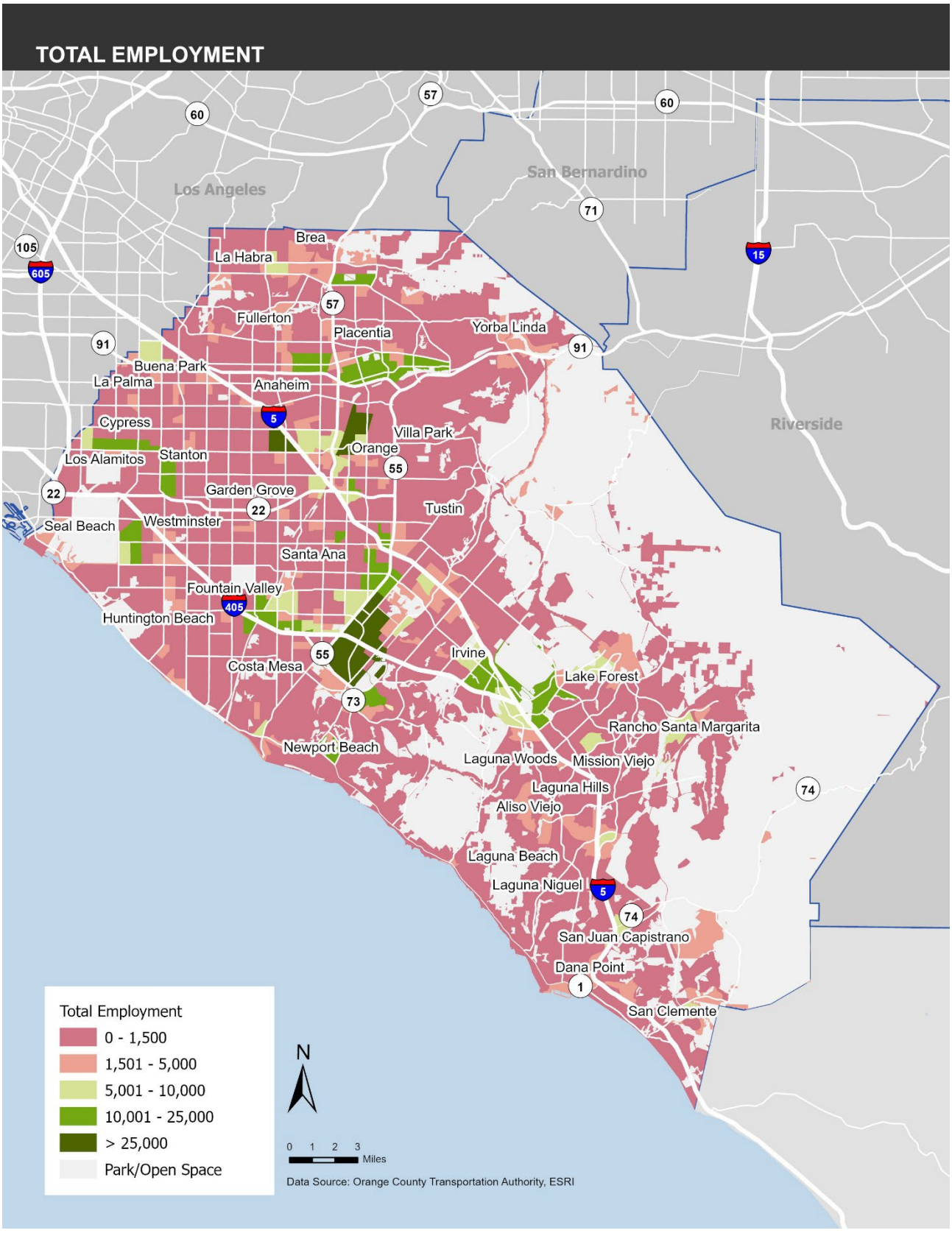


FIGURE 67 EMPLOYMENT DENSITY (JOBS PER ACRE)

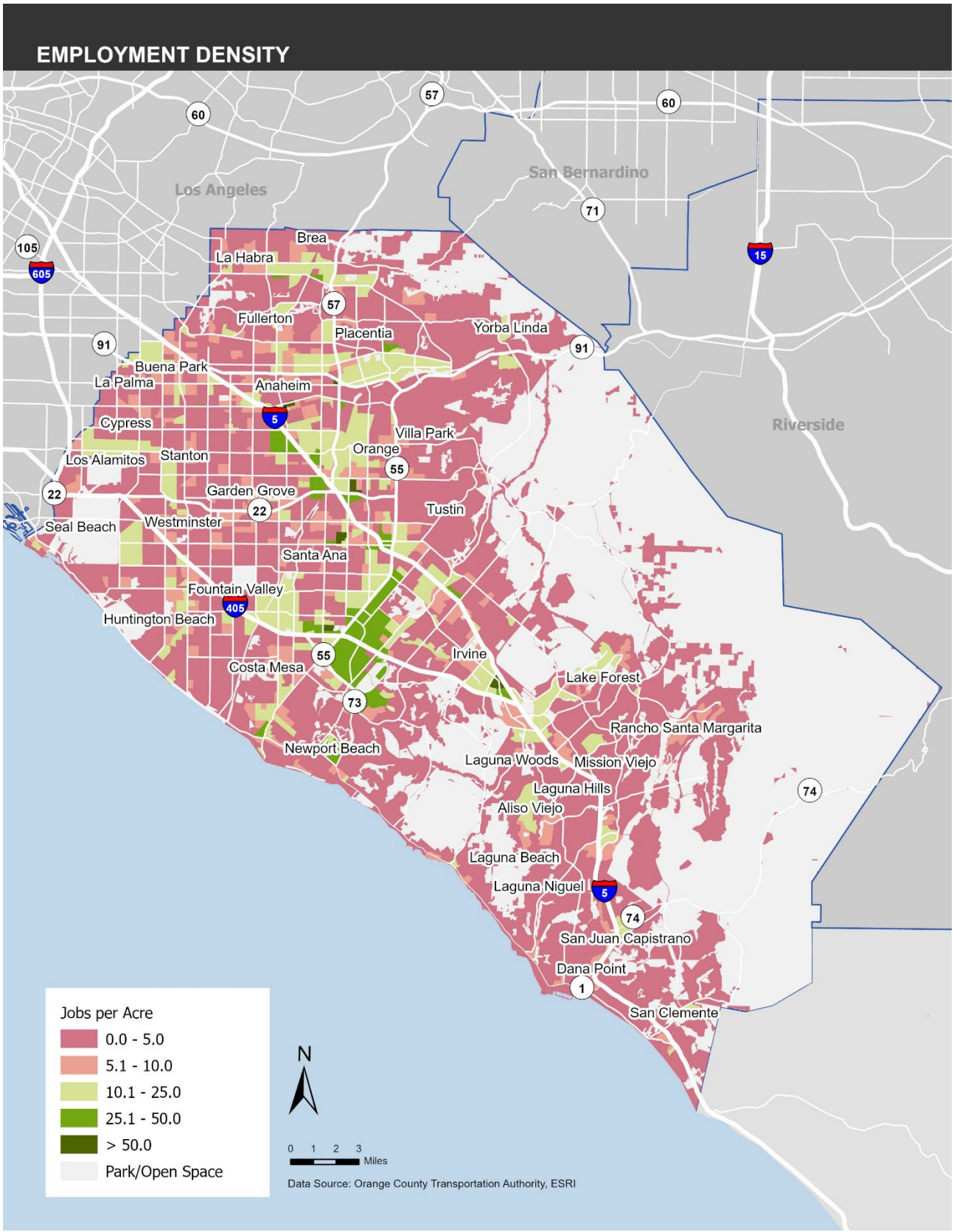
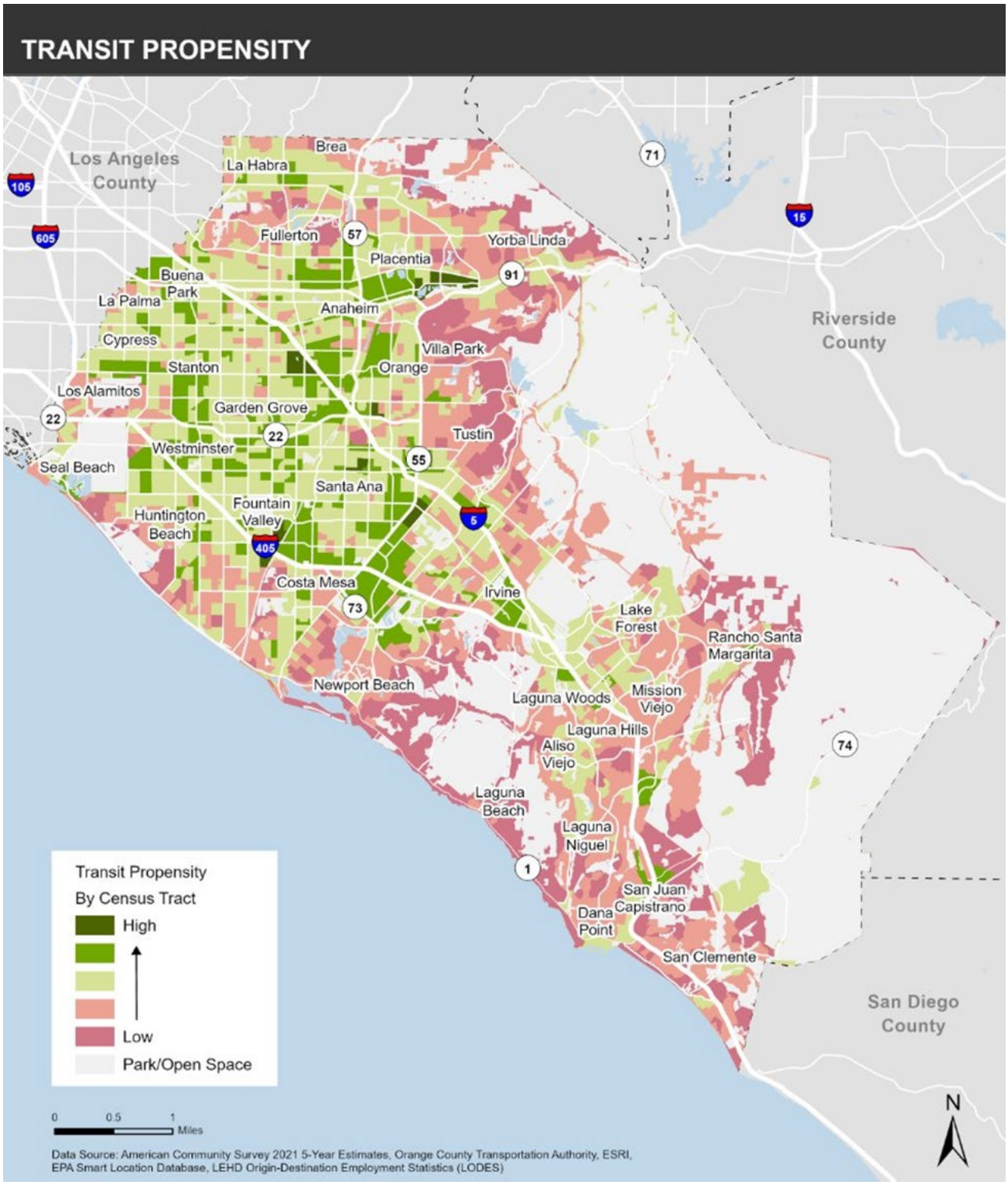


Figure 68 combines and weights the six factors to reveal the areas of the county with the highest overall propensity for transit use. Key findings include the following:

- Most areas of high and medium-high transit propensity are located in the urban core of North/Central County, most notably in Santa Ana and Anaheim. There are, however, areas of relatively high propensity throughout Irvine and in South County along the I-5 corridor.
- The methodology includes two separate measures of income, household income and per-capita income, and it weights per-capita income most heavily. Lower-income individuals and households are highly concentrated in the urban core of North/Central County: In much of the area north and west of the 55 and north of the 405, per-capita income is less than $35,000 annually.
- As with income, two of the six factors included in the analysis are related to employment, and the largest concentration of jobs in Orange County is at the Irvine Business Complex. However, unlike areas north of the 55, it is not a major source of existing ridership, due most likely to the types of jobs found here—higher-income office employment, rather than lower-income service sector jobs—as well as heavily auto-oriented patterns of land use and street design. Put most simply, the Business Complex is a massive office park in the style of a suburban office park or campus rather than a more walkable traditional central business district.
- Areas with lower transit propensity—to the east, along the coast, and in South County— are marked by higher incomes and auto-oriented patterns of design.

FIGURE 68 TRANSIT PROPENSITY



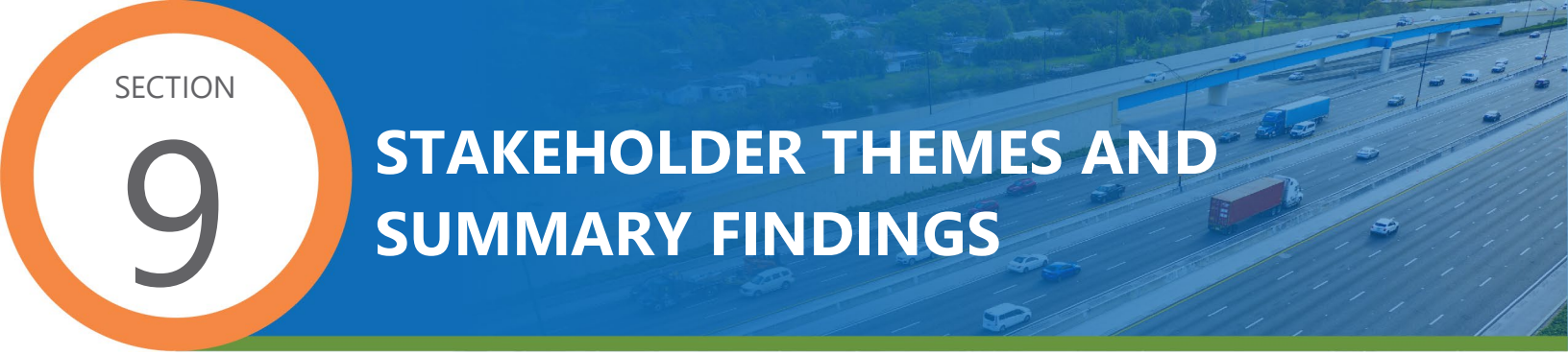
Summary

In developing recommendations for high-capacity transit corridors in Orange County, an understanding of both current and future demand for transit throughout the County will be essential. The analysis in this chapter first considered which factors of the built environment are typically most important in determining transit demand. It then assessed unique conditions of Orange County including current and future land uses, population and employment density, major trip generators, demographic characteristics of the population, and overall travel patterns, culminating in a "transit propensity analysis" based on the factors OCTA has determined to be the greatest predictors of individual propensity toward transit use, and where these factors are found within Orange County. In short, there are areas of relatively high demand for transit throughout the county, particularly in the northern part of the county.

SECTION

9

STAKEHOLDER THEMES AND SUMMARY FINDINGS



As an effort to collect feedback from stakeholders throughout the county, several target audiences were identified and invited to participate in a one-on-one interview to comment about their goals for the 2024 OC Transit Vision. The project team posed open-ended questions to gather insight into what works and what could be improved to encourage more people to use transit in Orange County.

More than 80 stakeholders were invited to participate and represented the following industries and groups: healthcare, building, educational institutions, tourism, major employers; business and chamber groups, and countywide city organizations. The following groups participated in the interviews.

- Caltrans
- The Irvine Company
- UCI Health
- Rancho Mission Viejo
- Visit Anaheim
- South Coast Metro Alliance
- South Orange County Economic Coalition Advocacy Committee

Each group was asked to describe its vision for the future of Orange County transit. Interviews generally followed a script of about 15 questions geared to the interviewee's background and expertise. Transit-related questions focused on identifying barriers, priorities, and opportunities, as well as what is already working well. Interviewees shared a wide range of ideas, issues, and insights. Recurring themes included the following:

- Mobility hubs in Orange County will be beneficial in integrating various transportation modes, promoting connectivity, and offering convenient, multi-modal options for commuters.
- Investing in improved biking infrastructure will encourage people to choose bicycles over cars and facilitate crucial first and last-mile connections.
- Integrating technology will be essential for optimizing Orange County's transit system, improving efficiency, and enhancing the overall experience.
- Microtransit can offer flexible, on-demand transportation solutions tailored to individual needs.
- Education will be pivotal for the success of Orange County's transit initiatives, fostering public awareness, understanding, and contributing to a more informed and supportive community.

- As housing increases in Orange County, it is essential to carefully plan transportation infrastructure to accommodate a growing population, ensuring efficient access to transit options and minimizing congestion while promoting sustainable development patterns.

9.1 SUMMARY FINDINGS

The analyses from the previous chapters point to a number of major findings including notable issues, opportunities, and challenges that together provide a framework for the 2024 OC Transit Vision effort.

- **The majority of existing OC Bus ridership is concentrated in a few key corridors.** Existing ridership is heavily concentrated in major corridors, almost all of which are in the northern part of the county.
- **OC Bus service is focused on the weekday commuter market. OCTA offers much more service during weekdays** than late evenings, weekends, or to special events. Employment centers with non-traditional work schedules can be hard to access via transit.
- **OC Bus service is focused on a select number of hubs, including destinations and connection points.** The network is organized around 30 rail stations, park-and-rides, and bus transfer centers, making multimodal access to these facilities very important.
- **OCTA has begun taking steps to address ridership declines.** While ridership continues to recover from the coronavirus pandemic, OCTA has taken important steps to reallocate resources to where they can be most effective and to better leverage existing resources by improving connectivity. OCTA has also introduced free fares for youth and most university students and will soon introduce a fare-capping program to make transit more competitive with driving.
- **Limited funding has constrained ridership growth.** It is reasonable to believe that the agency could increase ridership by improving service; however, additional funding is required.
- **Land uses and demographics in Orange County present both challenges and opportunities for effective transit service.** In many ways, Orange County is not a typical suburban area, and this is true in ways that support transit use: the county has concentrations of jobs and employment, a racially diverse population, and major destinations such as Disneyland. However, land uses are highly auto-oriented, both in their design as well as their distribution throughout the county.
- **The overall transportation network of Orange County presents both challenges and opportunities for effective transit service.** In the northern part of the county, there is a relatively well-connected street grid, and the wide streets throughout the county can make it easier for buses to operate efficiently. However, wide streets with few crossings limit pedestrian access, and roads that have limited connections to other roads lead to indirect pathways that are not conducive to transit.
- **Long-term trends offer a mixed message.** Demographic trends point toward higher ridership over time, but ridership has stagnated for a variety of reasons including technology-based alternatives to transit and an increase in hybrid work schedules. Other technologies such as real time arrival smartphone apps have benefited transit, and future technology innovations may further improve transit speed and reliability.

A primary focus of the 2024 OC Transit Vision is to identify potential high-capacity and rapid transit corridors. While there are no existing urban rail corridors in Orange County (as opposed to regional rail like Metrolink and Amtrak), there are OC Bus Rapid bus lines, and the OC Streetcar will soon operate in Santa Ana and Garden Grove. Rapid bus and Bus Rapid Transit will be included in this effort, as well a series of countywide transit strategies to provide cost-effective mobility solutions in areas where demand for transit is lower.

OCTA's approach to improving its highest-demand transit corridors has demonstrated certain characteristics that will prove useful in the 2024 OC Transit Vision process. OCTA recognizes that the future mode selected for a corridor should be based on the specific context of the corridor. OCTA has focused on areas with the highest potential demand, while developing innovative transit options in South Orange County. The agency has worked in close partnership with cities to ensure that the needs of local residents and workers are met.