

June 2013

Health Atlas for the City of Los Angeles



Health Atlas for the City of Los Angeles

County of Los Angeles Public Health Working For You.

Made possible with funding from the Centers for Disease Control and Prevention through the Los Angeles County Department of Public Health and The California Endowment.

June 2013



This page is intentionally left blank.

Table of Contents

1 Introduction	1
2 Regional Context	3
3 Demographic and Social Characteristics	13
Population Characteristics	13
Race and Ethnicity	16
Linguistic Isolation	17
4 Economic Conditions	27
Hardship Index	28
Income	29
Poverty	30
5 Education	41
Educational Attainment	41
Academic Performance	43
Free and Reduced-Price Lunches	43
6 Health Conditions	55
Health Outcomes	56
Health Status	60
Health Behaviors and Risk Factors	64
Access to Care	68
7 Land Use	85
Walkability	86
Land Use Mix	86
Parks and Park Access	88
Employment	90
8 Transportation	111
Commutes	111
Zero-Vehicle Households	112
Access to Transit	113
Injuries and Fatalities from Collisions with Motor Vehicles	113
Transportation Index	115
9 Food Systems	129
Retail Food Locations	129
Fast Food	132
Alcohol Consumption, Alcohol Outlets, and Motor Vehicle Collisions Involving Alcohol	134
Income and Food Access	137
10 Crime	147
Crime Rates	147
Neighborhood Safety	149
Homicide	150
Crime Rate Index	150
11 Housing	157
Housing Density and Diversity	157
Overcrowding	159
Housing Cost	160
Homelessness	161
12 Environmental Health	173
Proximity to Truck Routes and Industrial and Manufacturing Lands	173
Pollution Burden	175
13 Community Health and Equity Index	181

List of Maps

Map 1: Council Districts for the City of Los Angeles (2012)	4
Map 2: Community Plan Areas for the City of Los Angeles (2012)	5
Map 3: Service Planning Areas for the City of Los Angeles (2012)	6
Map 4: Health Districts for the City of Los Angeles (2012)	7
Map 5: Public Use Microdata Areas for the City of Los Angeles (2010)	8
Map 6: Census Tracts for the City of Los Angeles (2012)	9
Map 7: Census Blocks for the City of Los Angeles (2012)	10
Map 8: Zip Codes for the City of Los Angeles (2012)	11
Map 9: Population Density (2010)	18
Map 10: Percentage of the Population under Age 5 (2010)	19
Map 11: Population under Age 5 (2010)	20
Map 12: Percentage of the Population under Age 18 (2010)	21
Map 13: Percentage of the Population over Age 65 (2010)	22
Map 14: Population over Age 65 (2010)	23
Map 15: Percentage of Non-White and Hispanic Population (2010)	24
Map 16: Non-White and Hispanic Population (2010)	25
Map 17: Percentage of Linguistically-Isolated Households (2009)	26
Map 18: Hardship Index by Community Plan Area (2010)	32
Map 19: Hardship Index (2010)	33
Map 20: Median Household Income (2010)	34
Map 21: Number of Jobs with Earnings Greater than \$3,333 per Month (2010)	35
Map 22: Percentage of Unemployed Workers Age 16 and Over (2010)	36
Map 23: Percent of the Population below the Federal Poverty Level (2010)	37
Map 24: Percent of the Population 200% below the Federal Poverty Level (2010)	38
Map 25: Extreme Poverty Neighborhoods (2010)	39
Map 26: Percentage of Population Age 25 and Over that Did Not Graduate from High School (2010)	44
Map 27: Percentage of the Population Age 25 and Over that Graduated from High School (2010)	45
Map 28: Percentage of Population Age 25 and Over with a Bachelor's Degree or Higher (2010)	46
Map 29: Median Earnings for the Population Age 25 and Over that Did Not Graduate from High School (2010)	47
Map 30: Poverty Rate for the Population Age 25 and Over Who Did Not Graduate High School (2010)	48
Map 31: Academic Performance Index by School for Public Elementary Schools (2011)	49
Map 32: Academic Performance Index for Public Middle and Junior High Schools (2011)	50
Map 33: Academic Performance Index for Public High Schools (2011)	51
Map 34: Percentage of Primary School Students Eligible for Free and Reduced-Priced Lunches (2009)	52
Map 35: Percentage of Secondary School Students Eligible for Free and Reduced-Priced Lunches (2009)	53
Map 36: Percentage of High School Students Eligible for Free and Reduced-Priced Lunches (2009)	54
Map 37: Life Expectancy at Birth (2006-2008)	69
Map 38: Coronary Heart Disease Mortality Rate per 100,000 Residents by City Council District (2004-2008)	70
Map 39: Rate of Heart Attacks in Population 45 and Over per 10,000 Residents (2010)	71
Map 40: Stroke Mortality Rate per 100,000 Residents by City Council District (2004-2008)	72
Map 41: Diabetes Mortality Rate per 100,000 Residents by City Council District (2004-2008)	73
Map 42: Respiratory Disease Mortality Rate per 100,000 Residents by Community Plan Area (2009)	74
Map 43: Asthma-Related Emergency Department Visit Rate in Population 17 and Under per 10,000 Residents (2010)	75
Map 44: Asthma-Related Emergency Department Visit Rate in Population 18 and Over per 10,000 Residents (2010)	76
Map 45: Asthma-Related Hospitalizations Visit Rate in Population 17 and Under per 10,000 Residents (2010)	77
Map 46: Asthma-Related Hospitalizations Visit Rate in Population 18 and Over per 10,000 Residents (2010)	78
Map 47: Prevalence of Childhood Obesity by Community Plan Area (2010)	79
Map 48: Percentage of Low Birth-Weight Infants (2010)	80
Map 49: Estimated Prevalence of Serious Emotional Disturbance and Serious Mental Illness (2008)	81
Map 50: Mental Illness Hospitalization Rate per 100,000 Residents (2007-2010)	82
Map 51: Health Professional Shortage Areas (2010)	83
Map 52: Health Care Facilities (2011 and 2012)	84
Map 53: Walkability Index (2012)	91
Map 54: Intersection Density (2012)	92
Map 55: Block Size (2010)	93
Map 56: Population Density on Blocks Smaller than 8.26 Acres, 600-Foot Block Lengths (2010)	94
Map 57: Land Use Mix (2012)	95

Map 58: Land Use Diversity (2012).....	96
Map 59: Residential Land Uses (2012).....	97
Map 60: Commercial Land Uses (2012).....	98
Map 61: Industrial Land Uses (2012).....	99
Map 62: Park Level of Service (Acres per 1,000 Residents in 2010)	100
Map 63: Park Access: Population Density of Census Blocks with ½ Mile of a Park or Open Space (2010)	101
Map 64: Employment Density (2010)	102
Map 65: Trade, Transportation, and Utility Sector Employment Density (2010)	103
Map 66: Goods-Producing Sector Employment Density (2010)	104
Map 67: Professional and Business Service Sector Employment Density (2010).....	105
Map 68: Government Sector Employment Density (2010).....	106
Map 69: Education and Health Services Sector Employment Density (2010)	107
Map 70: Leisure and Hospitality Sector Employment Density (2010)	108
Map 71: Finance, Insurance, and Real Estate Sector Employment Density (2010)	109
Map 72: Percentage of Commuters Driving Alone to Work (2010)	116
Map 73: Percentage of Commuters Carpooling to Work (2010)	117
Map 74: Public Transportation Commuters (2010)	118
Map 75: Pedestrian Commuters (2010).....	119
Map 76: Bicycle Commuters (2010)	120
Map 77: Zero Vehicle Households (2010).....	121
Map 78: Population Density of Census Blocks within 1/2 Mile of Metro Transit Stops Where Service Frequency is 15 Minutes or Less During Peak Hours (2010).....	122
Map 79: Average Annual Motor Vehicle Traffic Mortality Rate per 100,000 Residents (2000-2009)	123
Map 80: Average Annual Rate of Motor Vehicle Collisions with Pedestrians per 10,000 Residents (2001-2010)	124
Map 81: Average Annual Rate of Motor Vehicle Collisions with Bicyclists per 10,000 Residents (2001-2010)	125
Map 82: Motor Vehicle Collisions with Pedestrians and Bicyclists (2001-2010).....	126
Map 83: Average Annual Rate of Motor Vehicle Collisions with Pedestrians and Bicyclists Under Age 18 within ½ Mile of a School per 10,000 Residents Under Age 18 (2001-2010)	127
Map 84: Transportation Index (2010).....	128
Map 85: Modified Retail Food Environment Index (2011)	138
Map 86: Grocery Store Rate per 10,000 Residents and Healthy Food Sources (2011).....	139
Map 87: Fast Food Restaurant Rate per 10,000 Residents (2011).....	140
Map 88: On-Sale Liquor License Rate per 10,000 Residents (2012)	141
Map 89: Off-Sale Liquor License Rate per 10,000 Residents (2012).....	142
Map 90: Average Annual Rate of Motor Vehicle Collisions Involving Alcohol per 10,000 Residents (2001-2010)	143
Map 91: CalFresh Vendors and Participants (2010).....	144
Map 92: Woman, Infant, and Children Vendor Rate per 10,000 Residents (2010).....	145
Map 93: Crime Rate for All Part I Offences per 1,000 Residents (6-Month Rate, April to September 2012).....	151
Map 94: Violent Crime Rate per 1,000 Residents (6-Month Rate, April to September 2012)	152
Map 95: Property Crime Rate per 1,000 Residents (6-Month Rate, April to September 2012).....	153
Map 96: Average Annual Emergency Department Visit Rate for Assault per 100,000 Residents (2005-2010)	154
Map 97: Average Annual Mortality Rate for Homicide per 100,000 Residents (2000-2009)	155
Map 98: Crime Rate Index (2012)	156
Map 99: Residential Density (2012).....	163
Map 100: Housing Diversity (2012).....	164
Map 101: Percentage Renter-Occupied Housing Units (2010).....	165
Map 102: Renter-Occupied Housing Units (2010).....	166
Map 103: Percentage of Housing Units with 1 or More than Persons per Room (2010).....	167
Map 104: Percentage of Housing Units with 1.5 or More Persons per Room (2010).....	168
Map 105: Percentage of Households Paying More than 30% of Income on Housing Costs (2010)	169
Map 106: Percentage of Population Paying More than 35% of Income on Monthly Rent (2010)	170
Map 107: Subsidized Housing Units (2008).....	171
Map 108: Homelessness by City Council District (2011).....	172
Map 109: Population Density of Census Blocks within 500 Feet of Truck Routes (2010).....	176
Map 110: Population Density of Census Blocks within 500 Feet of Manufacturing, Warehousing and Distribution, and Refinery and Chemical Plants Lands and the Port (2010).....	177
Map 111: Pollution Exposure Score (2013).....	178
Map 112: Environmental Effects (2013)	179
Map 113: Pollution Burden Index (2013)	180
Map 114: Community Health and Equity Index (2013)	183

List of Tables

Table 1: Standard Body Mass Index Categories.....	64
Table 2: Community Health and Equity Index Components	181

List of Figures

Figure 1: Population per Square Mile by Community Plan Area in 2010	14
Figure 2: Population under Age Five by Community Plan Area in 2010	14
Figure 3: Population under Age 18 by Community Plan Area in 2010	15
Figure 4: Population Age 65 and Over by Community Plan Area in 2010	16
Figure 5: Non-White and Hispanic by Community Plan Area in 2010	16
Figure 6: Percentage of Linguistically-Isolated Households for Community Plan Areas in 2009	17
Figure 7: Hardship Index by Community Plan Area in 2010	28
Figure 8: 2010 Per Capita Income by Community Plan Area in 2010	29
Figure 9: 2010 Unemployment Rate by Community Plan Area	30
Figure 10: Percentage of the Population below the Federal Poverty Level and Below 200% of the Federal Poverty Level by Community Plan Area in 2010	30
Figure 11: Percentage of the Population Living in Extreme Poverty Census Tracts by Community Plan Area in 2010	31
Figure 12: Percentage of the Total Population Age 25 and Older with a High School Degree and Percentage of the Total Population Age 25 and Older with No High School Degree by Community Plan Area in 2010	42
Figure 13: Percentage of the Total Population Age 25 and Older with a Bachelor's Degree or Higher by Community Plan Area in 2010	42
Figure 14: Median Earnings by Education Attainment for the Population Age 25 Years and Older in 2011	43
Figure 15: Life Expectancy at Birth by Public Use Microdata Area for 2006-2008	57
Figure 16: Leading Causes of Death in Service Planning Areas Corresponding to the City of Los Angeles for 2009	57
Figure 17: Leading Causes of Premature Death (Years of Life Lost Before Age 75) in Service Planning Areas Corresponding to the City of Los Angeles for 2009	58
Figure 18: Percentage of Adults Ever Diagnosed with Diabetes by Health District in 2011	59
Figure 19: Leading Causes of Injury Death in the City of Los Angeles from 2000-2009	60
Figure 20: Percent of Adults (18+ years old) and Children (Age 17 and under) who Reported Fair or Poor Health by Health District in 2011	61
Figure 21: Average Number of Unhealthy Days and Days Limited Due to Poor Physical and/or Mental Health during the Past 30 days for Adults (18+ years old) by Health District in 2011	62
Figure 22: Percentage of Adults who Received Sufficient Social and Emotional Support by Health District in 2011	63
Figure 23: Percentage of Adults with Depression by Health District in 2011	63
Figure 24: Prevalence of Overweight and Obesity Adults by Health District in 2011	65
Figure 25: Prevalence of Childhood Obesity by Community Plan Area in 2010	65
Figure 26: Percentage of Adults who Met Physical Activity Guidelines for Aerobic and Muscle-Strengthening Activity Each Week by Health District in 2011	66
Figure 27: Percentage of Children who Participated in Physical Activity per Week by Health District in 2011	67
Figure 28: Walkability Index Score by Community Plan Area in 2012	86
Figure 29: Land Use Mix by Community Plan Area in 2012	87
Figure 30: Land Use Diversity by Community Plan Area in 2012 (Number of Amenities)	88
Figure 31: Park Level of Service by Community Plan Area in 2012	89
Figure 32: Percentage of the Population within One-Half Mile Walking Distance of a Park by Community Plan Area in 2010	89
Figure 33: Employment Density by Community Plan Area in 2010	90
Figure 34: Walk, Bicycle, and Public Transportation Commute Mode Share by Community Plan Area in 2010	112
Figure 35: Zero Vehicle Households by Community Plan Area in 2010	113
Figure 36: Average Annual Rate of Motor Vehicle Collisions with Pedestrians and Bicyclists per 10,000 Residents by Community Plan Area between 2001 and 2010	114
Figure 37: Average Annual Rate of Motor Vehicle Collisions with Pedestrians and Bicyclists under Age 18 within ½ Mile of a School per 10,000 Residents Under Age 18 by Community Plan Area between 2001 and 2010	115
Figure 38: Average Modified Retail Food Index Score by Community Plan Area in 2011	130
Figure 39: Neighborhood Food Sources by Community Plan Area in 2011	131
Figure 40: Percent of Adults Who Reported that Accessing Fresh Produce (Fruits and Vegetables) was Very or Somewhat Easy by Health District in 2011	131
Figure 41: Percent of Adults (18+ years old) Who Reported Having Eaten Five or More Servings of Fruits or Vegetables in the Past Day by Health District in 2011	132
Figure 42: Rate of Fast Food Restaurants per 10,000 Residents by Community Plan Area in 2011	133
Figure 43: Percent of Adults (18+ years old) Who Reported Consuming Fast Food at Least Once a Week by Health District in 2011	133
Figure 44: Percent of Children (0-17 years old) Who Consumed Fast Food At Least Once a Week by Health District in 2011	134
Figure 45: Percent of Adults (18+ years old) Who Reported Binge Drinking in the Past Month by Health District in 2011	135
Figure 46: Off-Sale Liquor License Rate by Community Plan Area in 2012	136
Figure 47: Average Annual Rate of Motor Vehicle Collisions Involving Alcohol per 10,000 Residents by Community Plan Area between 2001 and 2010	136
Figure 48: Percentage of Households that are CalFresh Recipients by Community Plan Area in 2010	137
Figure 49: Total Crime Rate per 1,000 Residents by Community Planning Area (6-month rate from April 2012 through September 2012)	148
Figure 50: Violent Crime Rate per 1,000 Residents by Community Planning Area (6-month rate from April 2012 through September 2012) ...	148
Figure 51: Property Crime Rate per 1,000 Residents by Community Planning Area (6-month rate from April 2012 through September 2012) .	149

Figure 52: Percentage of Adults Who Reported They Perceive Their Neighborhood to be Safe from Crime by Health District in 2011	149
Figure 53: Average Annual Homicide Rate per 100,000 Residents by Community Planning Area between 2000 and 2009.....	150
Figure 54: Housing Density by Community Plan Area in 2012.....	158
Figure 55: Housing Diversity by Community Plan Area in 2012	159
Figure 56: Renter-Occupied Housing Units by Community Plan Area in 2010.....	159
Figure 57: Overcrowded Housing by Community Plan Area in 2010	160
Figure 58: Households Paying More than 30% of Monthly Income on Housing Costs by Community Plan Area in 2010	161
Figure 59: Average Monthly Public Costs for Persons in Supportive Housing and Comparable Homeless Persons for Los Angeles County in 2008	162
Figure 60: Homeless Population by City Council District in 2011	162
Figure 61: Population within 500 Feet of Truck Routes by Community Plan Area in 2010	174
Figure 62: Population within 500 Feet of Manufacturing Lands and the Port by Community Plan Areas in 2010	174

Acknowledgements

MAYOR

Antonio Villaraigosa

CITY COUNCIL

Herb J. Wesson, Jr., Council President

Ed Reyes, President Pro Tempore

Tom LaBonge, Assistant Council President Pro-Tempore

Paul Krekorian, Councilperson

Dennis P. Zine, Councilperson

Paul Koretz, Councilperson

Tony Cardenas, Councilperson

Richard Alarcon, Councilperson

Bernard Parks, Councilperson

Jan Perry, Councilperson

Bill Rosendahl, Councilperson

Mitchell Englander, Councilperson

Eric Garcetti, Councilperson

Jose Huizar, Councilperson

Joe Busciano, Councilperson

DEPARTMENT OF CITY PLANNING (DCP)

Executive Staff

Michael LoGrande, Director

Alan Bell, Deputy Director

Eva Yuan-McDaniel, Deputy Director

Lisa Webber, Deputy Director

City Planning Commission

William Roschen, President

Regina M. Freer, Vice President

Sean Burton, Commissioner

Diego Cardoso, Commissioner

George Hovaguimain, Commissioner

Robert Lessin, Commissioner

Barbara Romero, Commissioner

Dana Perlman, Commissioner

Project Staff

Ken Bernstein, Principal Planner

John Butcher, GIS Chief

Claire Bowin, City Planner

Arthi Varma, City Planner

Jane Choi, Assistant Planner

Matthew Glesne, Assistant Planner

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC HEALTH

Dr. Jonathan Fielding, MD, MPH, Director, Los Angeles County Department of Public Health
Dr. Paul Simon, MD, MPH, Director, Division of Chronic Disease and Injury Prevention
Dr. Tony Kuo, MD, MPH, Deputy Director, Division of Chronic Disease and Injury Prevention
Mark D. Weber, PhD, Chief Epidemiologist, Tobacco Control & Prevention Program
Margaret Shih, MD, PhD, Director, Office of Health Assessment and Epidemiology
Jean Armbruster, MA, Director of PLACE Program
Chanda Singh, MA, Policy Analyst, PLACE Program
Alexis Lantz, MA, Policy Analyst, PLACE Program
Isabelle Sternfeld, MSPH, Epidemiologist, Injury and Violence Prevention Program
Lauren Gase, MPH, Program Manager, Health and Policy Assessment
Patricia Cummings, MPH, Program Manager, Los Angeles County Sodium Reduction Initiative
Amy Lightstone, Office of Health Assessment and Epidemiology
Loren Lieb, MPH, Supervising Epidemiologist, Office of Health Assessment and Epidemiology
Isabelle Sternfeld, MSPH, Epidemiologist, Injury and Violence Prevention Program

LOS ANGELES COUNTY DEPARTMENT OF MENTAL HEALTH

Debbie Innes-Gomberg, District Chief, Los Angeles County Department of Mental Health
Vandana Joshi, PhD, Program Head, Quality Improvement Division-Data/GIS Unit

LOS ANGELES COUNTY CHIEF INFORMATION OFFICE

Mark Greninger, Geographic Information Officer

LOS ANGELES COUNTY INTERNAL SERVICES DEPARTMENT

Durga Niraula, ISD/ITS, SSSD, Urban Research – GIS

LOS ANGELES FOOD POLICY COUNCIL

Paula Daniels, Senior Food Advisor on Food Policy
Clare Fox, Strategic Initiatives Coordinator

UCLA

Dr. Richard J. Jackson, MD, MPH, Professor and Chair, Environmental Health Sciences

USC

Dr. Manuel Pastor, PhD, Professor, Sociology and American Studies and Ethnicity

RAIMI + ASSOCIATES CONSULTANT TEAM

Matt Raimi, Principal
Eric Yurkovich, Senior Planner
Aaron Welch, Senior Planner + Associate
Beth Altshuler, MCP, MPH, CPH, Public Health Planning Specialist
David Hill, Epidemiologist
Elizabeth Carvajal, Urban Planning and Public Health Specialist
Lys Mendez, Outreach Coordinator

List of Acronyms and Abbreviations

ACS	American Community Survey
API	Academic Performance Index
BMI	Body Mass Index
CalEnvironScreen	California Communities Environmental Health Screening Tool
CalEPA	California Environmental Protection Agency
CDC	Centers for Disease Control and Prevention
CHD	Coronary Heart Disease
CPA	Community Plan Area
ED	Emergency Department
FPL	Federal Poverty Level
FRPL	Free or Reduced-Price Lunch Program
HD	Health District
ICD	International Classification of Diseases
LEED	Leadership in Energy and Environmental Design
LEHD	Longitudinal Employer-Household Dynamics Survey
mRFEI	modified Retail Food Environment Index
NAICS	North American Industry Classification Codes
OSHPD	California Office of Statewide Health Planning and Development
PUMA	Public Use Microdata Area
SED	Serious Emotional Disturbance
SMI	Serious Mental Illness
SPA	Service Planning Area
SWITRS	Statewide Integrated Traffic Records System
TIMS	Transportation Injury Mapping System
WIC	Women, Infants, and Children Program
YLL	Years of Life Lost

City of Los Angeles Community Plans

The 35 Community Plans guide the physical development of neighborhoods in the City of Los Angeles by establishing the goals and policies for land use. While the General Plan sets out a long-range vision and guide to future development, the Community Plans provide the specific, neighborhood-level detail, relevant policies, and implementation strategies necessary to achieve the General Plan objectives. Map 2 shows the geographic boundary of each Community Plan Area.

Much of the data in the *Health Atlas for the City of Los Angeles* is summarized by Community Plan Area. The names of the Community Plan Areas have been shortened in the figures for brevity purposes. The following table shows the full name of each Community Plan Area and the shortened name used throughout this document.

Full Community Plan Area Names	Shortened Community Plan Names
Chatsworth-Porter Ranch	N/A
Northridge	N/A
Granada Hills-Knollwood	N/A
Sylmar	N/A
Arleta-Pacoima	N/A
Mission Hills-Panorama City-North Hills	N/A
Sun Valley-La Tuna Canyon	N/A
Sunland-Tujunga-Shadow Hills-Lake View Terrace-East La Tuna Canyon	Sunland-Tujunga-Shadow Hills
Canoga Park-Winnetka-Woodland Hills-West Hills	Canoga Park-Winnetka-Woodland Hills
Reseda-West Van Nuys	N/A
Van Nuys-North Sherman Oaks	N/A
North Hollywood-Valley Village	N/A
Encino-Tarzana	N/A
Sherman Oaks-Studio City-Toluca Lake-Cahuenga Pass	Sherman Oaks-Studio City-Toluca Lake
Brentwood-Pacific Palisades	N/A
Bel Air-Beverly Crest	N/A
Hollywood	N/A
Westwood	N/A
West Los Angeles	N/A
Wilshire	N/A
Silver Lake-Echo Park-Elysian Valley	N/A
Northeast Los Angeles	N/A
Westlake	N/A
Central City	N/A
Central City North	N/A
Boyle Heights	N/A
Southeast Los Angeles	N/A
South Los Angeles	N/A
West Adams-Baldwin Hills-Leimert	N/A
Palms-Mar Vista-Del Rey	N/A
Venice	N/A
Westchester-Playa Del Rey	N/A
Harbor Gateway	N/A
Wilmington-Harbor City	N/A
San Pedro	N/A

Key Findings

The *Health Atlas for the City of Los Angeles* provides a data-informed snapshot of health issues and outcomes in Los Angeles. The analysis is the first step in understanding the areas of the City burdened with the most adverse health-related conditions in order to improve health outcomes for all Angelenos. The data will be used to inform the creation of a new Health and Wellness Chapter for the City's General Plan Framework.

The *Health Atlas* illustrates the geographic variation in socio-economic conditions, demographic characteristics, and health factors and outcomes to help City officials understand the issues and identify priorities. The data underscores a key issue: where Angelenos live often influences their health and well-being. Los Angeles is a city with great health disparities and the patterns of inequality are reflected in many of the indicators highlighted in the *Health Atlas*.

Health and wellness is dependent on a complex array of social, economic, lifestyle, and environmental factors. In Los Angeles, the hardship and lack of educational attainment that is prevalent in some of the poorest neighborhoods is often associated with worse health outcomes. Geographic location is such an important indicator of health that a resident born and raised in Brentwood can expect to live 12 years longer than a resident who is born and raised in Watts.

The disparity between the more affluent neighborhoods on the City's Westside and the poorer communities in the central and southern part of Los Angeles are consistently reflected in the data. Some key findings include:

- Residents in communities around South Los Angeles and near downtown Los Angeles are over 70% Non-White and Hispanic, while Non-White and Hispanic residents represent less than 15% of residents in neighborhoods like Bel Air-Beverly Crest and Brentwood-Pacific Palisades. (Chapter 3: Demographic and Social Characteristics)
- Residents in affluent neighborhoods like Bel Air-Beverly Crest and Brentwood-Pacific Palisades make more than 12 times the per capita income of residents in the poorest neighborhoods such as Boyle Heights and South Los Angeles. (Chapter Economic Conditions)
- Over 90% of adults in several Westside neighborhoods have a high school diploma, compared to less than 50% in neighborhoods such as Boyle Heights, South Los Angeles, and Arleta-Pacoima. (Chapter 5: Education)
- Over 30% of children in South Los Angeles, Southeast Los Angeles, Boyle Heights, and in neighborhoods near the Port of Los Angeles are obese, compared to less than 12% of children in Bel Air-Beverly Crest and Brentwood-Pacific Palisades. (Chapter 6: Health Conditions)
- Residents in Westlake and Southeast Los Angeles have less than half an acre of park space available per 1,000 residents. (Chapter 7: Land Use)
- Fatalities from motor vehicle collisions and pedestrian fatalities are higher in areas in the San Fernando Valley, South Los Angeles, Boyle Heights, and Southeast Los Angeles. (Chapter 8: Transportation)
- Less than 10% of adults in South Los Angeles and in some communities near the Port of Los Angeles report eating the recommended five servings of fruits and vegetables a day. (Chapter 9: Food Systems)
- Average annual homicide rates in some higher income neighborhoods were nearly zero, compared to more than 20 homicides per 100,000 residents in Southeast Los Angeles, South Los Angeles, and West Adams-Baldwin Hills-Leimert. (Chapter 10: Crime)
- Over 60% of residents in areas around South Los Angeles are cost-burdened by housing, paying more than 30% of their income on housing costs. (Chapter 11: Housing)
- Several low-income communities in Los Angeles scored in the top 10% of the State's pollution burden scores. (Chapter 12: Environmental Health)
- The concentration of all poor socioeconomic conditions and health issues result in great disparities throughout Los Angeles. (Chapter 13: Community Health and Equity Index).

The *Health Atlas* provides greater depth and analysis of the conditions that contribute to health outcomes in Los Angeles.

This page is intentionally left blank.

1 | Introduction

The *Health Atlas for the City of Los Angeles* articulates the baseline health conditions in the City of Los Angeles and provides a context for understanding how demographic conditions, social and economic factors, the physical environment, access to health care, and health behaviors contribute to the health of Angelenos. It also examines the relationship between factors that identify the areas of the City burdened with the most adverse health-related conditions and key health issues in the community. This document serves as a first step in the process to develop a Health and Wellness Chapter. The Chapter will serve as a framing document for the General Plan Framework. Funding for the *Health Atlas*, Health and Wellness Chapter, and accompanying implementation ordinances and programs is made possible with funding from the Centers for Disease Control and Prevention through the Los Angeles County Department of Public Health.

HEALTH IN LOS ANGELES

The health and well-being of Angelenos is influenced by a wide variety of complex and interrelated factors. We all understand that our behaviors, including what we eat, whether we are physically active, whether we smoke, and how often we see a doctor affects our health. Our health, however, is also influenced by a myriad of other factors. The surrounding physical environment, our social environment, educational and economic opportunities, and exposure to crime and environmental toxins help shape our individual health, as do the choices we make about healthy living and well-being.

In recent years, many studies have also examined the conditions in the environment that affect health outcomes and risks. Research has revealed the links between health and the physical environment, suggesting that variations in land use patterns, urban design, transportation systems, housing, parks, exposure to pollution, and access to healthy foods strongly impact a community's health behaviors and health status. Research has also shown that social and economic conditions have a significant impact on an individual's health and wellbeing. These social determinants of health include education, employment, income and wealth, discrimination, race and ethnicity, immigration, and community safety.¹ Not only are the physical and social determinants drivers of community health, but they also influence our health behaviors. For example, communities with less economic hardship tend to exhibit healthier behaviors, while unhealthy behaviors are more common in communities with greater economic hardships.²

The *Health Atlas for the City of Los Angeles* begins to examine the interconnected relationships between health outcomes and the social and physical factors that influence health. It illustrates some of the clear geographic patterns of health inequities across the City, analyzing them within a broader framework of social, economic, and physical factors.

ABOUT THIS ATLAS

The *Health Atlas* provides a snapshot of social, demographic, economic, health, land use, transportation, food system, crime, housing, and environmental health conditions across the City of Los Angeles. Each chapter includes a series of maps and associated indicators examining the differences in communities across the City, and a discussion about how a particular indicator relates to health. Where appropriate, indicators for Los Angeles and neighborhoods within the City are compared to national, state, and county figures. The indicators were selected based on availability of data and known relationships to health behaviors and outcomes. The City will be able to use these indicators to monitor City and neighborhood changes in health conditions over time.

The *Health Atlas* is organized into the following chapters:

- **Chapter 2: Regional Context** includes maps showing all the different geographic scales used in the *Health Atlas*, including City Council Districts, Community Plan Areas (CPAs), Health Districts (HDs), Service Planning Areas (SPAs), zip codes, and U.S. Census Bureau geographic designations.
- **Chapter 3: Demographic and Social Characteristics** examines information on age characteristics, racial and ethnic groups, and linguistic isolation. Data is shown at the census block, census tract, and CPA scales.
- **Chapter 4: Economic Conditions** provides information about the location of economic hardship, income, poverty, and unemployment. Data is shown at the census block, census tract, and CPA scales.
- **Chapter 5: Education** includes information about education attainment, academic performance, and free- and reduced-price lunches. Data is shown at the census tract, CPA, and school scales.
- **Chapter 6: Health Conditions** examines information on life expectancy, causes of death, obese and overweight populations, asthma and other respiratory diseases, birth weight, tobacco use, and access to health care. Data is shown at the Public Use Microdata Area, zip code, HD, SPA, City Council, and census tract scales.
- **Chapter 7: Land Use** assesses data and information on land use, block size and structure, parks and open space, and employment areas. Land use data is shown at the census tract and census block scales.
- **Chapter 8: Transportation** examines information on transportation demand, infrastructure, and safety. Data is shown at the census tract and CPA scales.
- **Chapter 9: Food Systems** incorporates information about the location of healthy and unhealthy food sources, alcohol outlets, and food security program participants and vendors. Data is shown at the census tract and CPA scales.
- **Chapter 10: Crime** describes the physical location of criminal activity within the City and the spatial concentration of specific types of violent crime. Data is shown at the census tract and zip code scales.
- **Chapter 11: Housing** includes data and information on housing density, diversity, overcrowding, and cost. Data is shown at the census tract and City Council District scales.
- **Chapter 12: Environmental Health** assesses information on a number of exposures to pollution and the burdens that many communities face from different environmental pollutants. Data is shown at the census block and zip code scales.
- **Chapter 13: Community Health and Equity Index** combines demographic, socio-economic, health conditions, land use, transportation, food environment, crime, and pollution burden variables into a single index to compare health conditions across the City of Los Angeles. The Index is shown in ten foot by ten foot grid cells.

¹ U.S. Department of Health and Human Services. (2012, September). Social Determinants of Health. Retrieved from <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=39>

² Los Angeles County Public Health Department. (2013). Social Determinants of Health: How Social and Economic Factors Affect Health.

This page is intentionally left blank.

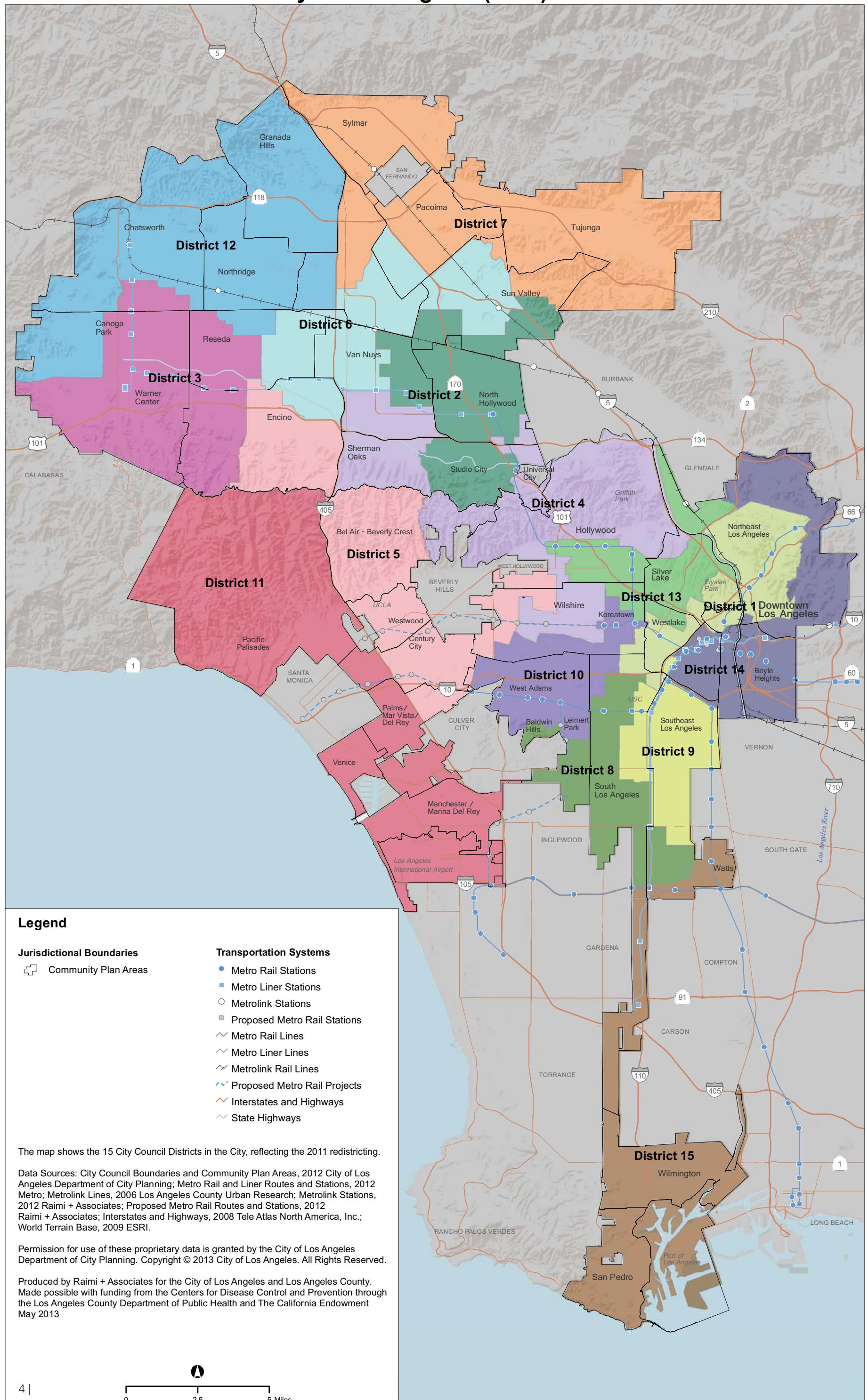
2 | Regional Context

The maps and associated indicators presented in subsequent chapters are summarized at a variety of geographic scales. The Regional Context Chapter includes maps showing all the different geographic scales used in the *Health Atlas*. The following list describes the maps included in this section.

- **City Council Districts for the City of Los Angeles:** The map shows the 15 City Council Districts in the City, reflecting the 2011 redistricting. Data developed before 2011 may reflect earlier versions of the Council boundaries. Data is from the City of Los Angeles.
- **Community Plan Areas for the City of Los Angeles:** The map highlights the 35 Community Plan Areas (CPAs) in the City. The 35 Community Plans guide the physical development of neighborhoods by establishing the goals and policies for land use. While the General Plan sets out a long-range vision and guidelines for future development, the Community Plans provide the specific, neighborhood-level detail, relevant policies, and implementation strategies necessary to achieve the General Plan objectives. Data is from the City of Los Angeles.
- **Special Purpose Districts for the City of Los Angeles:** The City of Los Angeles has two Special Purpose Districts that encompass the Los Angeles International Airport and the Port of Los Angeles. These geographic areas are governed by policy documents that, like a Community Plan, establish goals and policies for land use. The Special Purpose Districts are administered by the Los Angeles World Airports and the Port of Los Angeles, both proprietary departments of the City of Los Angeles.
- **Service Planning Areas for the City of Los Angeles:** The map shows the health Service Planning Areas (SPAs) for the City. SPAs are used by a number of County departments, such as Public Health and Mental Health to manage service delivery across the County. SPAs are aggregated from census tracts. Many SPAs span portions of the City of Los Angeles and neighboring jurisdictions. Data is from Los Angeles County.
- **Health Districts for the City of Los Angeles:** The map shows Health Districts (HDs) areas for the City. HDs are used by the Los Angeles County Department of Public Health to manage health service delivery across the County. HDs are aggregated from census tracts. Several HDs span portions of the City of Los Angeles and neighboring jurisdictions. Data is from Los Angeles County.
- **Public Use Microdata Areas for the City of Los Angeles:** The map highlights the Public Use Microdata Areas (PUMAs) in the City. PUMAs are built on census tracts and counties and contain at least 100,000 people. Many PUMAs span portions of the City of Los Angeles and neighboring jurisdictions. Data is from the 2010 U.S. Census.
- **Census Tracts for the City of Los Angeles:** The map shows the census tract geography for the City. Data is from the 2010 U.S. Census.
- **Census Blocks for the City of Los Angeles:** The map shows the census block geography for the City. Data is from the 2010 U.S. Census.
- **Zip Codes for the City of Los Angeles:** The map shows the zip codes for the City. Data is from Los Angeles County.

Map 1

Council Districts for the City of Los Angeles (2012)



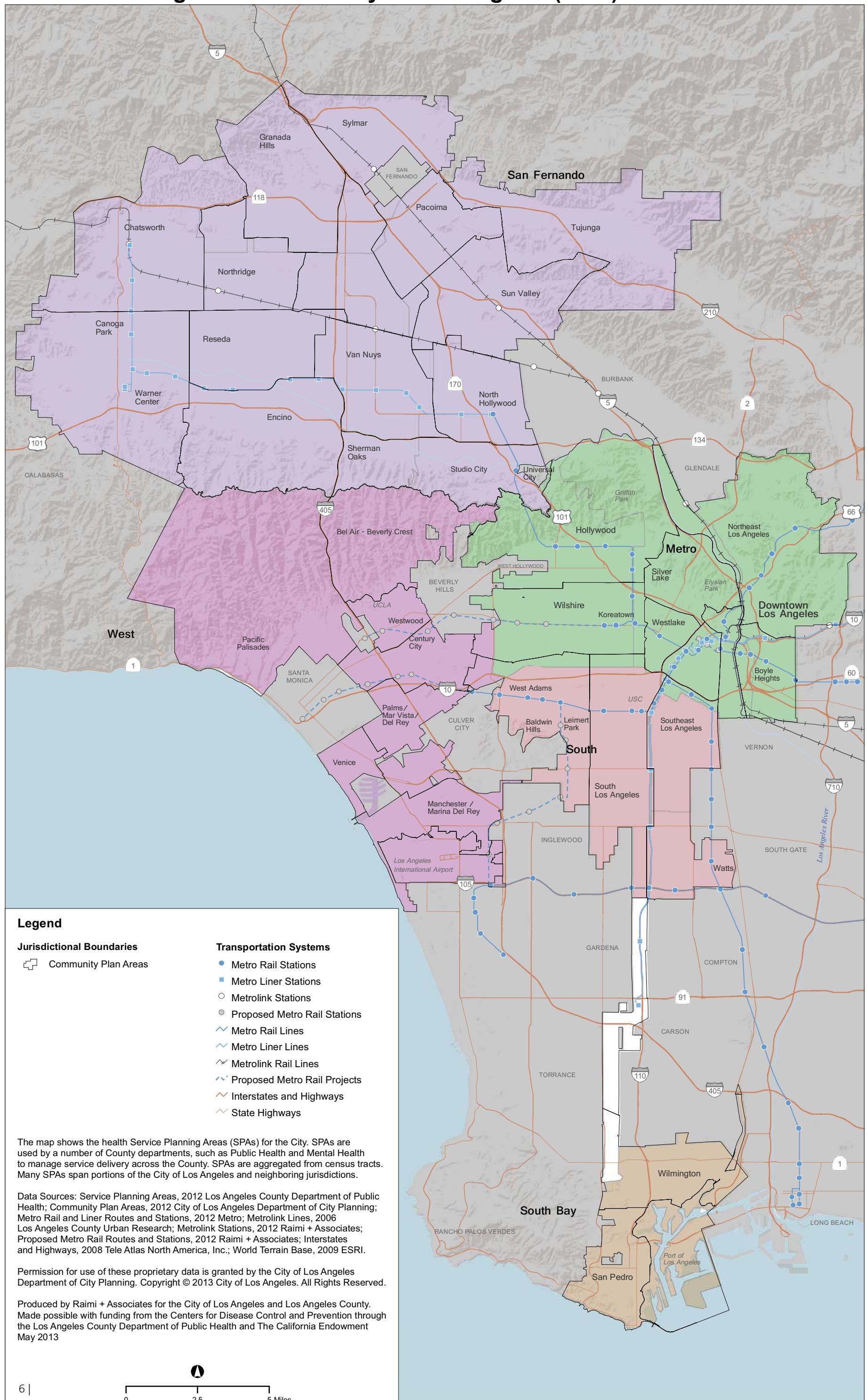
Map 2

Community Plan Areas and Special Purpose Districts (2012)



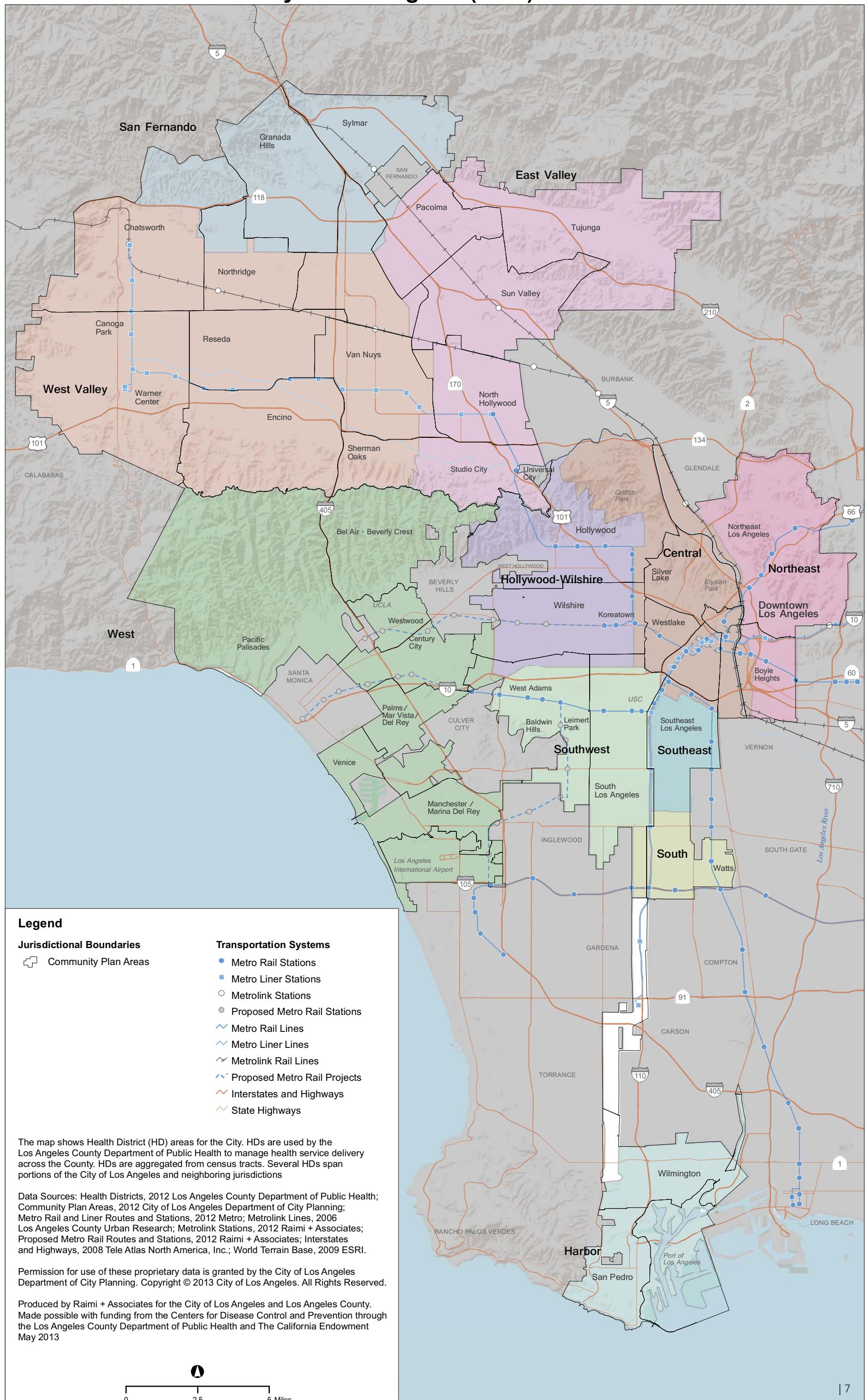
Map 3

Service Planning Areas for the City of Los Angeles (2012)



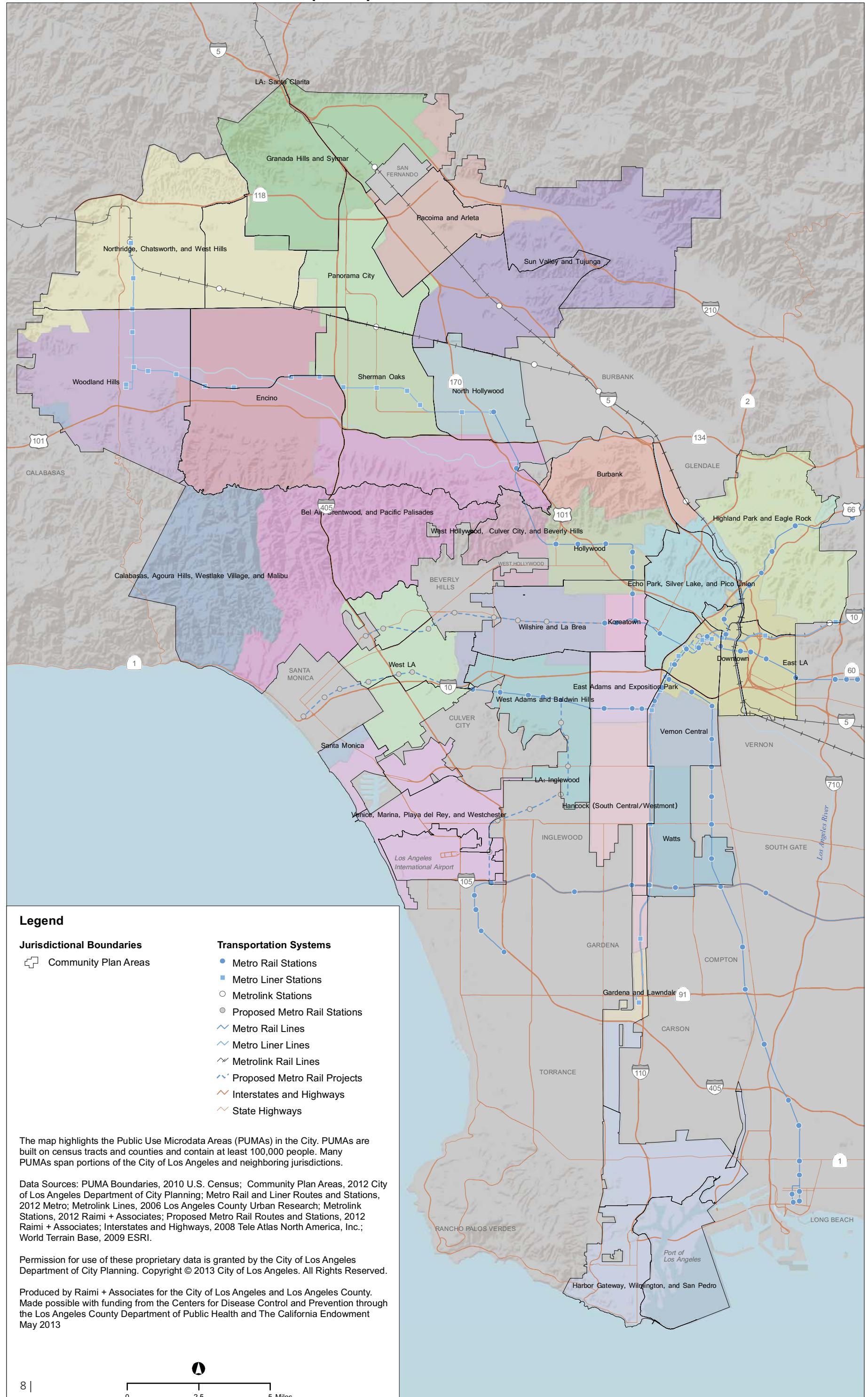
Map 4

Health Districts for the City of Los Angeles (2012)



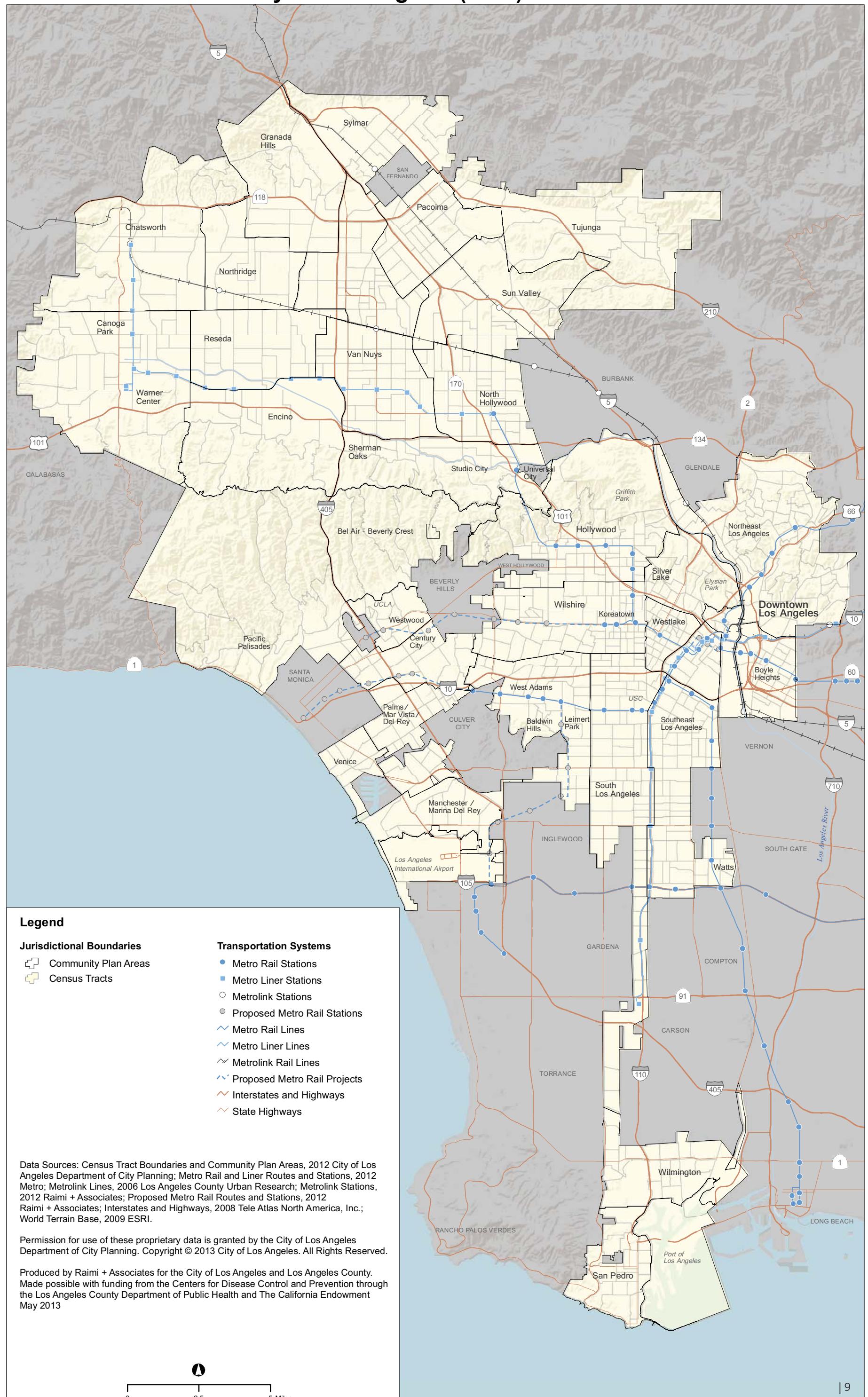
Map 5

Public Use Microdata Areas (2010)



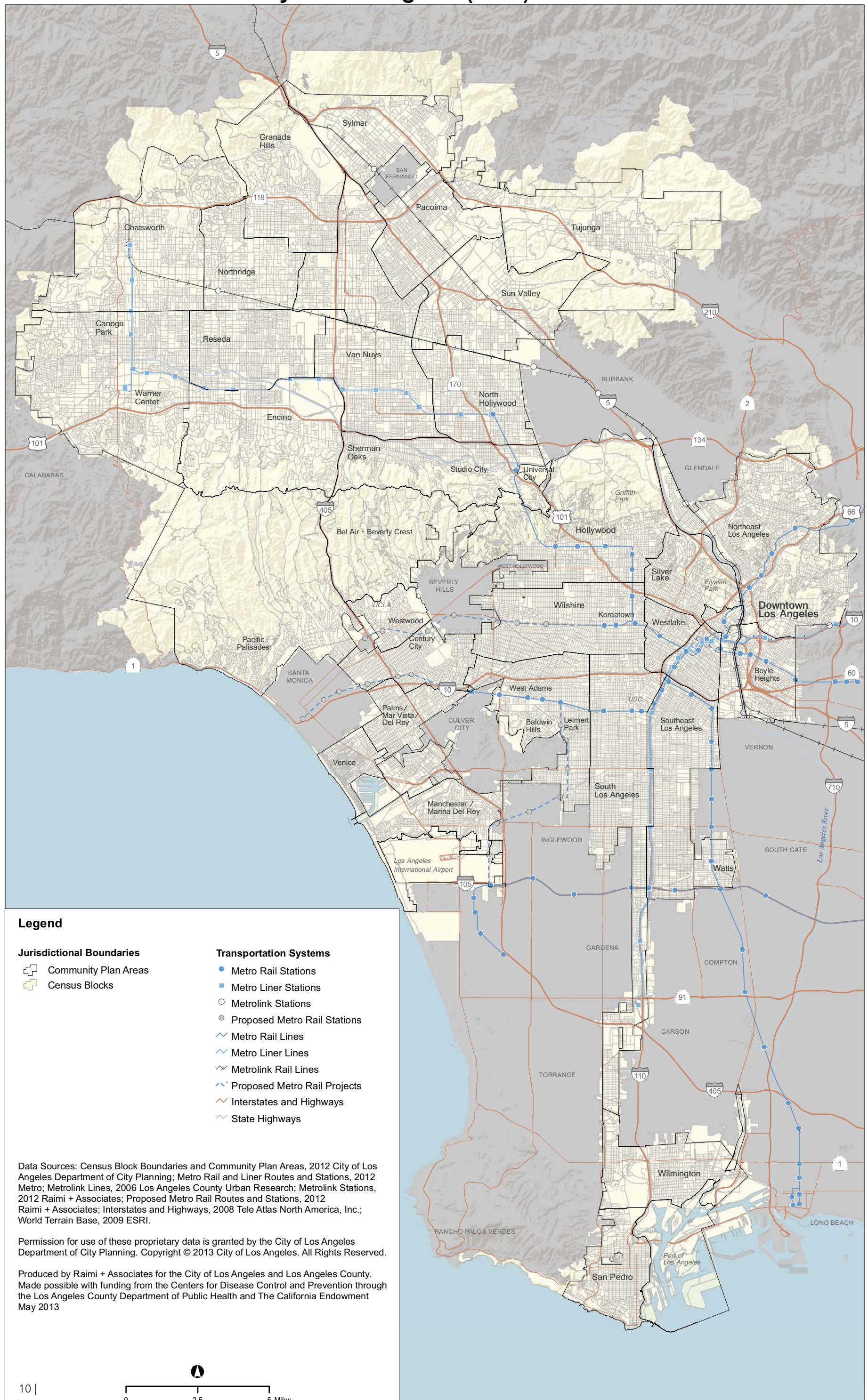
Map 6

Census Tracts for the City of Los Angeles (2012)



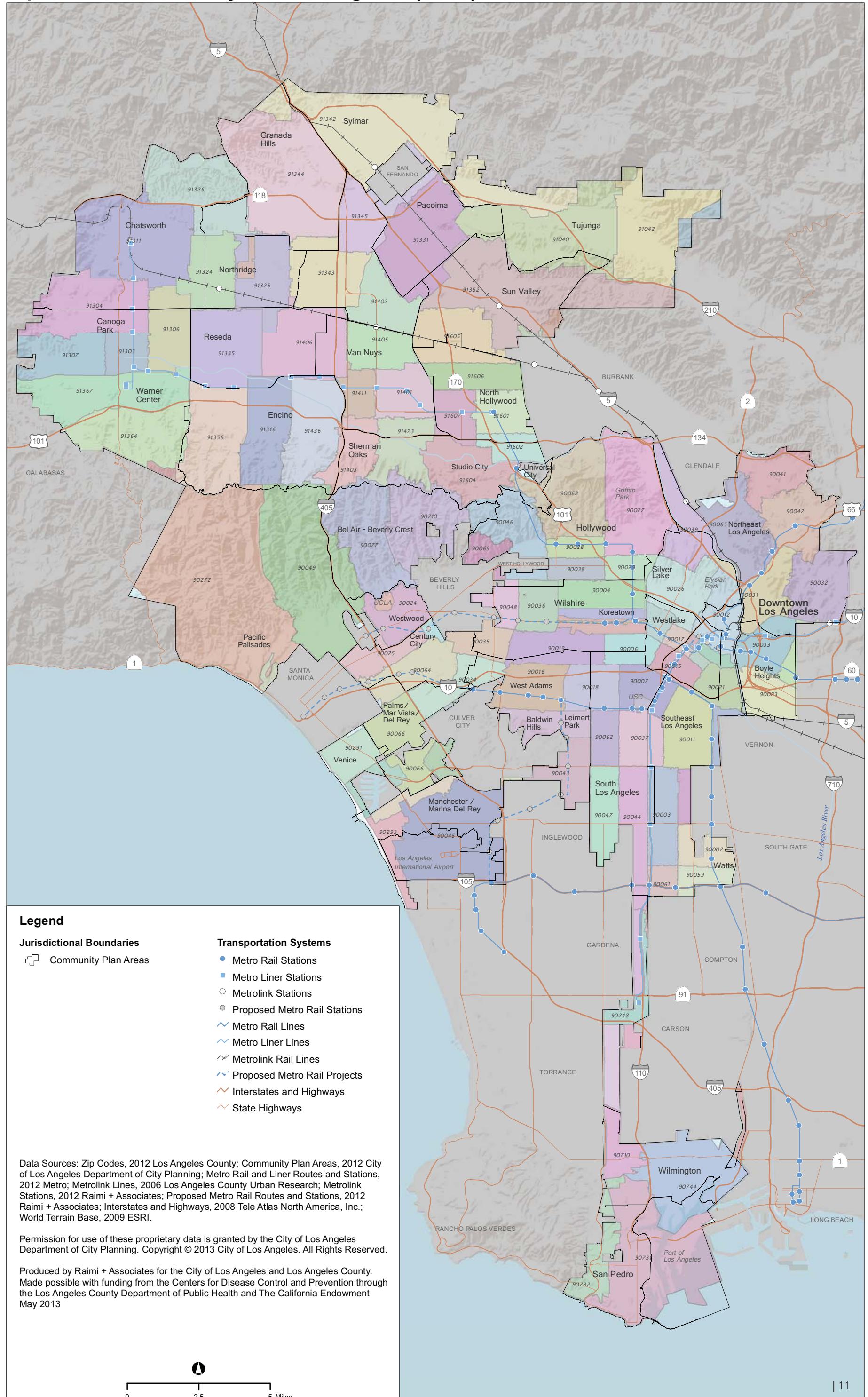
Map 7

Census Blocks for the City of Los Angeles (2012)



Map 8

Zip Codes for the City of Los Angeles (2012)



This page is intentionally left blank.

3 | Demographic and Social Characteristics

The Demographics and Social Characteristics analysis examines the differences in health indicators by age, race and ethnicity. Understanding a population's age composition helps planners, public health practitioners, and others plan for and target appropriate services and programs. Younger residents (under 18 years of age) and older adults (65 years and older) are considered to be more vulnerable to disease and poor health than adults (age 18 to 64 years). Younger residents are considered vulnerable because their bodies are not yet fully developed, which makes them more susceptible to disease. Older adults are considered more vulnerable because, on average, they have more existing chronic health problems than younger residents.³

Race and ethnicity correlate with persistent and often increasing health disparities among U.S. populations.⁴ White residents generally have better health outcomes than most other racial and ethnic groups, especially American Indians, Latinos, African Americans, and some Asian subpopulations.⁵ Groups currently experiencing poorer health outcomes are expected to grow as a proportion of the U.S. population.⁶ Race is sometimes regarded as a proxy for income and race-related stress (including discrimination and perceived discrimination) which also influence health outcomes.⁷

Differences in neighborhood conditions that contribute to health are often highly correlated with race. Consequently, communities with a high proportion of Non-White residents often have less access to parks and healthy food, are disproportionately exposed to pollution, and live in substandard housing.⁸

MAPS AND INDICATORS

The Demographic Chapter of this *Health Atlas* examines information on age characteristics, racial and ethnic groups, and linguistic isolation. The following list describes the maps and associated indicators included in this section.

- **Population Density:** The map shows the population density in persons per square mile for 2010. Data is from the 2010 U.S. Census and is displayed at the census block level.
- **Percentage of Population under Age 5:** The map shows the prevalence of population under age 5 for each census block in the City of Los Angeles. Data is from the 2010 U.S. Census.
- **Population under Age 5:** The map highlights census blocks where over 10% of the population is under age 5. Data is from the 2010 U.S. Census.
- **Percentage of Population under Age 18:** The map shows the proportion of the population under age 18 for each census block in the City. Data is from the 2010 U.S. Census.
- **Percentage of Population over Age 65:** The map shows the proportion of the population age 65 and over for each census block in the City. Data is from the 2010 U.S. Census.
- **Population over Age 65:** The map highlights census blocks where over 15% of the population is age 65 or over. Data is from the 2010 U.S. Census.
- **Percentage of Non-White and Hispanic Population:** The map shows the proportion of the population that identifies as Non-White or Hispanic for each census block in the City. Data is from the 2010 U.S. Census.
- **Non-White and Hispanic Population:** The map highlights census blocks where 75% or more of the population identify as Non-White or Hispanic. Data is from the 2010 U.S. Census.
- **Percentage of Linguistically-Isolated Households:** The map shows the proportion of households in which no person age 14 or over speaks English "very well." Data is from the 2009 U.S. Census Bureau's American Community Survey (ACS) 5-Year Estimates and is displayed at the census tract level.

KEY FINDINGS

POPULATION CHARACTERISTICS

Population density is the measure of total population per square mile. In 2010, the population density of the City was 8,092 persons per square mile. As shown on Map 9 and in Figure 1, 16 CPAs had population densities below the City average, with most of these CPAs located in the Santa Monica Mountains and in the San Fernando Valley area. The Bel Air-Beverly Crest and Brentwood-Pacific Palisades CPAs were the most sparsely populated areas. Nineteen CPAs exceeded the City average population density. Population density was highest in the Westlake CPA, followed by Wilshire, South Los Angeles, and Southeast Los Angeles.

¹ Maurer, Mathew S. (2003). "Age: a nonmodifiable risk factor?" *Journal of the American College of Cardiology*. 42(8):1427-1428. Retrieved from <http://content.onlinejacc.org/article.aspx?articleid=1132733>

⁴ Murray, C.J., et. al., (2006). Eight Americas: investigating mortality disparities across races, counties, and race-counties in the United States. *PLoS Medicine*, 3(9), pp. 1513-1524.

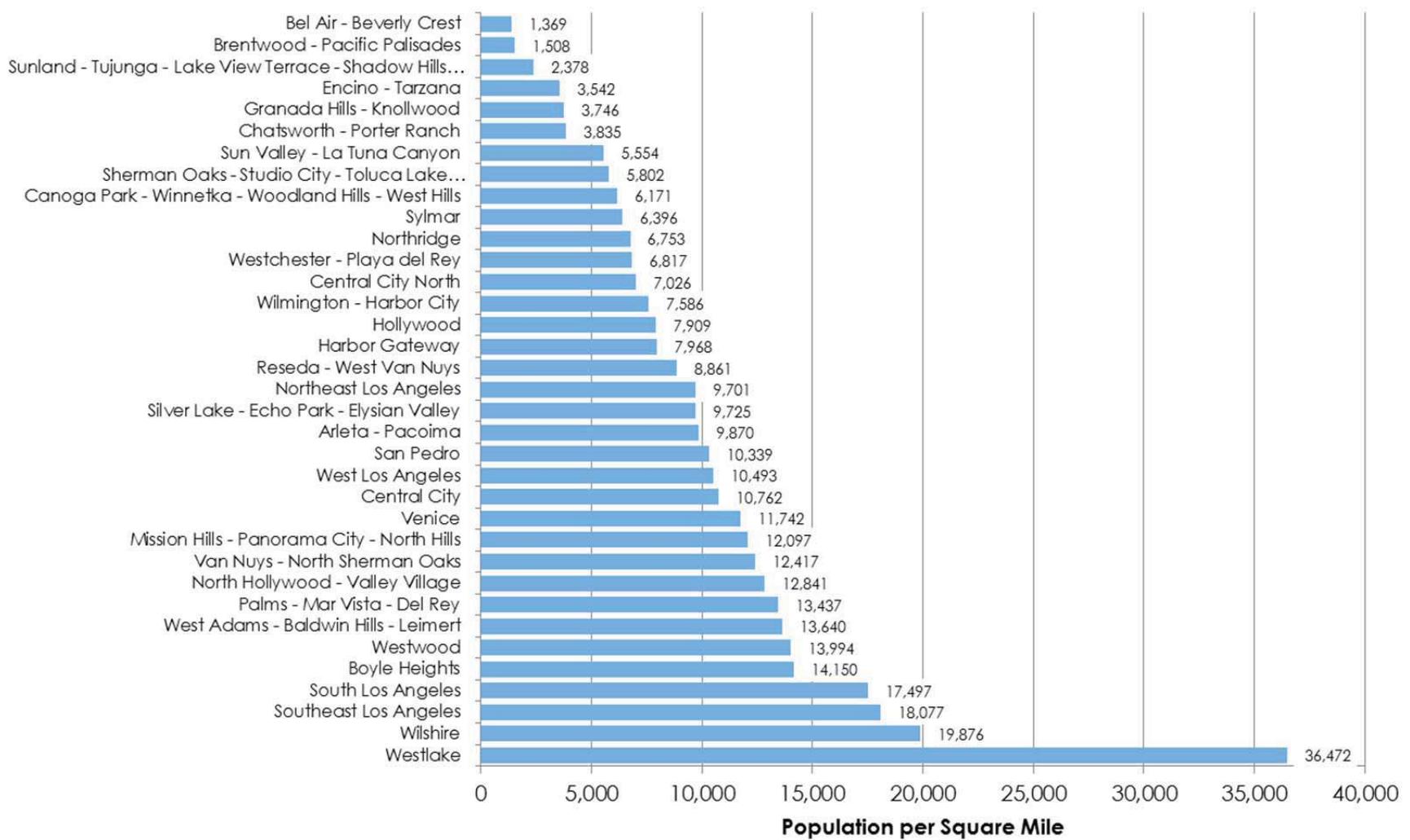
⁵ Centers for Disease Control and Prevention, Office of Minority Health and Health Disparities. (2009, March) Eliminating Racial & Ethnic Health Disparities. Retrieved from <http://www.cdc.gov/omhd/about/disparities.htm>.

⁶ Centers for Disease Control and Prevention. (January 14, 2011). CDC Health Disparities and Inequalities Report - United States. *Morbidity and Mortality Weekly Report*. Supplement / Vol. 60. Retrieved from: <http://www.cdc.gov/mmwr/pdf/other/su6001.pdf>

⁷ Williams, D. R., (2001, January). Low Income, Not Race or Lifestyle, Is the Greatest Threat to Health. Robert Wood Johnson Foundation.

⁸ Robert Wood Johnson Foundation. (2011, May). Exploring the Social Determinants of Health Series. Issue Brief #8: Neighborhoods and Health. Retrieved from <http://www.rwjf.org/content/dam/web-assets/2011/05/neighborhoods-and-health->

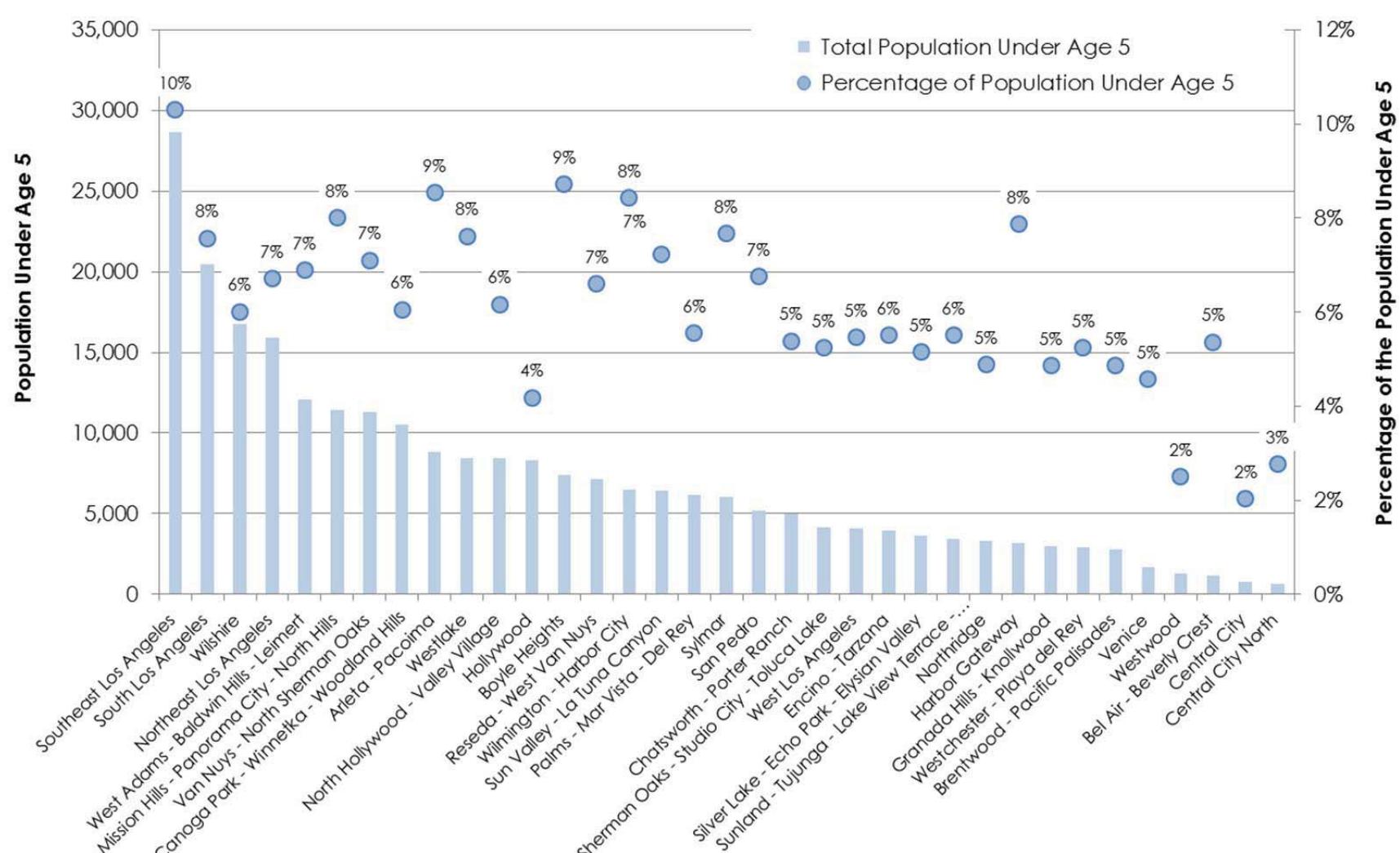
Figure 1: Population per Square Mile by Community Plan Area in 2010



Source: 2010 U.S. Census. Accessed from American FactFinder.

In 2010, children under the age of five accounted for 7% of the City, County, and California populations. Map 10 and Map 11 show the population under age five for each census block. Nine CPAs exceeded the citywide average of population under age five. The Southeast Los Angeles, Boyle Heights, and Arleta-Pacoima CPAs had the highest percentage (greater than 9%) of population under age five. Westwood, Central City, and Central City North had the lowest proportion (less than 4%) of the population under age 5. In most cases, the CPAs with a higher proportion of population under age 5 also had a higher total number of people under age 5. The Southeast Los Angeles CPA, for example, had both the highest prevalence of population under age five (10%) and the most children under age five (over 28,000). The opposite relationship (low proportion, low total numbers) was true for the Central City North, Central City, and Westwood CPAs. The Harbor Gateway and Hollywood CPAs did not follow this relationship. The Harbor Gateway CPA had a high proportion of the population under age five, but a low total number. Hollywood had a low proportion of children under age five but a relatively high total number.

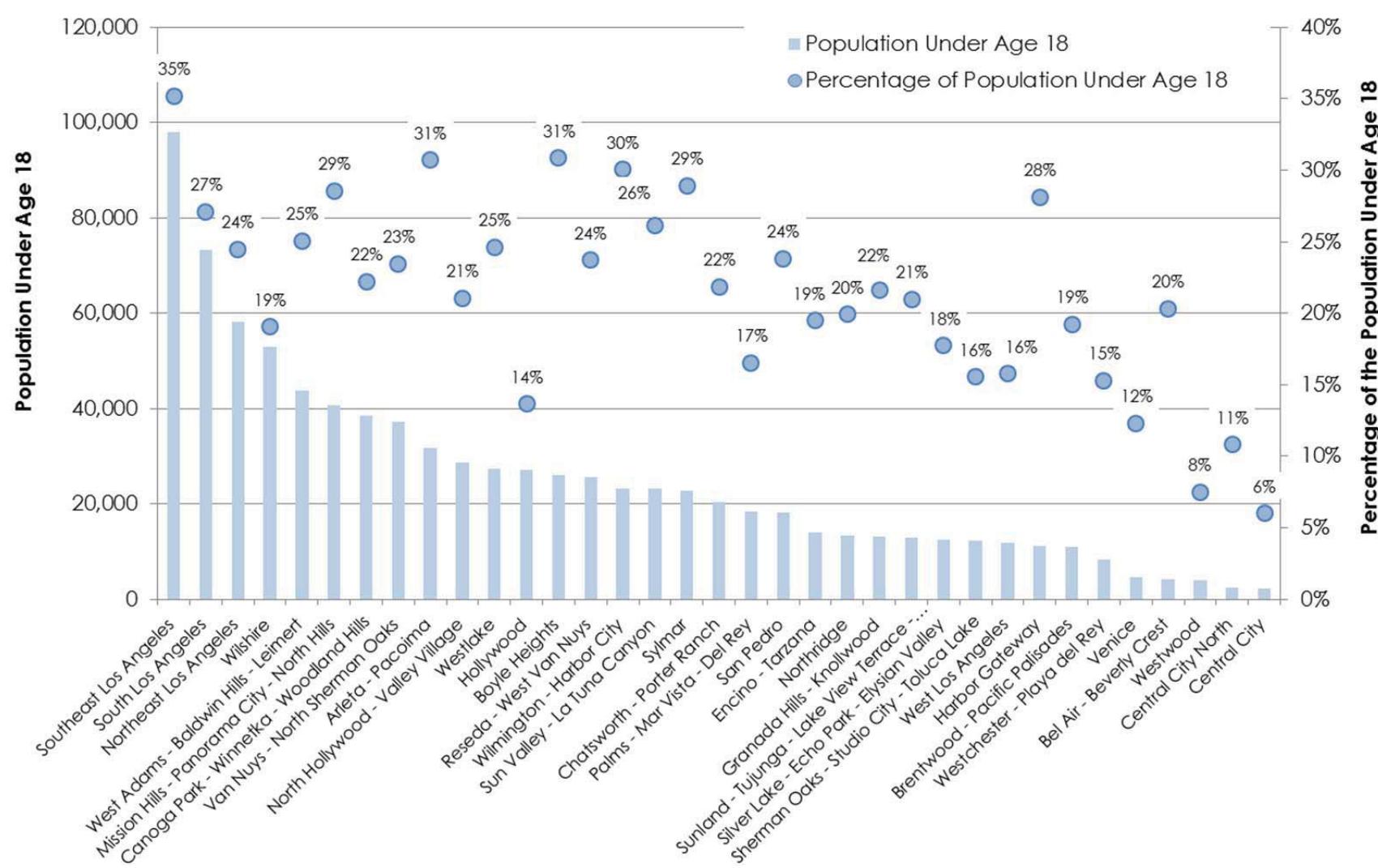
Figure 2: Population under Age Five by Community Plan Area in 2010



Source: 2010 U.S. Census. Accessed from American FactFinder.

Twenty-three percent of the City's population was under age 18 in 2010, similar to the countywide average (24%) and statewide average (25%). Map 12 shows the percentage of population under age 18 for each census block. The Southeast Los Angeles, Boyle Heights, Arleta-Pacoima, and Wilmington-Harbor City CPAs had the highest percentage (greater than 30%) of population under 18 years of age as shown in Figure 3. The areas with large numbers of young people included Southeast Los Angeles (over 97,000), South Los Angeles (over 73,000), and Northeast Los Angles (over 58,000). Despite having high proportions of people under age 18, Wilmington and Boyle Heights ranked in the middle of CPAs in terms of total population under 18. The Wilshire (19%) and Hollywood (14%) CPAs had average or below average proportions of population under age 18, but relatively high total numbers. Central City and Westwood have the smallest percentage (less than 9%) of school-age children.

Figure 3: Population under Age 18 by Community Plan Area in 2010

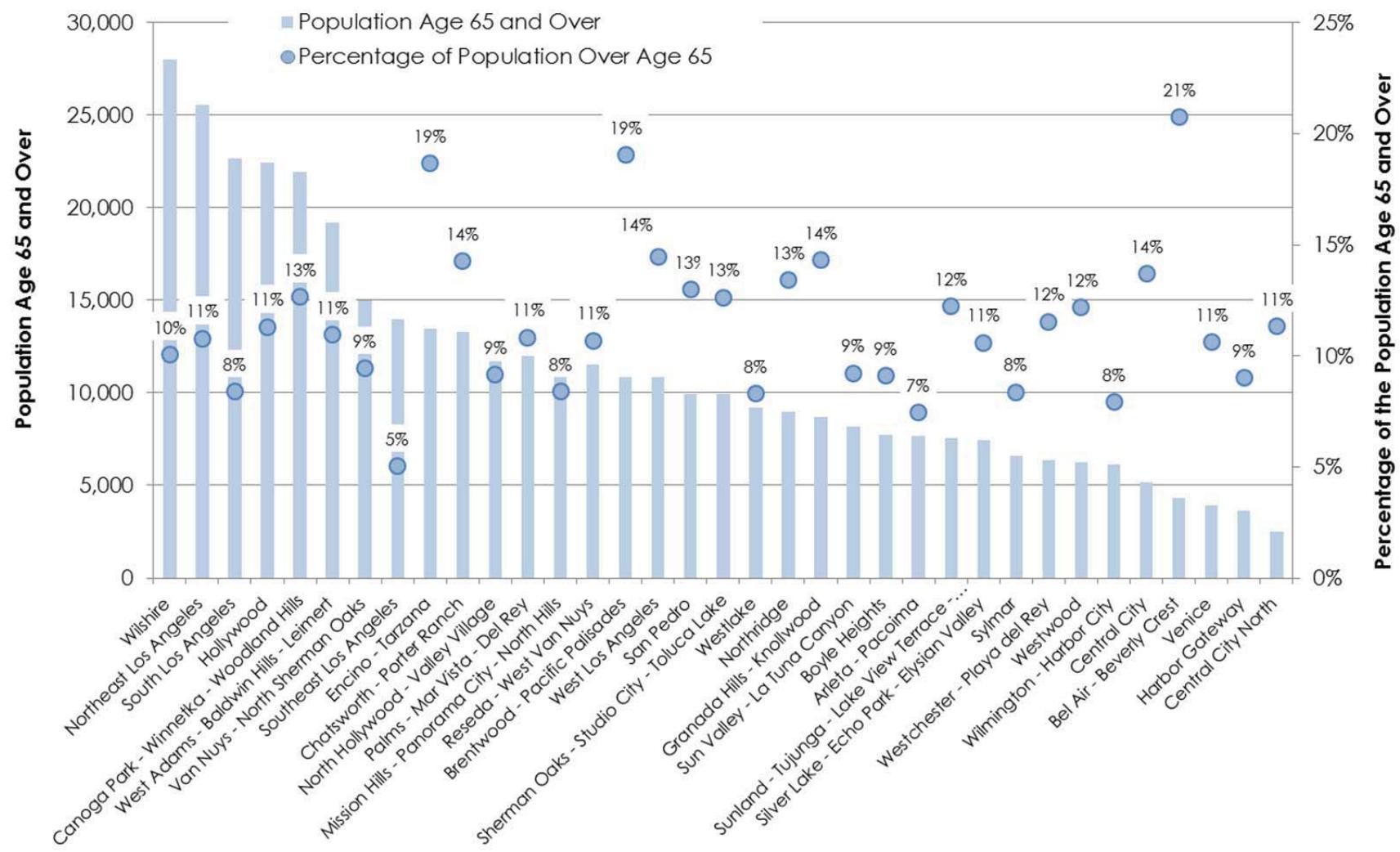


Source: 2010 U.S. Census. Accessed from American FactFinder.

In 2010, 10% of the City's population was age 65 and over. Map 14 shows the percentage of population over age 65 by census block, and Map 13 shows the census blocks in which 15% or more of the population is over age 65. A high proportion of seniors lived on the Westside of the City, the Santa Monica Mountains, and the western San Fernando Valley.

Figure 4 shows the total population age 65 and over and the percentage of the population age 65 and over for each CPA. Out of 35 CPAs, 22 had proportions of seniors greater than the City average. Populations over 65 years of age were very high (greater than 19%) in the Bel Air-Beverly Crest, Brentwood -Pacific Palisades, and Encino-Tarzana CPAs, but the largest numbers of seniors were in the Wilshire and Northeast Los Angeles CPAs (greater than 25,000). Southeast Los Angeles had the lowest proportion of seniors (5%).

Figure 4: Population Age 65 and Over by Community Plan Area in 2010



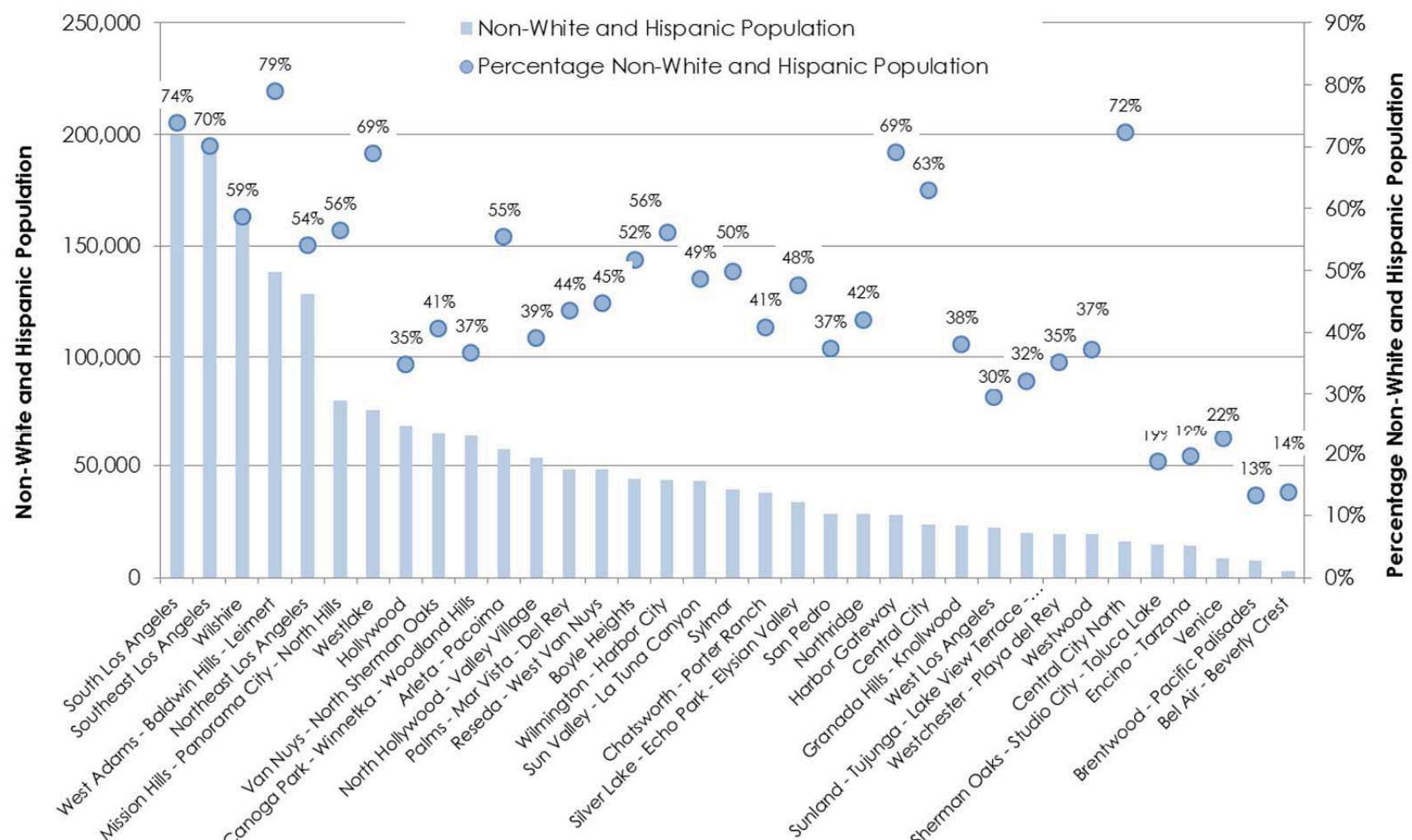
Source: 2010 U.S. Census. Accessed from American FactFinder.

RACE AND ETHNICITY

Half of the City and County residents identified as Non-White or Hispanic in 2010. Map 15 shows the proportion of the population in each census block that identified as Non-White or Hispanic, and Map 16 shows the census blocks where more than 75% of the population identified as Non-White or Hispanic. A majority of the census blocks in the West Adams-Baldwin Hills-Leimert, South Los Angeles, Southeast Los Angeles, and Central City North CPAs had large proportions of the population that identified as Non-White or Hispanic.

By CPA, the Non-White and Hispanic population ranged from 13% up to 79% as shown in Figure 5. The highest percentages (greater than 70%) of Non-White and Hispanic populations were in the West Adams -Baldwin Hills-Leimert, South Los Angeles, Southeast Los Angeles, and Central City North CPAs. The lowest proportions (less than 15%) of Non-White and Hispanic people were in the Bel Air-Beverly Crest and Brentwood- Pacific Palisades CPAs.

Figure 5: Non-White and Hispanic by Community Plan Area in 2010



Source: 2010 U.S. Census. Accessed from American FactFinder.

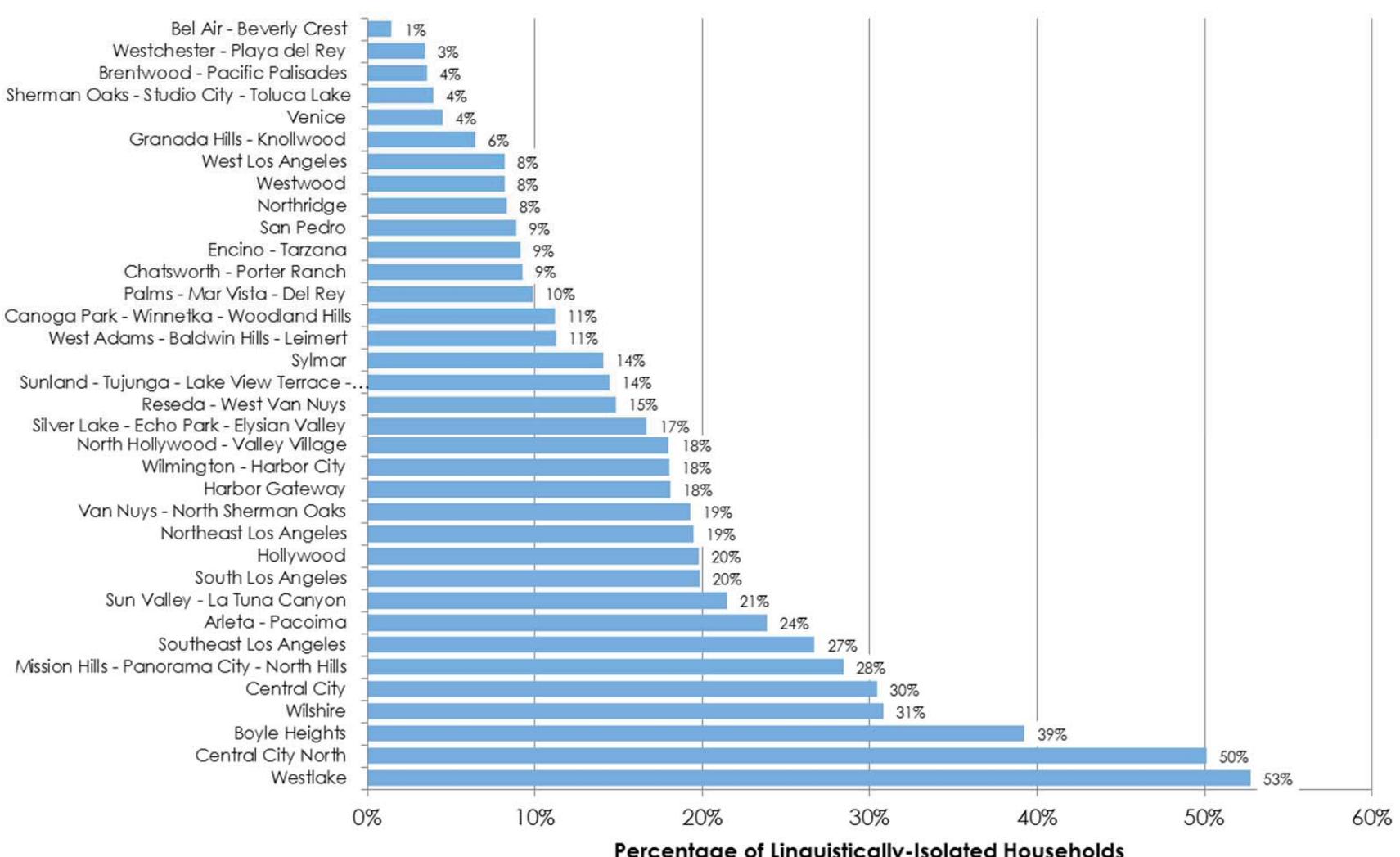
Citywide, 43% of the Non-White and Hispanic population (nearly 825,000 residents) lived in 5 CPAs: South Los Angeles, Southeast Los Angeles, Wilshire, West Adams-Baldwin Hills-Leimert, and Northeast Los Angeles. The Hollywood, Van Nuys-North Sherman Oaks, Canoga Park-Winnetka-Woodland Hills-West Hills, and North Hollywood-Valley Village CPAs all had over 50,000 Non-White and Hispanic residents, but lower proportions than the City as a whole. Conversely, the Central City, Central City North, and Wilmington-Harbor City CPAs had proportions significantly above the City average but relatively low populations of Non-White and Hispanic residents.

LINGUISTIC ISOLATION

English-language skills are also an important factor in health outcomes. While there are exceptions for some industries, linguistic isolation may serve as a barrier to jobs, especially those that pay higher wage jobs. Language barriers can also present obstacles to obtaining quality medical and social services.⁹ Linguistic isolation describes individuals who have difficulty speaking English, and their lack of English or limited English may isolate them from other segments of the population.

In 2010, 19% of the households in the City of Los Angeles were linguistically isolated. Map 17 shows the proportion of the households in each census tracts that were linguistically isolated. The percentage of linguistically-isolated households is greatest (above 50%) in the Westlake and Central City North CPAs. The Wilshire CPA has the most linguistically-isolated households (over 35,000), followed by Hollywood (21,000) and Southeast Los Angeles (20,000). Linguistic isolation is also a significant issue (greater than 30% of households) in the Boyle Heights, Wilshire, and Central City CPAs.

Figure 6: Percentage of Linguistically-Isolated Households for Community Plan Areas in 2009

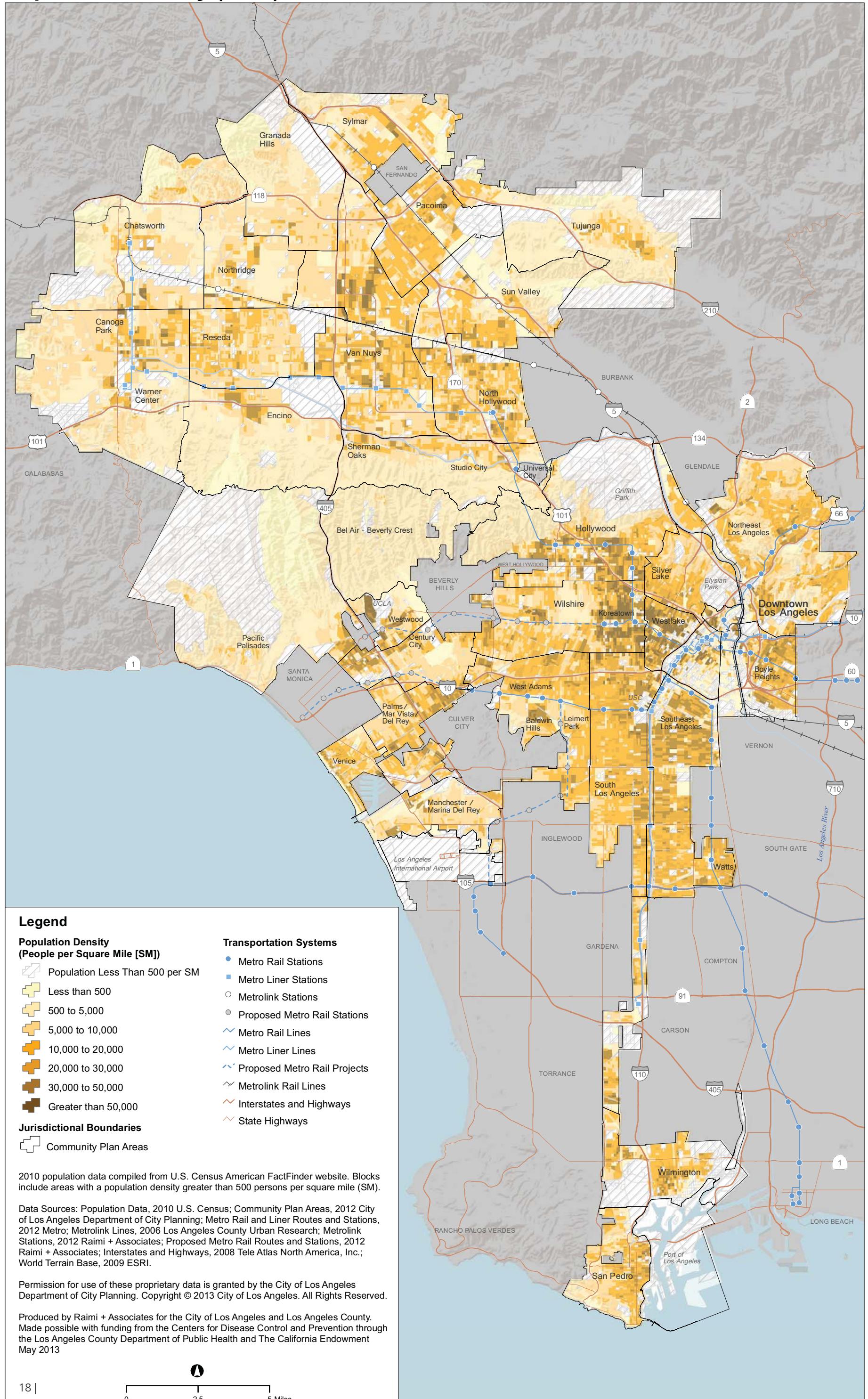


Source: 2010 U.S. Census. Accessed from American FactFinder.

⁹ Hernandez, Donald J. (Summer 2004). "Demographic Change and the Life Circumstances of Immigrant Families" The Future of Children: A Collaboration of The Woodrow Wilson School of Public and International Affairs at Princeton University and The Brookings Institution. *Children of Immigrant Families*. 14(2) pp.17-47. Retrieved from: http://futureofchildren.org/futureofchildren/publications/docs/14_02_2.pdf

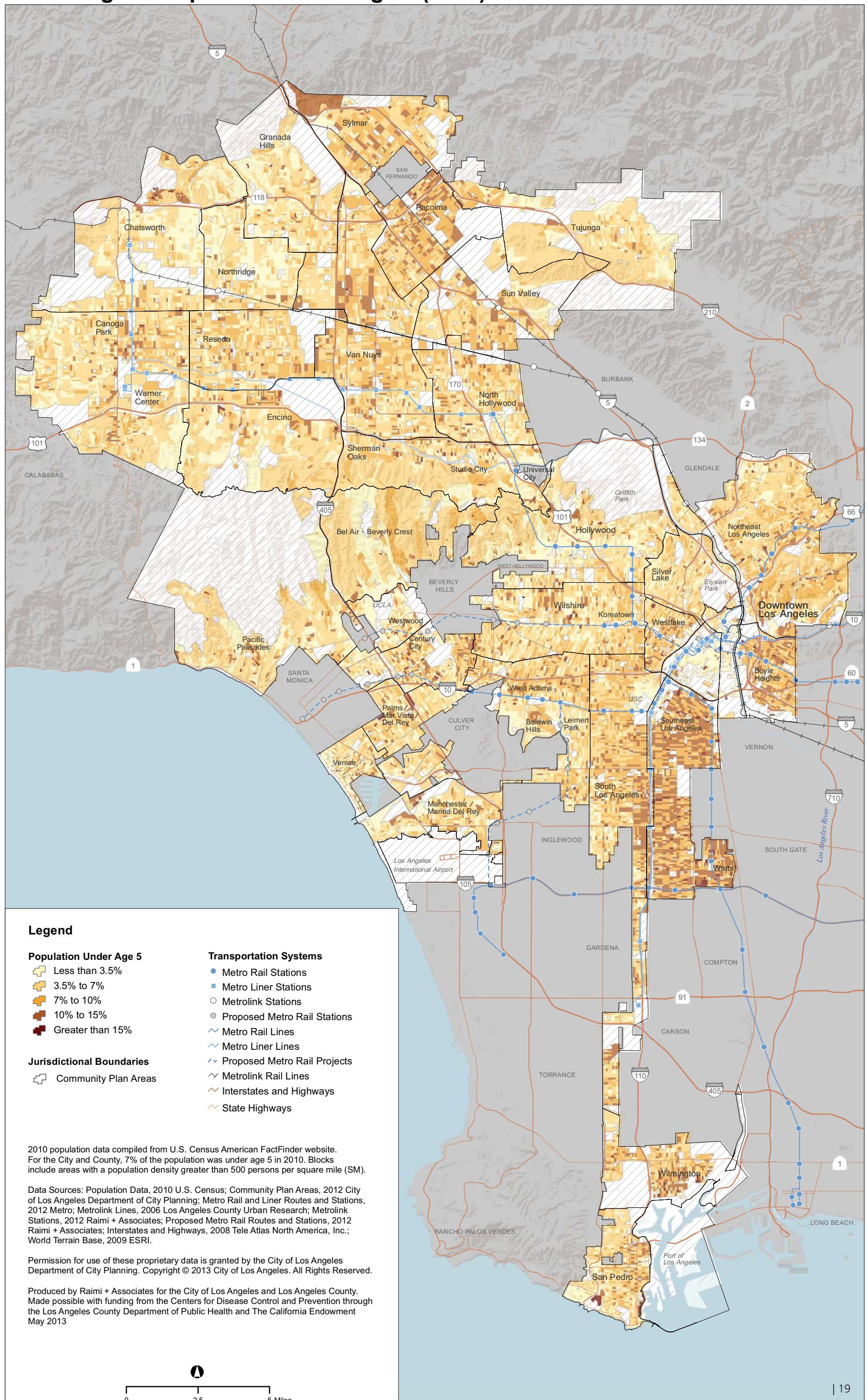
Map 9

Population Density (2010)



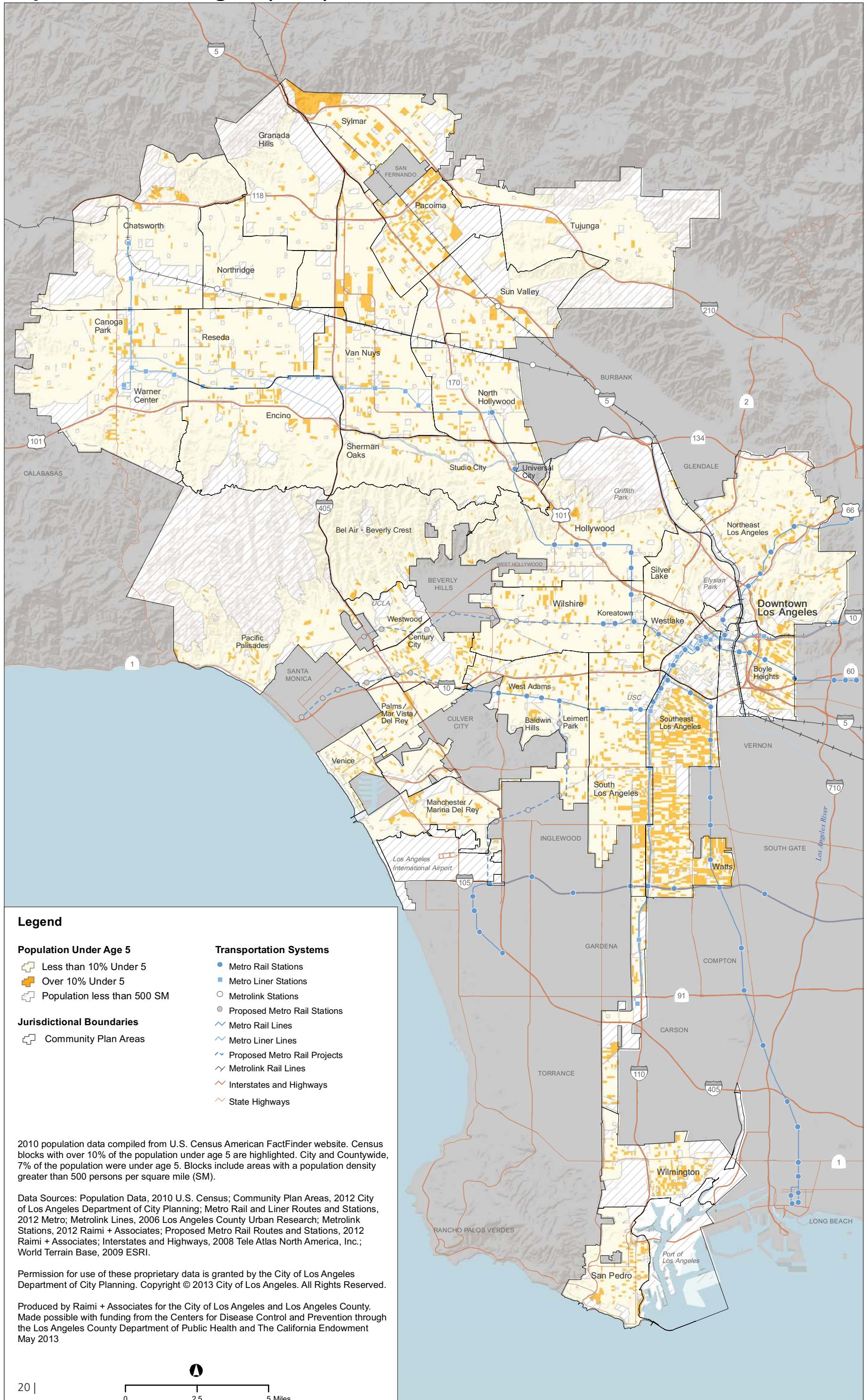
Map 10

Percentage of Population Under Age 5 (2010)



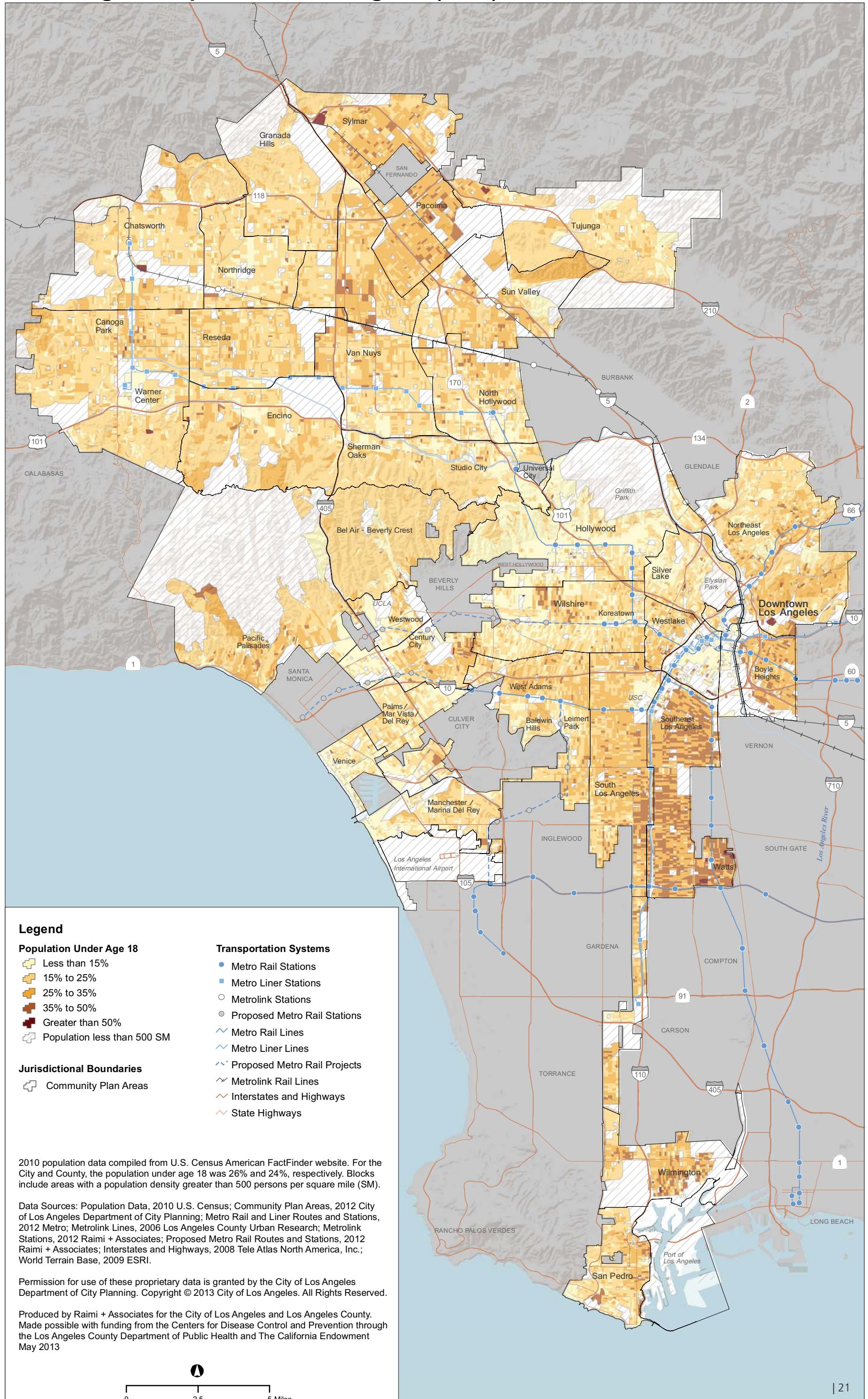
Map 11

Population Under Age 5 (2010)



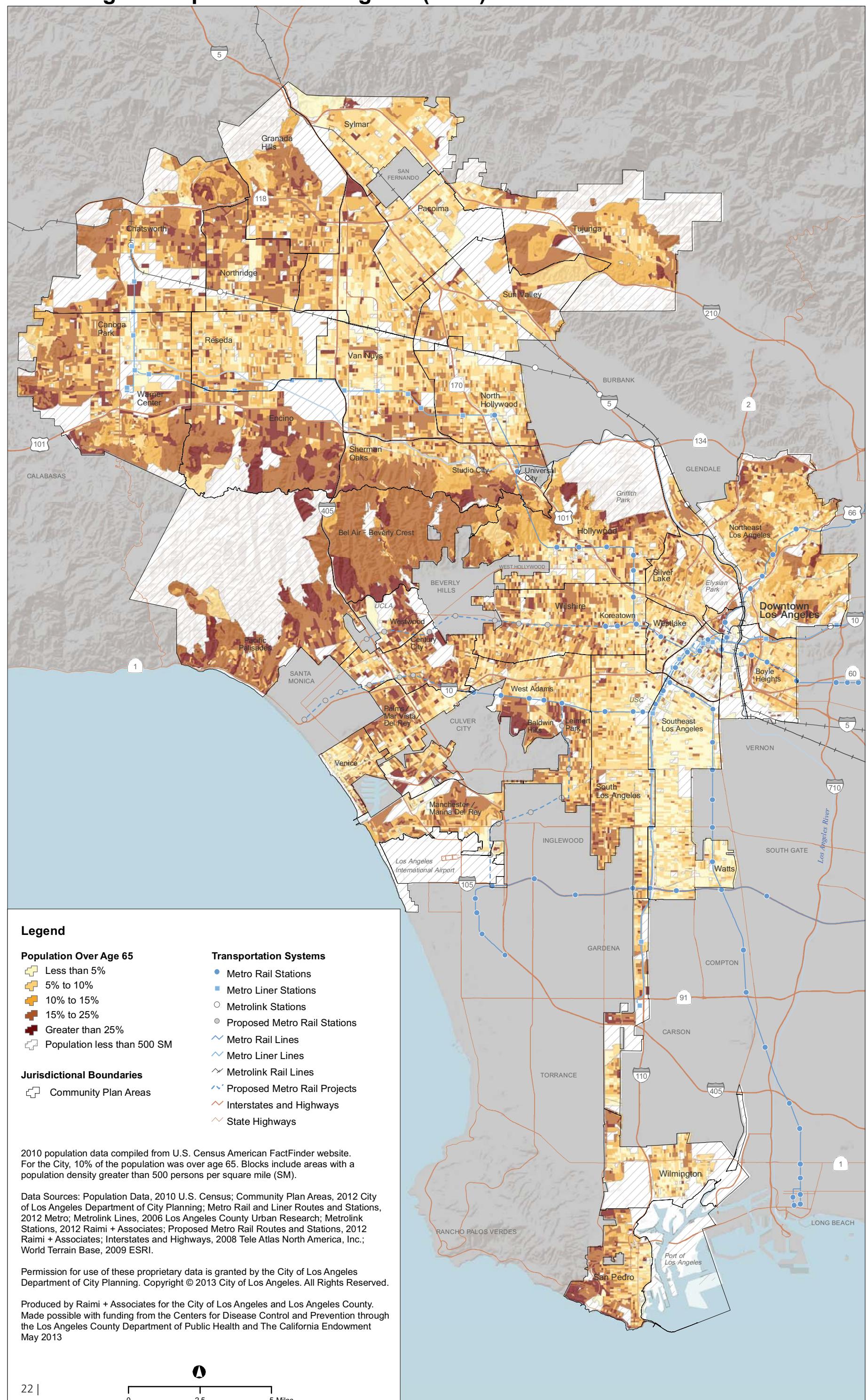
Map 12

Percentage of Population Under Age 18 (2010)



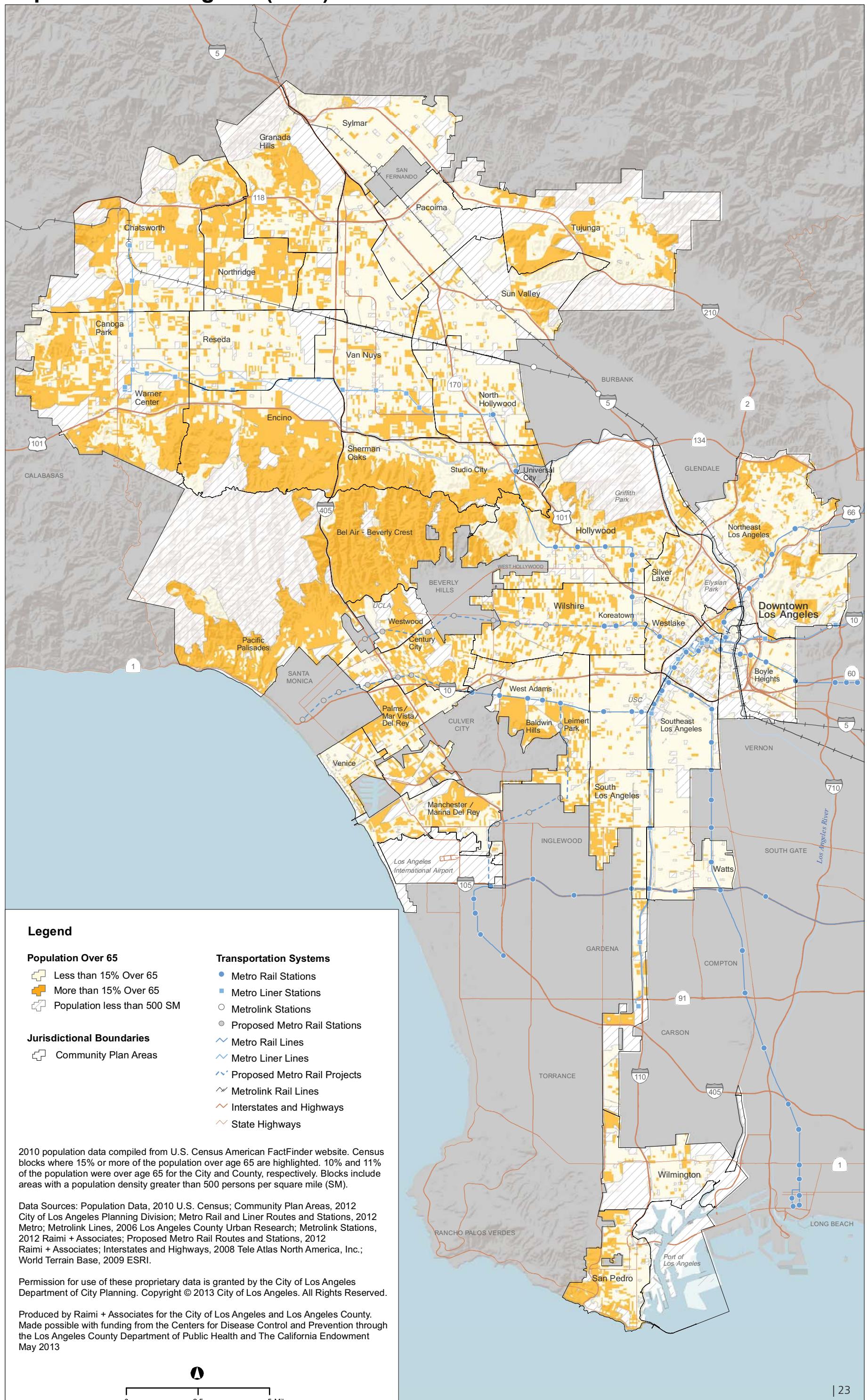
Map 13

Percentage of Population Over Age 65 (2010)



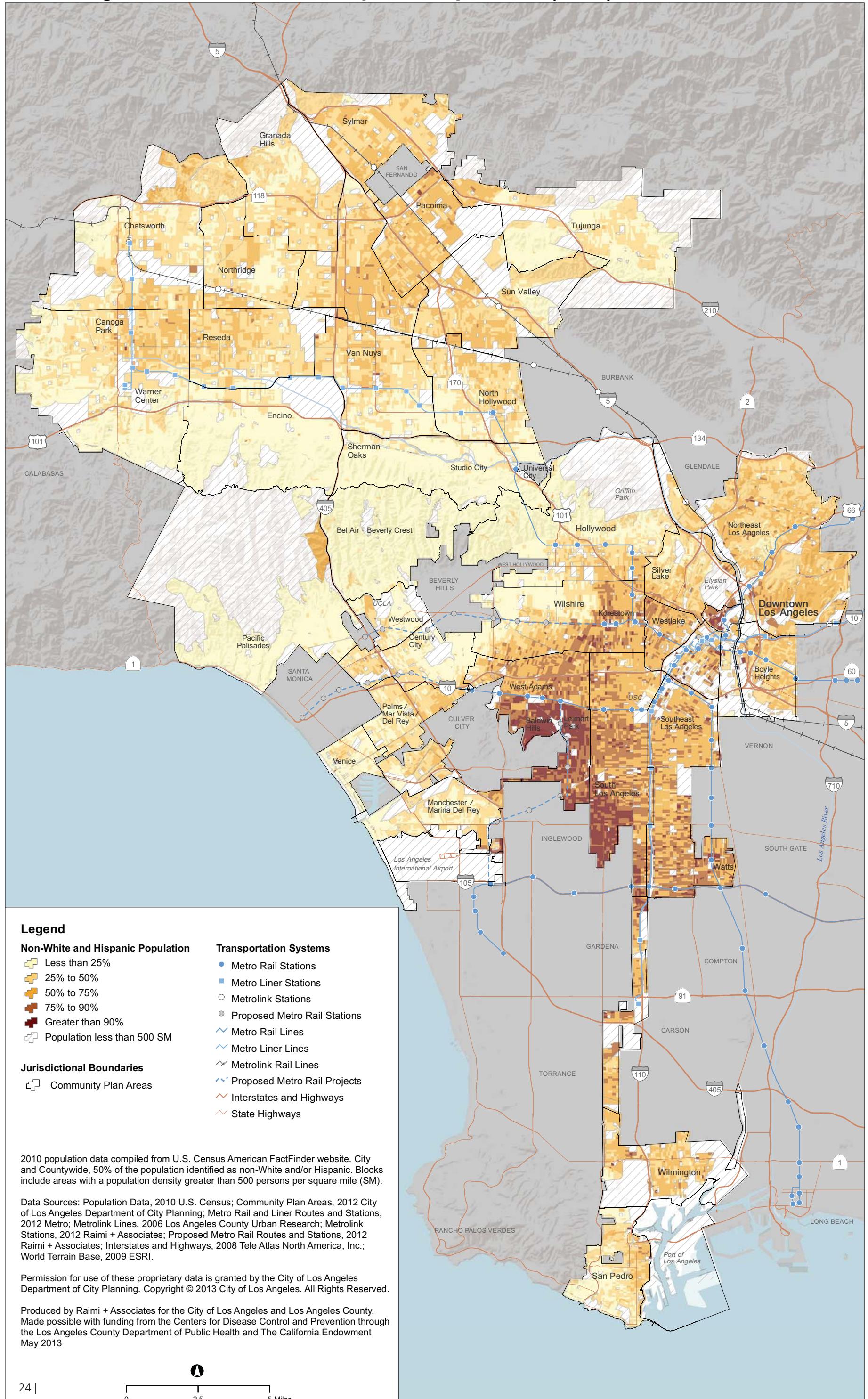
Map 14

Population Over Age 65 (2010)



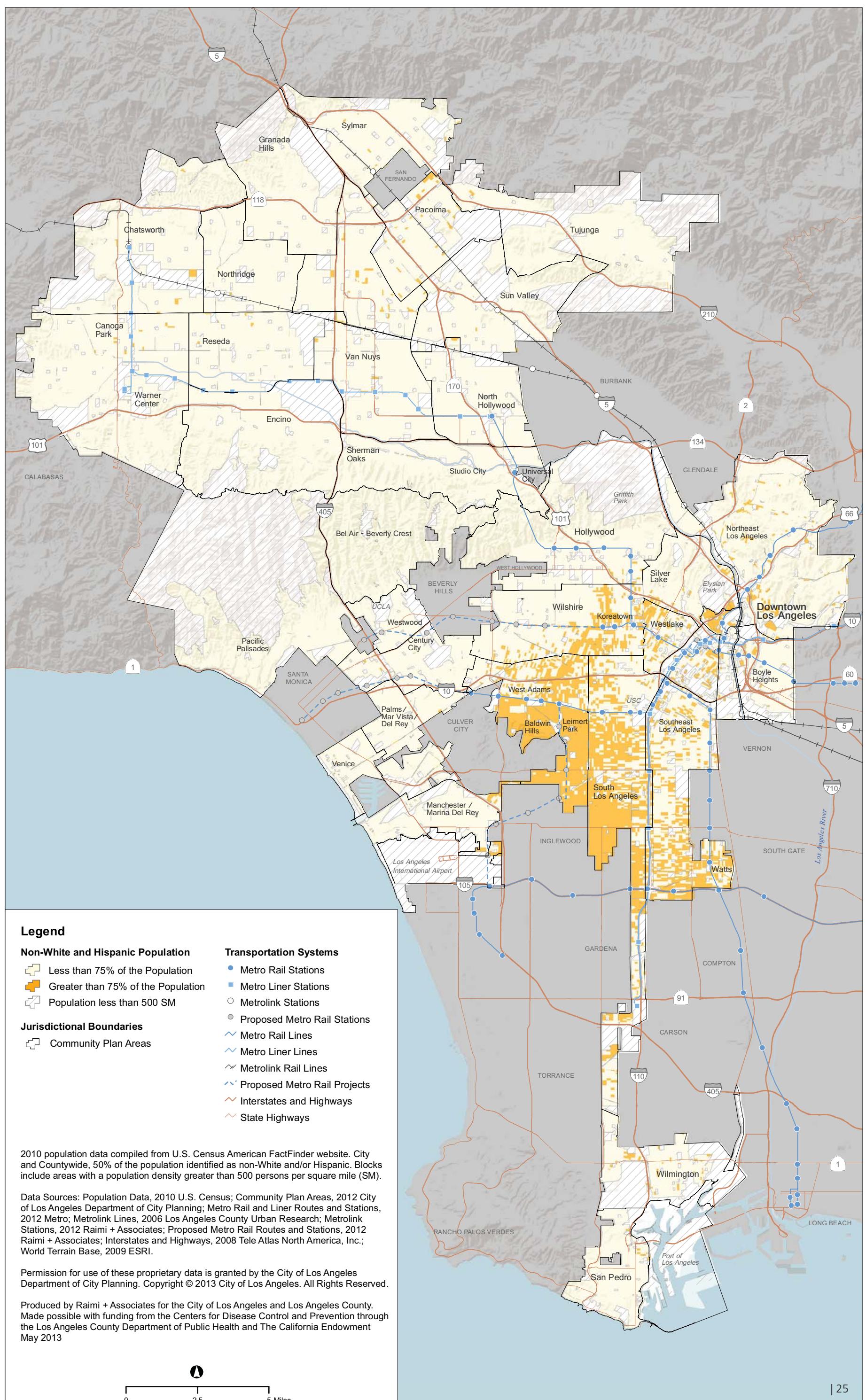
Map 15

Percentage of Non-White and Hispanic Population (2010)



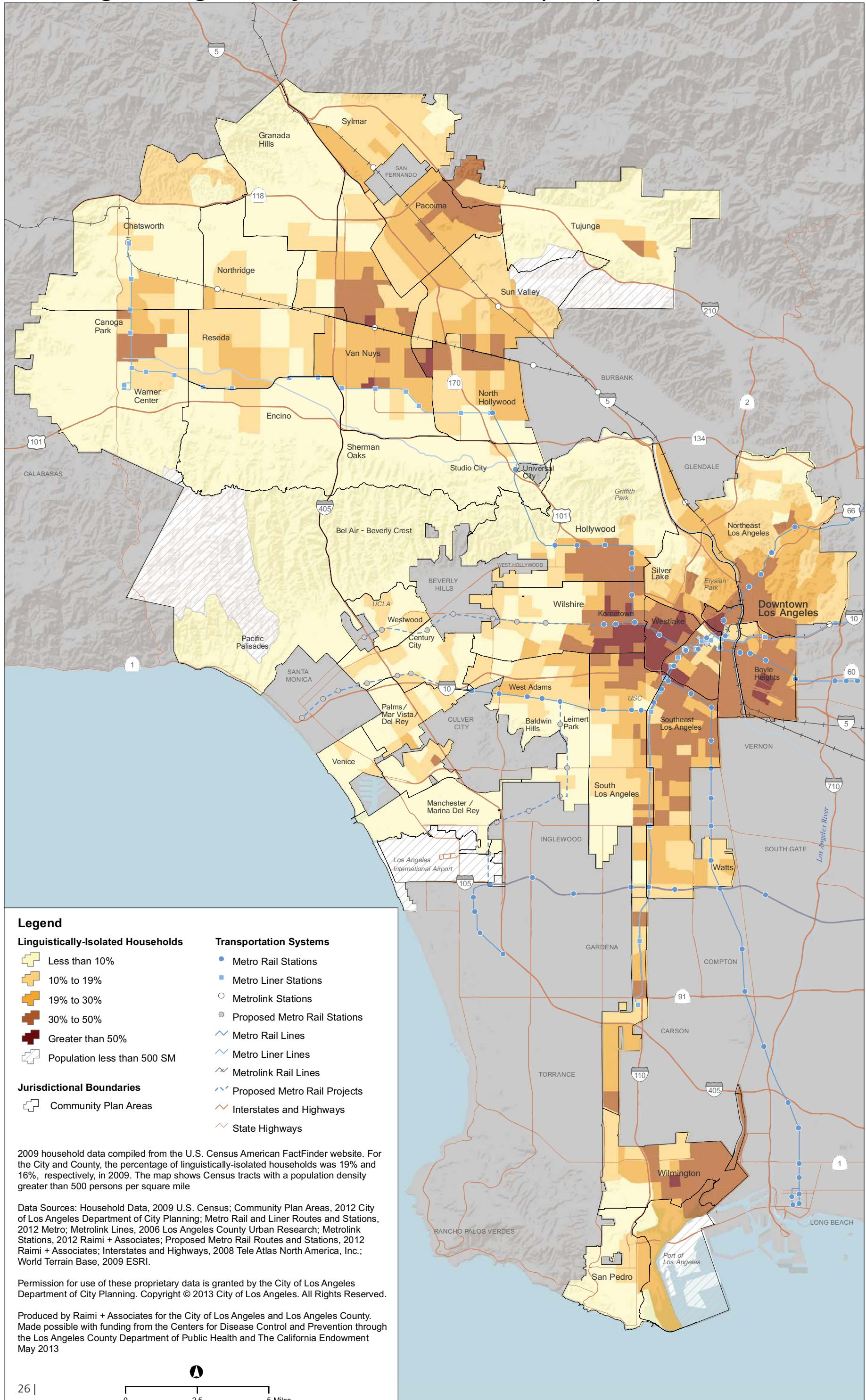
Map 16

Non-White and Hispanic Population (2010)



Map 17

Percentage of Linguistically-Isolated Households (2009)



4 | Economic Conditions

Socio-economic conditions can significantly affect a population's well-being and access to healthy living. Rising socio-economic status tends to improve health outcomes, while falling socio-economic status tends to decrease levels of health and wellness. Differences in social status, income and wealth, and opportunities for a quality education, are often associated with health impacts that disproportionately affect certain populations, such as the poor, young children, and the elderly.

Income is one of the strongest predictors of health outcomes worldwide. Health care access, outcomes, and life expectancy improve as income increases.¹⁰ Lower incomes are associated with higher rates of mortality, premature births, and other health issues. Households with higher incomes are likely to have more educated residents, lower unemployment rates, and better access to healthcare. These factors contribute to better health outcomes related to mortality, premature births, and other health indicators.^{11,12}

When households earn incomes much lower than the average cost of living, they tend to make sacrifices in important areas. Those lifestyle compromises can include eating less food and/or more unhealthy food, living in substandard housing, and/or delaying medical care. Additionally, the lack of resources to meet basic needs causes long-term stress, which makes the body less resistant to other health risks.¹³

Like race, average household income is strongly correlated with neighborhood condition.¹⁴ Concentrated poverty matters because it leads to increased crime rates and poor health outcomes. Violent crime rates tend to be higher in economically-distressed neighborhoods.¹⁵ Finally, residents living in low-income neighborhoods tend to have worse physical and mental health issues, such as asthma, depression, diabetes, and heart conditions, compared to higher-income areas.¹⁶

Being unemployed, underemployed, or concerned about job security are common contributors to adverse health effects. Unemployed people may have sleep disorders, anxiety disorders, and substance addictions that, in turn, cause increased demands on the health care system and higher societal costs.¹⁷ Additionally, unemployed men have been found to have increased mortality rates, particularly from suicide and lung cancer.¹⁸

MAPS AND INDICATORS

The Economic Conditions Chapter of the *Health Atlas* provides information about the location of economic hardship, income, poverty, and unemployment for the City of Los Angeles. The following describes each of the maps included within this section and the data associated with each map.

- **Hardship Index by Community Plan Area:** The Hardship Index compares the 2010 economic conditions of one place to another. Based on a methodology developed by the Nelson A. Rockefeller Institute of Government, the Index standardizes U.S. Census Bureau demographic and socio-economic variables, including unemployment, age dependency, education, income level, crowded housing, and poverty, and then averages them together, yielding a score on a scale of 0-100. The map shows the Hardship Index for CPAs in the City of Los Angeles.
- **Hardship Index:** The map shows the Hardship Index for census tracts in the City of Los Angeles in 2010.
- **Median Household Income:** The median household income map shows the amount of money, or its equivalent, that a household receives within a period of time in exchange for labor, services, or the sale of goods. The median divides the income distribution into two equal parts: one-half of the cases falling below the median income and one-half above the median. Data is from the 2010 U.S. Census ACS 5-year Estimates.
- **Number of Jobs with Earnings Greater than \$3,333 per Month:** This map examines the number of higher-wage jobs in the City of Los Angeles based on data from the U.S. Census Longitudinal Employer-Household Dynamics (LEHD) Survey in 2010. According to the U.S. Census Bureau definition, higher wage jobs are those that pay \$3,333 per month or more (\$40,000 per year).
- **Percentage of Unemployed Workers Age 16 and Over:** The map shows the percentage of residents age 16 and over who are actively looking for employment and are unable to find a job. This does not include workers who have stopped seeking employment. Data is from the 2010 U.S. Census ACS 5-year Estimates.
- **Percent of the Population below the Federal Poverty Level:** The map shows the percentage of the population below the Federal Poverty Level (FPL) in 2010. The FPL for a family of four was \$22,050 in 2010. Data is from the 2010 U.S. Census ACS 5-year Estimates.
- **Percent of the Population 200% Below the Federal Poverty Level:** The map shows the percentage of the population that is below 200% of the FPL in 2010. Two hundred percent of the FPL for a family of four was \$44,100 in 2010. Data is from the 2010 U.S. Census ACS 5-year Estimates.
- **Extreme Poverty Neighborhoods:** The map shows the percentage of residents living in census tracts with poverty rates greater than 40%. Data is from the 2010 U.S. Census ACS 5-year Estimates.

¹⁰ Marmot, M. (2002, March/April). The Influence of Income on Health: Views of an Epidemiologist. *Health Affairs*, 21(2), pp. 31-46. Retrieved from https://sph.uth.edu/course/occupational_envHealth/bamick/RICE%20-%20Weis%20398/Marmot_income.pdf

¹¹ Bhatia, R. and Katz, M. (2001). Estimation of Health Benefits from a Local Living Wage Ordinance. *American Journal of Public Health*: 91(9), pp. 1398-1402.

¹² Haan M., Kaplan G.A., and Camacho T. (1987). Poverty and health: Prospective evidence from the Alameda County Study. *American Journal of Epidemiology*: 125(6), pp. 989-98.

¹³ Marmot, M. (2002, March/April). The Influence of Income on Health: Views of an Epidemiologist. *Health Affairs*, 21(2), pp. 31-46. Retrieved from https://sph.uth.edu/course/occupational_envHealth/bamick/RICE%20-%20Weis%20398/Marmot_income.pdf

¹⁴ Robert Wood Johnson Foundation. (2011, May). Exploring the Social Determinants of Health Series. Issue Brief #8: Neighborhoods and Health. Retrieved from <http://www.rwjf.org/content/dam/web-assets/2011/05/neighborhoods-and-health>

¹⁵ Ellen, I. G. and Turner, M. A. (1997). Does Neighborhood Matter? Assessing Recent Evidence. *Housing Policy Debate*, 8(4), pp. 833-67.

¹⁶ Cohen, D. A. et. al. Neighborhood Physical Conditions and Health. *American Journal of Public Health*, 93(3), pp. 467-471.

¹⁷ Kroll, L. E. and Lampert, T. (2011). Unemployment, Social Support and Health Problems: Results of the GEDA Study in Germany. *Dtsch Arztbl Int.*; 108(4). pp. 47-52.

¹⁸ Wilson, S.H. and Walker, G.M. (1993) Unemployment and Health: A Review. *Public Health*: 107(3), pp. 153-62.

KEY FINDINGS

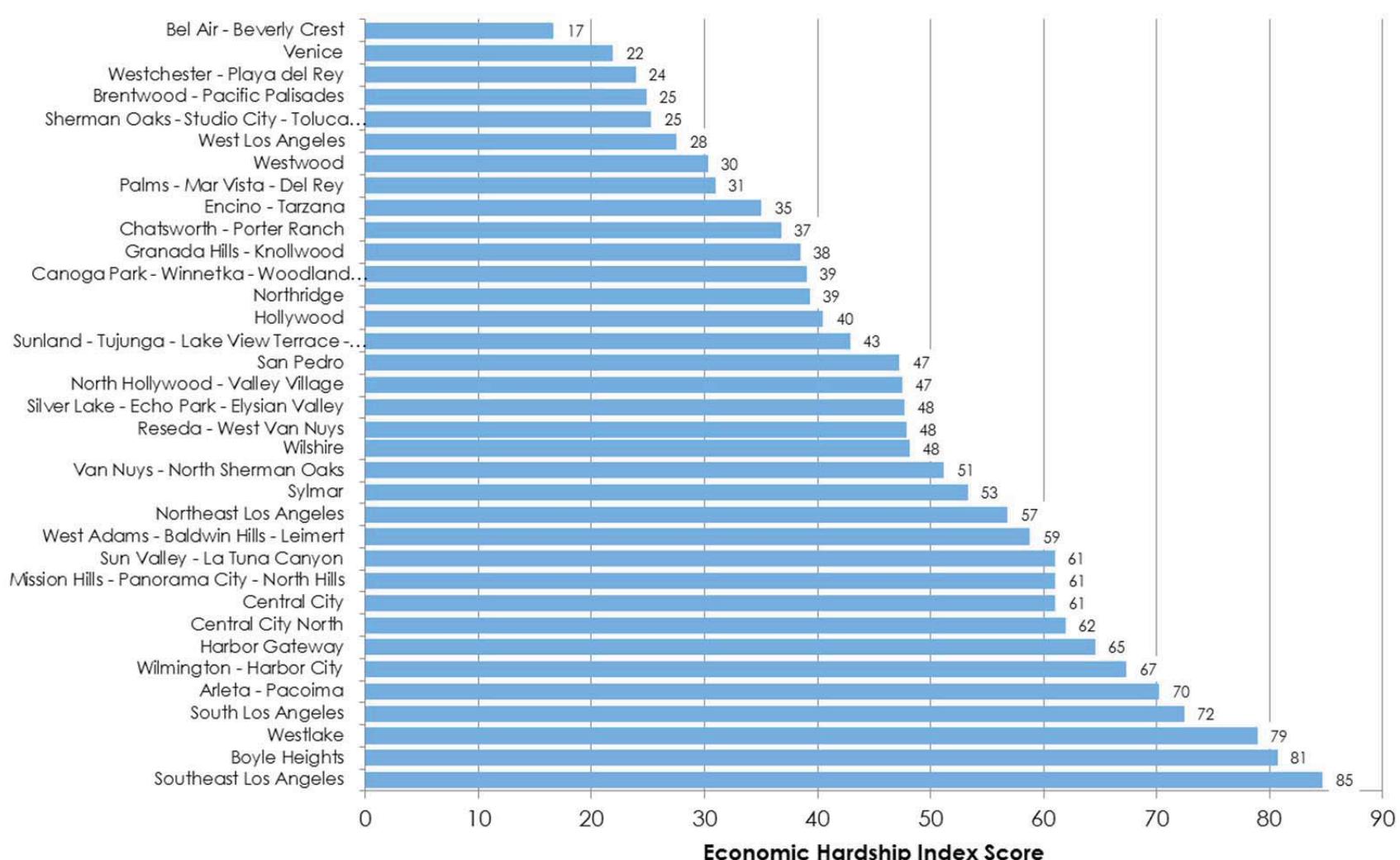
HARDSHIP INDEX

The Hardship Index was developed by the Nelson A. Rockefeller Institute of Government to compare the economic conditions of one place to another. The Index standardizes the following six variables on a scale of 0-100 and then averages them together:

- **Age:** Percentage of population over age 65 and the percentage of population under age 18 (Map 12 and Map 13)
- **Education:** Percentage of population over age 25 that did not graduate high school (Map 26)
- **Employment Status:** Percentage of unemployed workers age 16 and over (Map 22)
- **Income:** Household income (Map 20)
- **Overcrowding:** Percentage of housing units with more than one person per room (Map 103)
- **Poverty:** Percentage of population with income less than the Federal Poverty Level (Map 23)

Map 18 and Figure 7 shows the Hardship Index score for each CPA. Most CPAs in Los Angeles had “low” or “very low” levels of hardship.¹⁹ Twenty of the 35 CPAs analyzed (57%) had scores below the average Hardship Index score of 48, and approximately half of the City’s residents live within these areas.²⁰ These areas include many of the CPAs in the western portion of the City, including Bel Air-Beverly Hills, Venice, Westchester-Playa del Rey, Brentwood-Pacific Palisades, West Los Angeles, Westwood, and Palms-Mar Vista-Del Rey, which have “very low” levels of hardship. Six CPAs had “high” or “very high” levels of hardship, including Wilmington-Harbor City, Arleta-Pacoima, South Los Angeles, Westlake, Boyle Heights, and Southeast Los Angeles. Southeast Los Angeles is the only CPA that fell within the “very high” category, with a Hardship Index score two standard deviations above the average.

Figure 7: Hardship Index by Community Plan Area in 2010



Source: 2010 U.S. Census. Accessed from American FactFinder.

Map 19 shows the Hardship Index score for each census tract in Los Angeles. The average Hardship Index score was 40.6, with a standard deviation of 12. Nearly one-fifth of census tracts had “very low” Hardship Index scores, with some of the lowest scores in the census tracts in the Santa Monica Mountains. One in eight census tracts in the City had “very high” levels of hardship. Most of these tracts were located in the Southeast Los Angeles, South Los Angeles, Boyle Heights, Westlake, and Arleta-Pacoima CPAs. By far, the census tract with the highest Hardship Index score was adjacent to Watts.

¹⁹ CPAs were classified as “low” or “very low” hardship if their scores were below the average score for all CPAs, per the original Rockefeller Institute Study. CPAs were classified as “high” or “very high” hardship if their score exceeded 1 or 2 standard deviations from the mean, respectively.

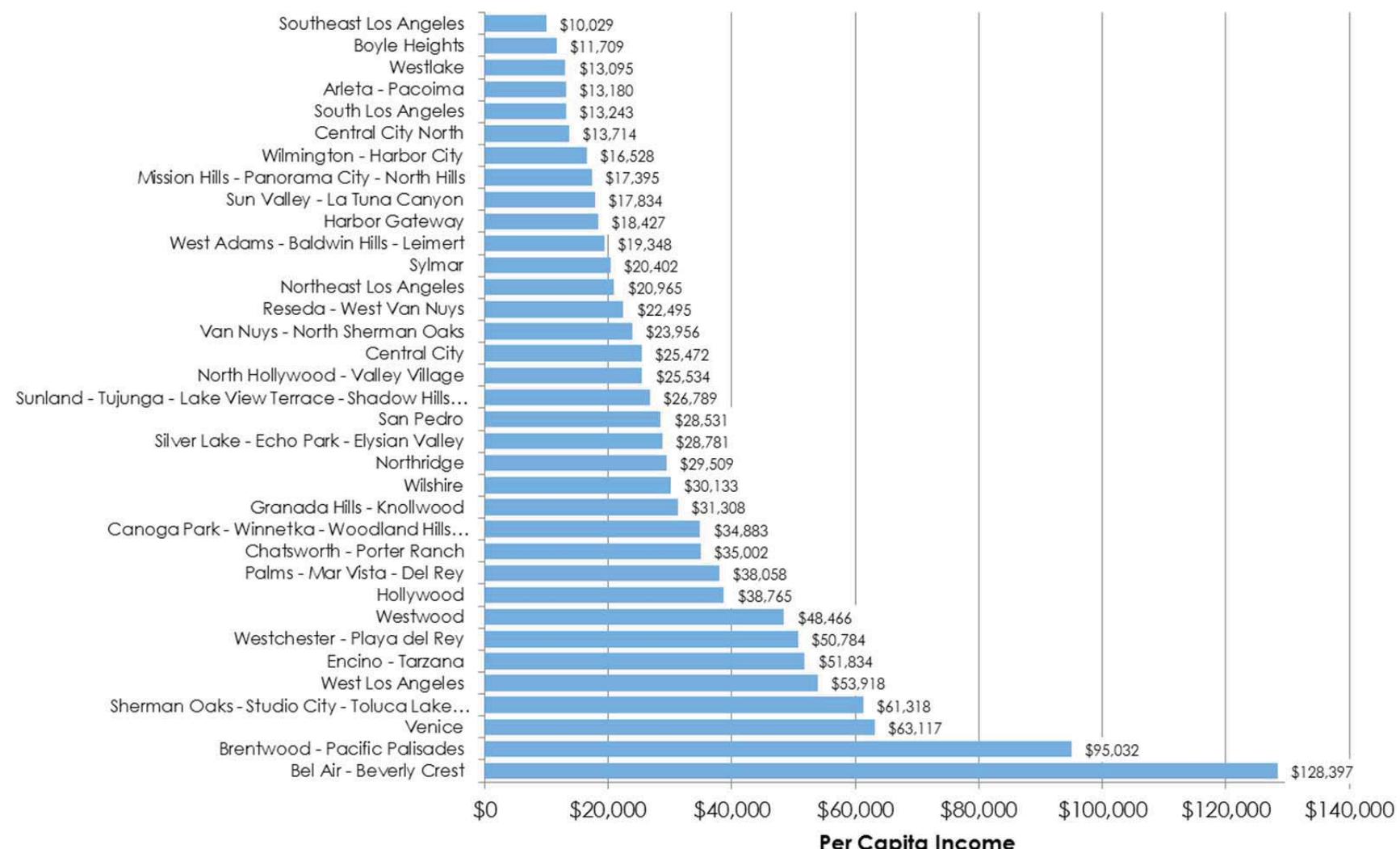
²⁰ Due to lack of data, Hardship Index scores were not calculated for the Los Angeles International Airport and Port of Los Angeles CPAs.

INCOME

The *Health Atlas* includes two separate measures of income for the City of Los Angeles: per capita income and median household income. Per capita income is the total income divided by the total population, and the data is summarized by CPA. Median household income represents the middle income for an area, with half of all incomes below and half above the median value. The data is available at the census tract level.

In terms of per capita income, the Bel Air-Beverly Crest and Brentwood-Pacific Palisades CPAs had the highest incomes, ranging from 7 to 12 times that of the lowest areas. The CPAs with the lowest per capita income included Southeast Los Angeles, South Los Angeles, Boyle Heights, Westlake, Arleta-Pacoima, and Central City North, each of whose residents had per capita income less than \$14,000 per year.

Figure 8: 2010 Per Capita Income by Community Plan Area in 2010



Source: 2010 U.S. Census. Accessed from American FactFinder.

The pattern of median household income is similar to that of per capita income. As shown on Map 20, the areas with the highest median household income were located on the Westside of the City, in the Santa Monica Mountains, and along the northern and western sides of the San Fernando Valley. Areas with lower median household income were found throughout the City, with concentrations in South Los Angeles, Central Los Angeles, Wilmington, Central City, Boyle Heights, Central City North, Westlake, and parts of Van Nuys and North Hollywood.

The Family Economic Self-Sufficiency Standard (FESSS) estimates the amount of money a family needs to meet their basic needs in a specific region. Basic needs include housing, food, and health care, and work related expenses such as transportation, childcare, and taxes. The estimated FESSS for two adults, an infant, and a school-aged child in Los Angeles County in 2008 was \$70,247.^{21,22} Only those census tracts shown on Map 20 in dark orange exceed this target for a family of four.

In 2010, the rate of unemployment for all workers age 16 and over was 8.7% in Los Angeles County 9.2% in the City of Los Angeles. This is well above the 6.25% historic, natural rate of unemployment²³ and the current Federal Reserve target rate of unemployment 6.5%.²⁴ Map 22 shows the percentage of unemployed workers age 16 and over by census tracts. Of all CPAs, Bel Air-Beverly Crest had the lowest unemployment rate at 4%, less than half of the City and County averages. Twenty of the CPAs were within 1% of the average unemployment rate for the City. Central City and South Los Angeles had the highest rates of unemployment in the City, at 15% and 13%, respectively.

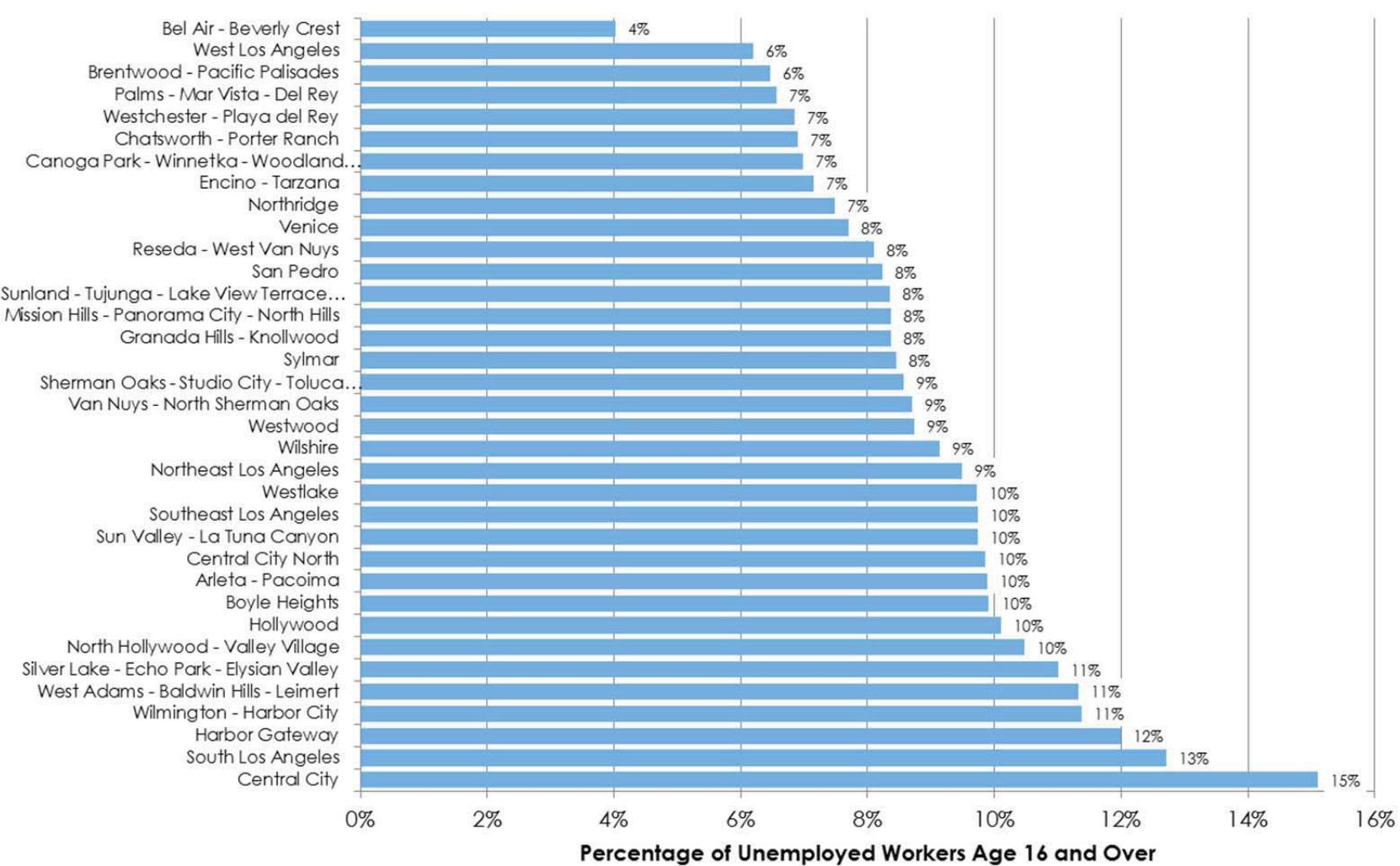
²¹ Center for Community Economic Development. (2011). How Much is Enough in Los Angeles County? Retrieved from <http://www.insightcced.org/uploads/cfes/2011/Los%20Angeles.pdf>

²² Insight Center for Community and Economic Development. (October 2011). Methodology Appendix: The Self-Sufficiency Standard for California 2011. Retrieved from http://www.insightcced.org/uploads/cfes/2011/MethodologyAppendix_2011.pdf

²³ Daly, M., Hobijn, B., and Valletta, R. (2011, July). The Recent Evolution of the Natural Rate of Unemployment. IZA Discussion Paper Series. Retrieved from <http://ftp.iza.org/dp5832.pdf>

²⁴ Lee, D. and Puzzanghera, J. (2012, December 13). Fed to tie interest rate to job gains. Retrieved from <http://www.latimes.com/business/la-fi-bernanke-stimulus-20121213,0,2161646.story>

Figure 9: 2010 Unemployment Rate by Community Plan Area



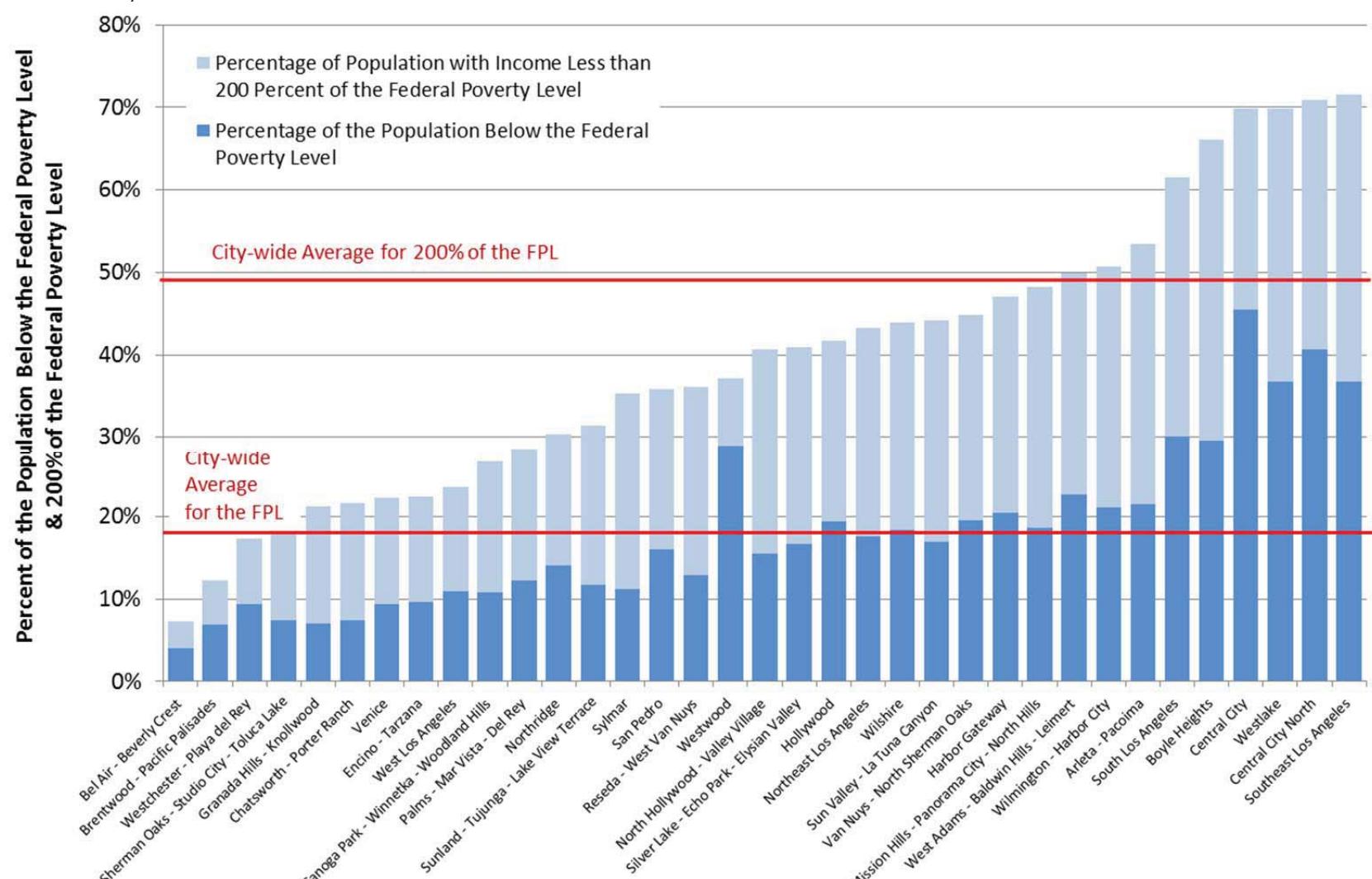
Source: 2010 U.S. Census. Accessed from American FactFinder.

POVERTY

Poverty is defined as the deprivation of food, clothing, shelter, and money that occurs when an individual or family cannot meet its basic needs. The Federal government's primary measure of poverty is the Federal Poverty Level (FPL) or poverty threshold. The poverty level for a family of four was \$22,050 in 2010 and 200% of FPL for a family of four was \$44,100.

In 2010, 19% of the population in the City of Los Angeles was living in poverty, while nearly half of the population (48%) was within 200% of the Federal Poverty Level. The percentage of the population living below the Federal Poverty Level (FPL) was highest in Central City and Central City North (greater than 40%). The percentage of the population living below 200% FPL was highest in Southeast Los Angeles, Boyle Heights, Central City, Westlake, Central City North, and South Los Angeles (greater than 60%). Map 23 shows the percentage of the population below the poverty level, and Map 24 shows the percentage of the population below 200% of the poverty level.

Figure 10: Percentage of the Population below the Federal Poverty Level and Below 200% of the Federal Poverty Level by Community Plan Area in 2010

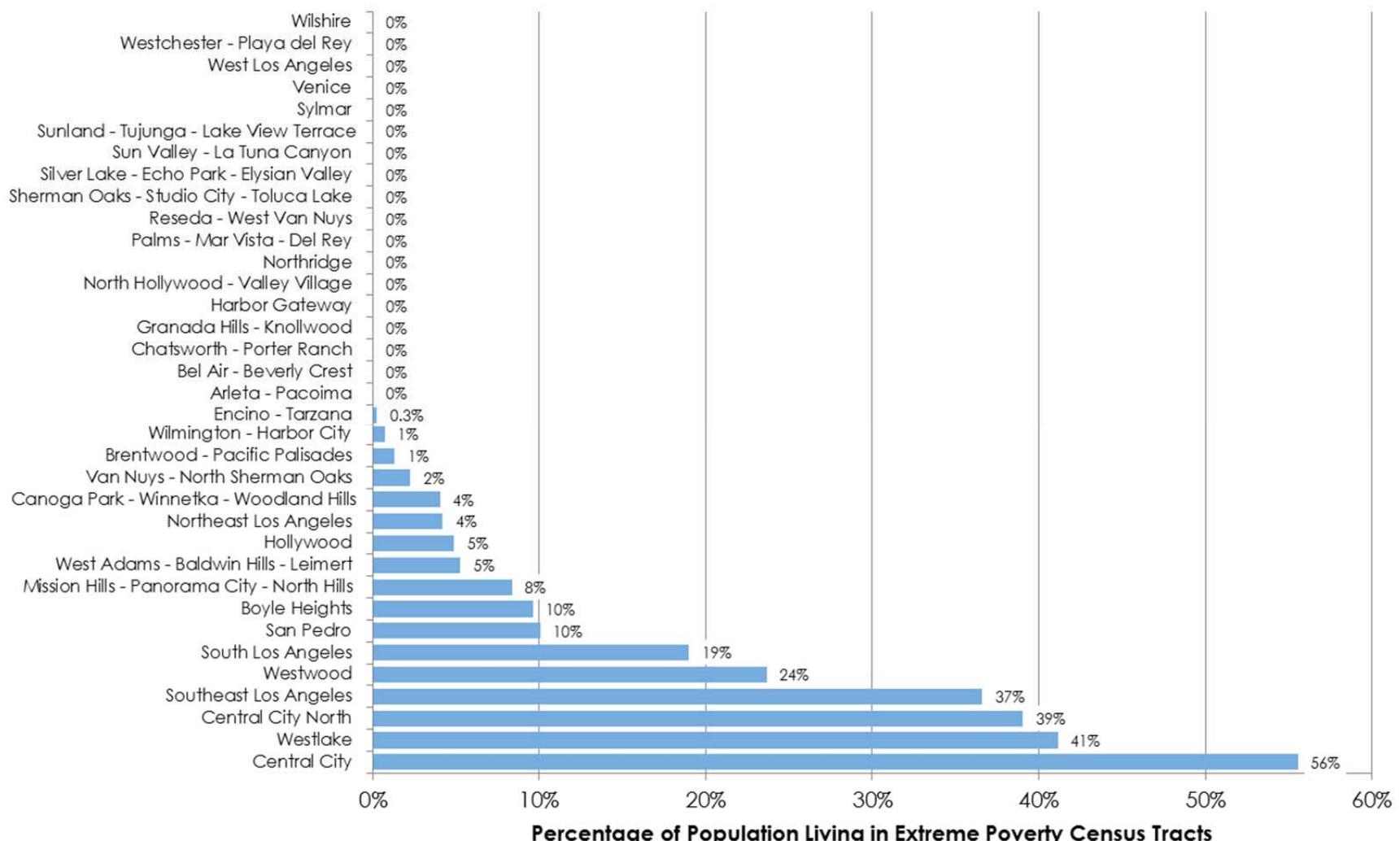


Source: 2010 U.S. Census. Accessed from American FactFinder.

Concentrated poverty is associated with higher crime rates and worse health outcomes.²⁵ A census tract is considered high poverty if 40% or more of the population lives below the poverty line. While the use of a threshold may be relatively arbitrary, the 40% threshold has been well documented and has been incorporated into Federal program rules.²⁶ Map 25 shows these concentrations of poverty.

For the City of Los Angeles, approximately 300,000 people were living in census tracts facing extreme poverty, distributed among half of the CPAs. This represented 8% of the City's total population. Over two-thirds of those residents lived in four CPAs: Central City, Westlake, Southeast Los Angeles, and South Los Angeles. In particular, South Los Angeles accounted for a third of those residents living in the extreme poverty tracts for the entire City. Although the Westwood CPA has a high proportion of the population living in extreme poverty tracts, this is a reflection of the large student population at UCLA.

Figure 11: Percentage of the Population Living in Extreme Poverty Census Tracts by Community Plan Area in 2010



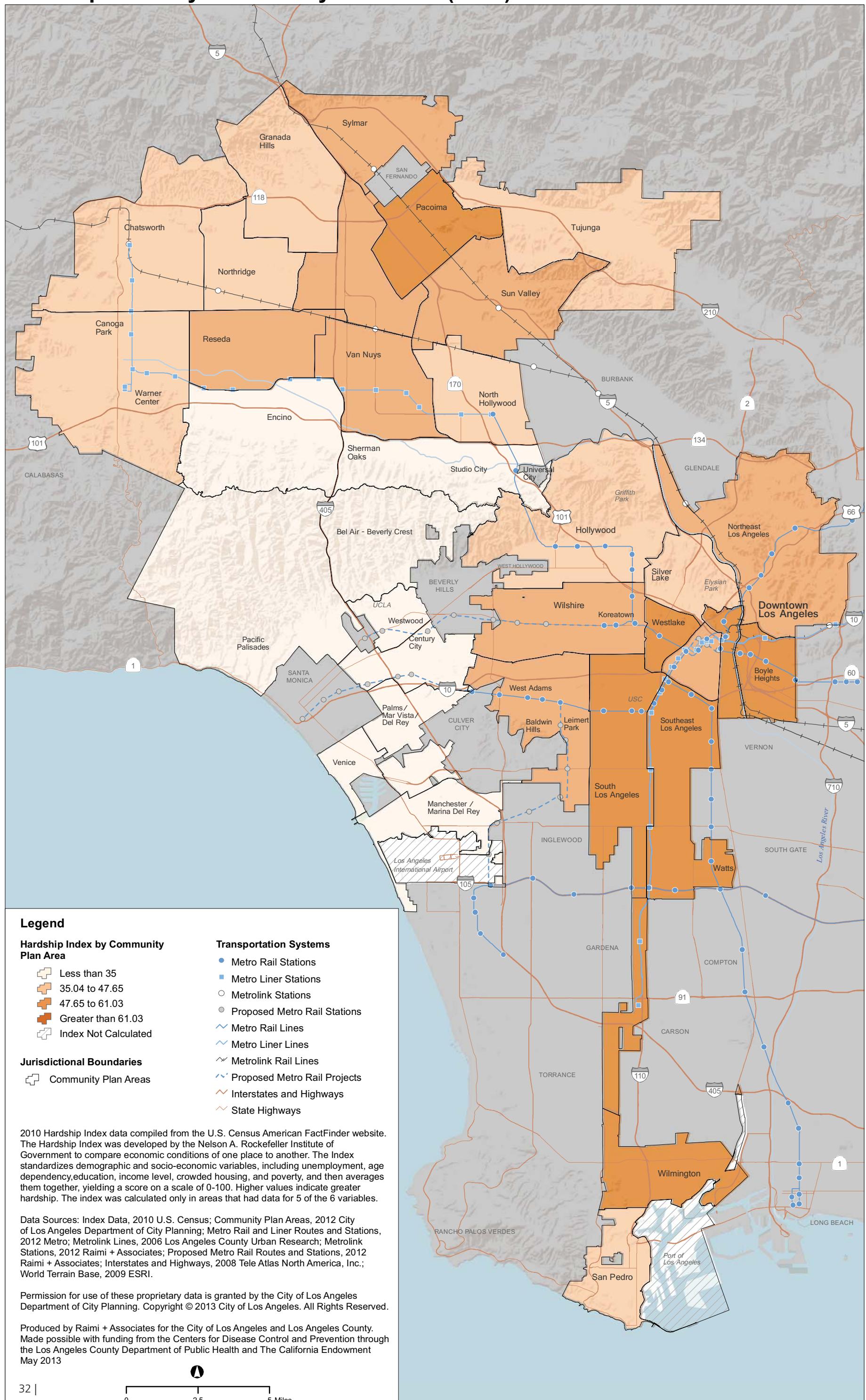
Source: 2010 U.S. Census. Accessed from American FactFinder.

²⁵ Elizabeth, K., Carey N., and Berube, A. (2011, November). The Re-Emergence of Concentrated Poverty: Metropolitan Trends in the 2000s. Metropolitan Policy Program at Brookings. Retrieved from <http://www.brookings.edu/research/papers/2011/11/03-poverty-kneebone-nadeau-berube>

²⁶ Jargowsky, P. (2003, May). Stunning Progress, Hidden Problems: The Dramatic Decline of Concentrated Poverty in the 1990s. The Brookings Institute. Retrieved from <http://www.brookings.edu/~media/research/files/reports/2003/5/demographics%20jargowsky/jargowskypoverty.pdf>

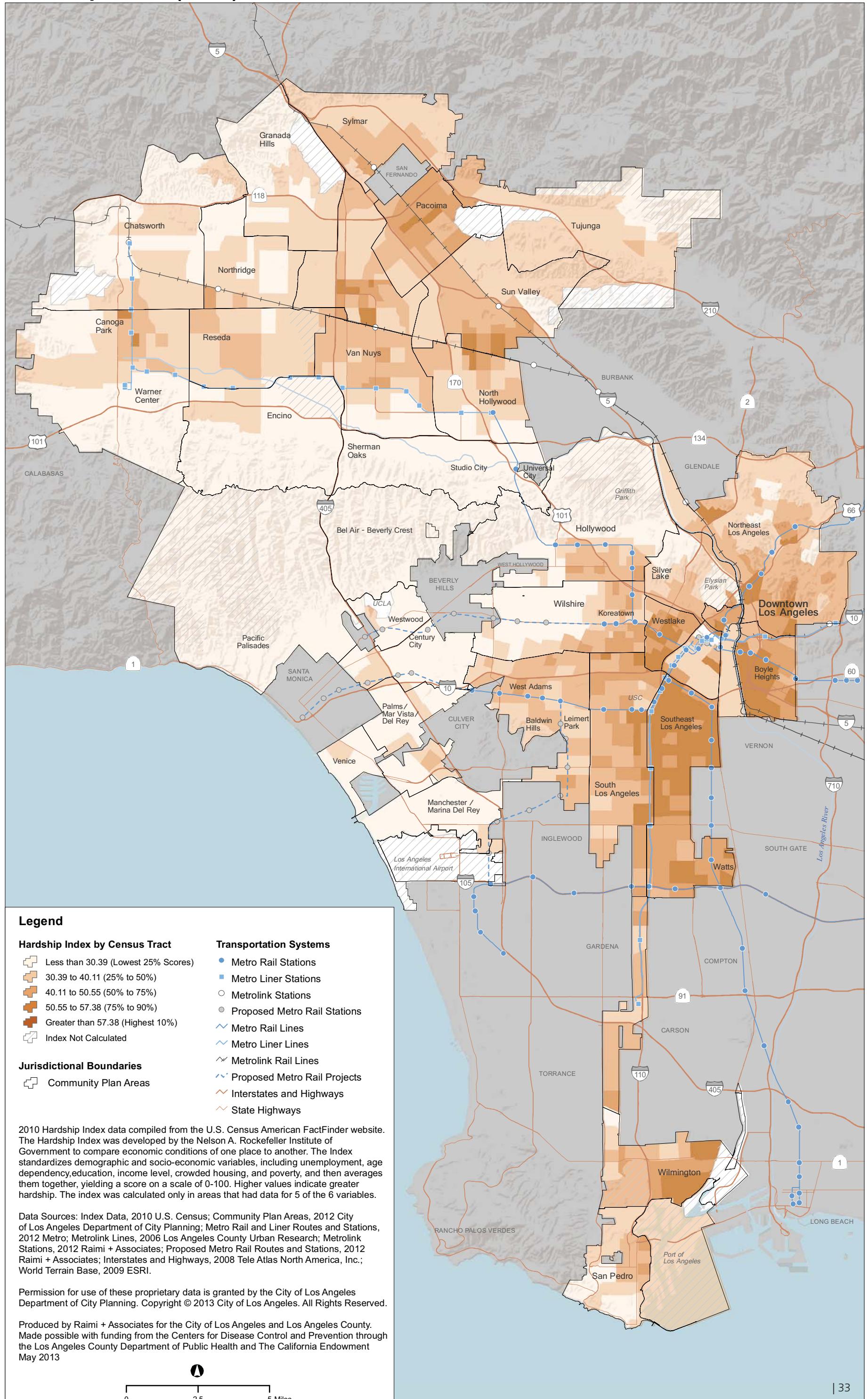
Map 18

Hardship Index by Community Plan Area (2010)



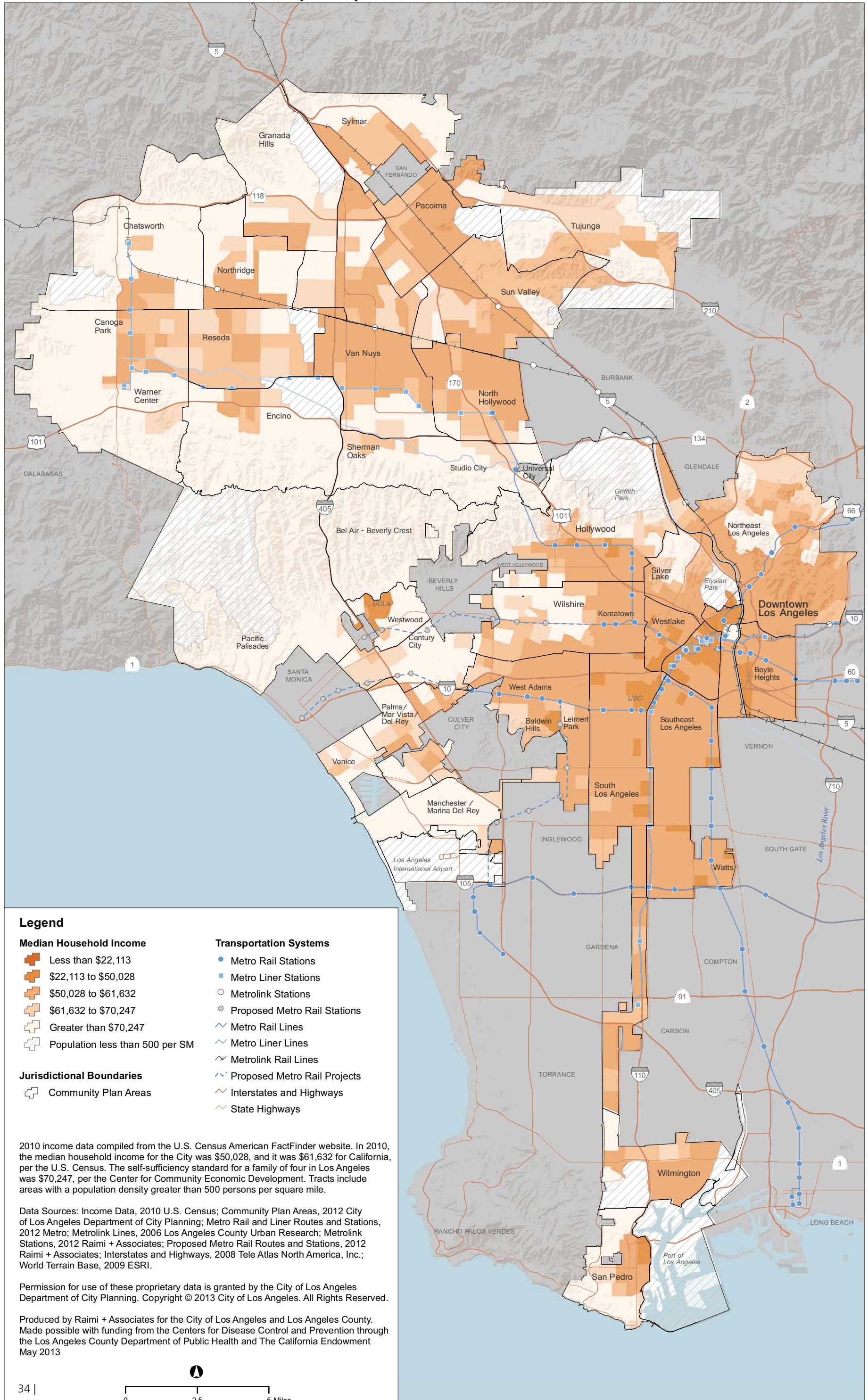
Map 19

Hardship Index (2010)



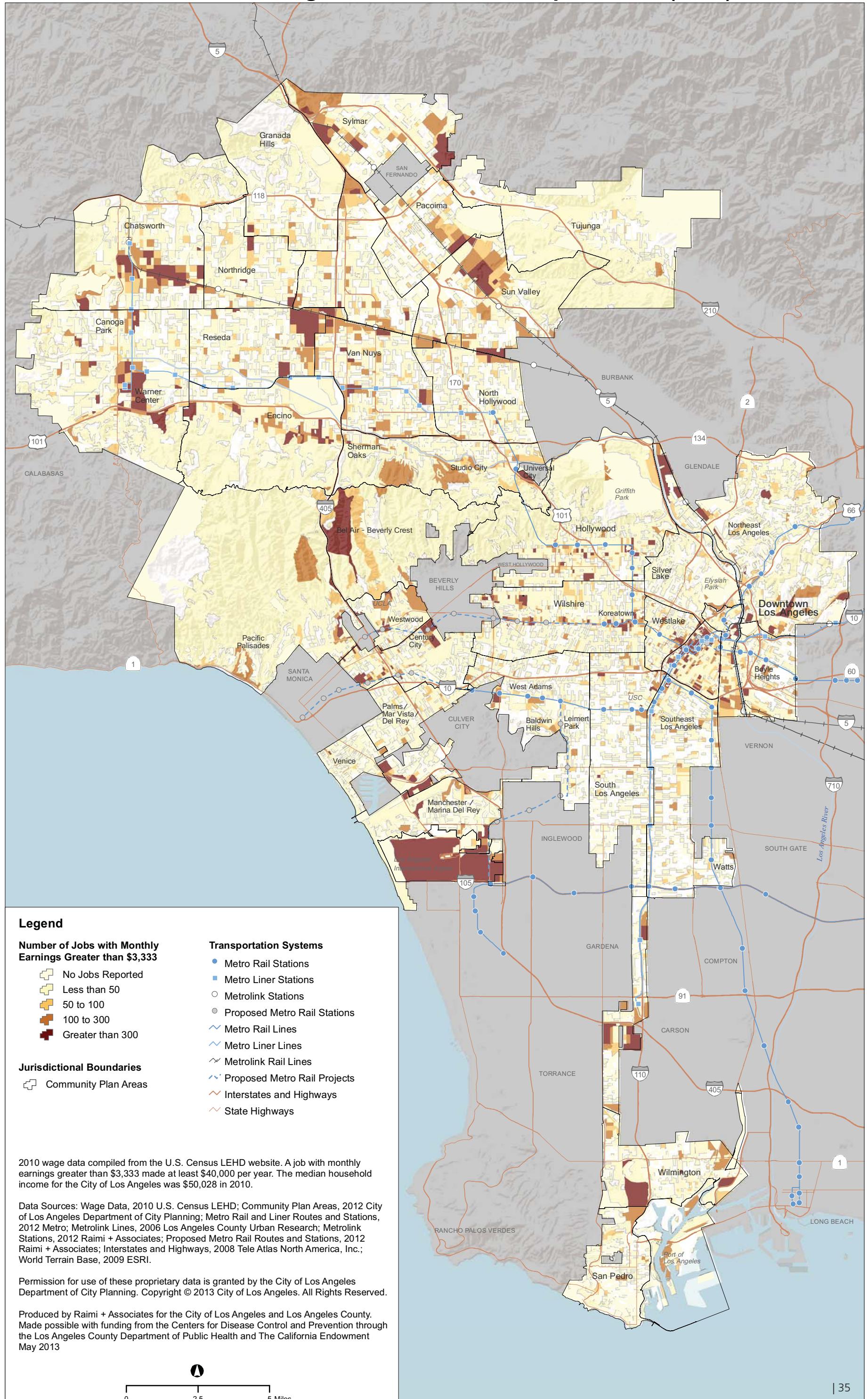
Map 20

Median Household Income (2010)



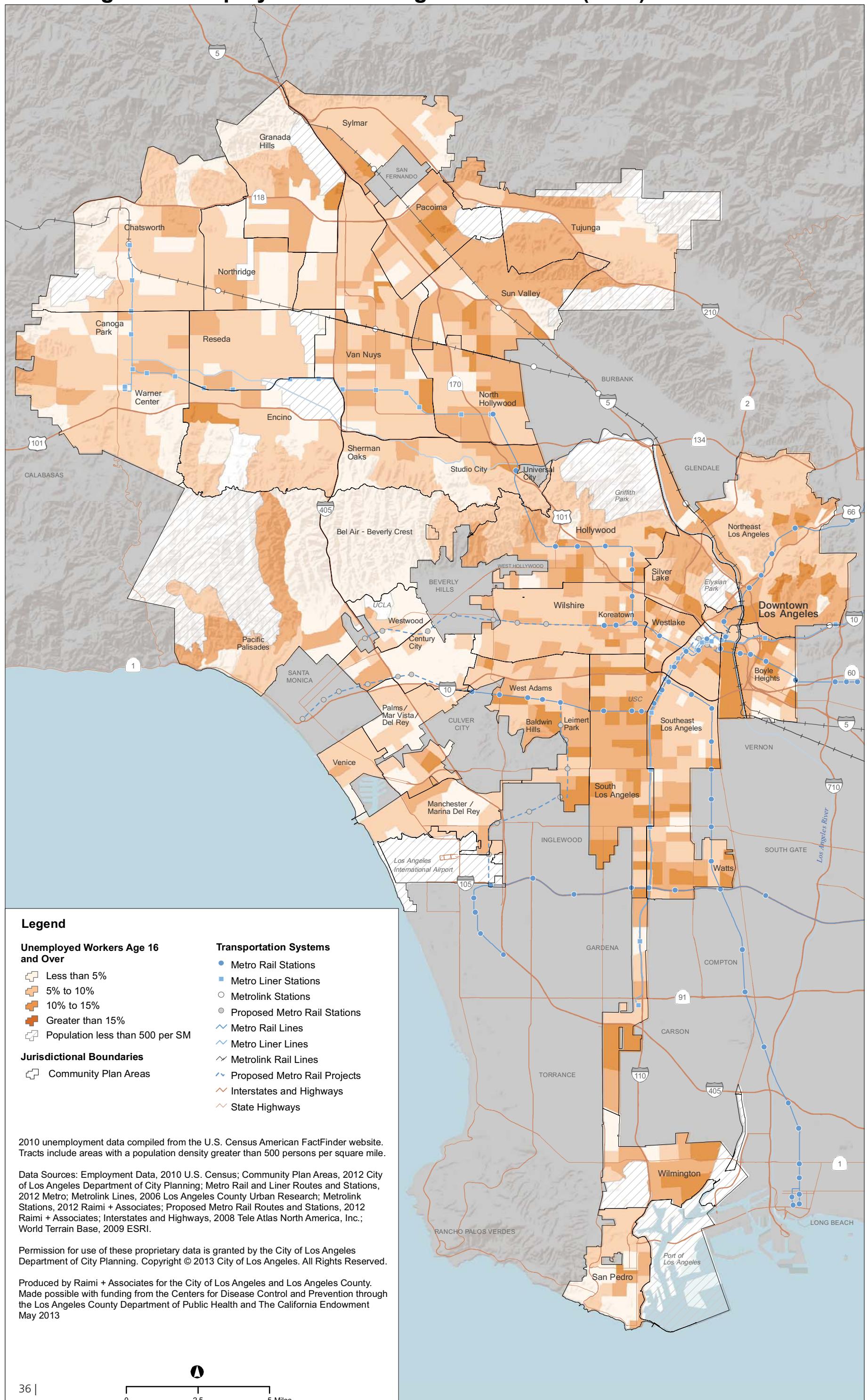
Map 21

Number of Jobs with Earnings Greater than \$3,333 per Month (2010)



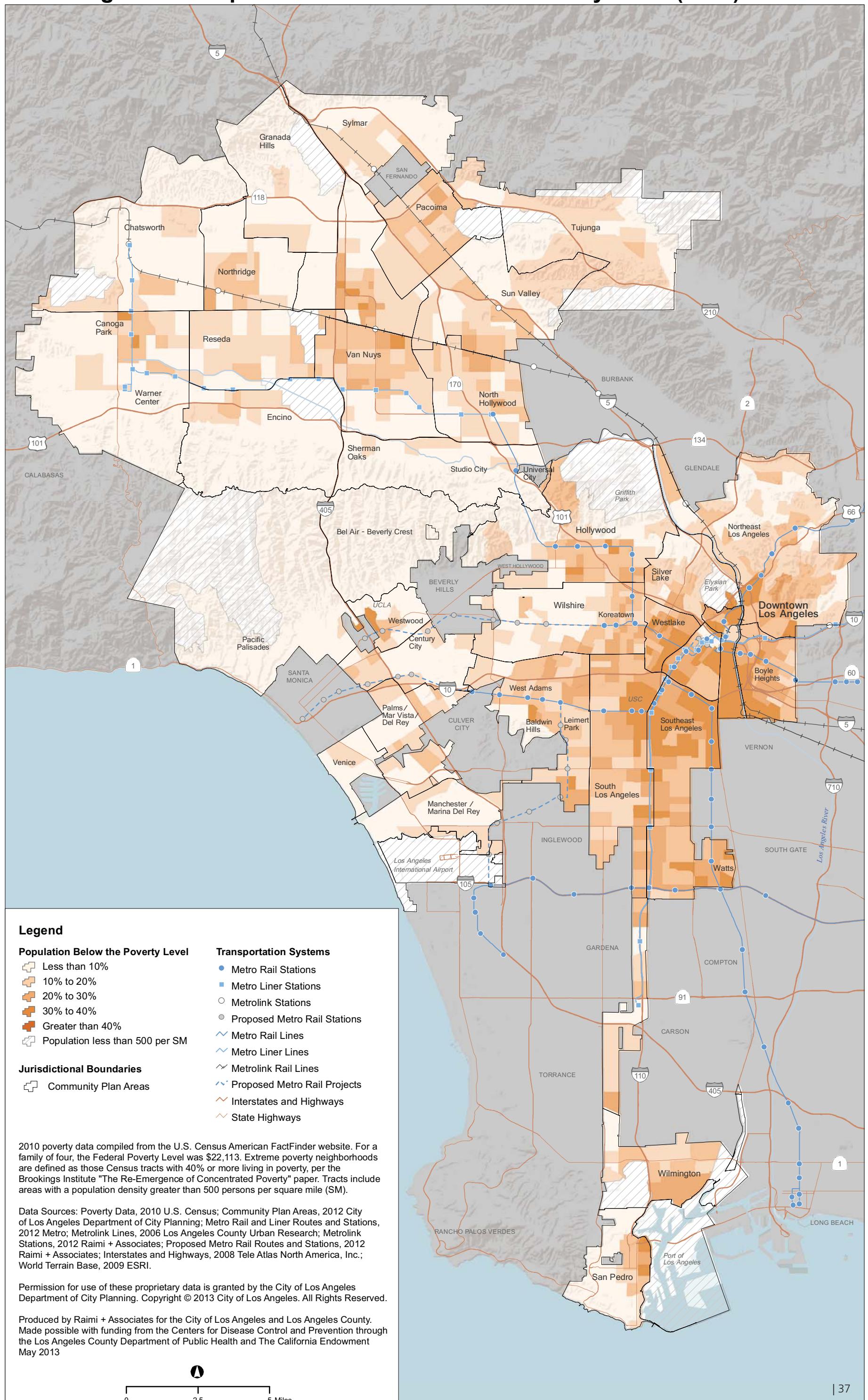
Map 22

Percentage of Unemployed Workers Age 16 and Over (2010)



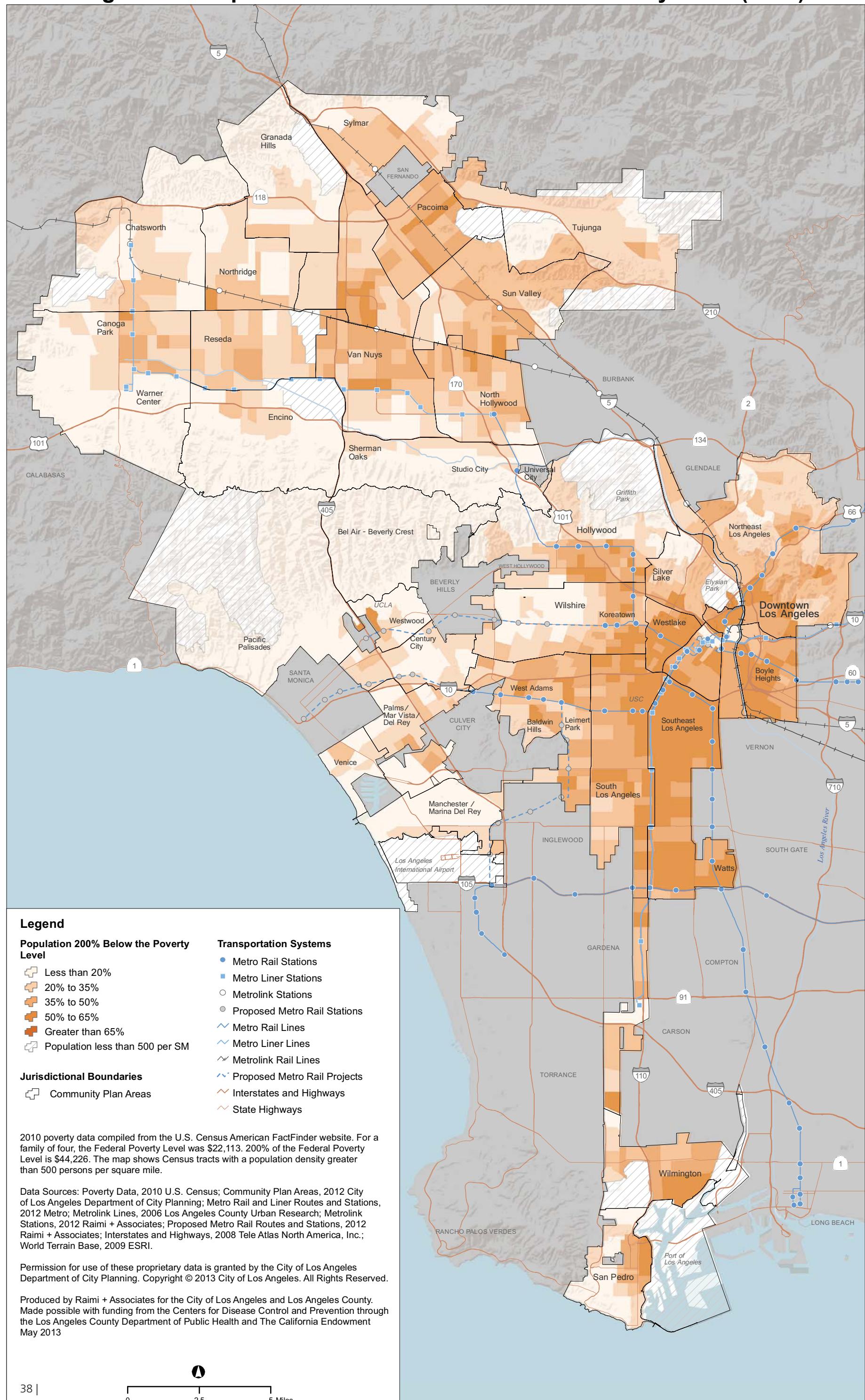
Map 23

Percentage of the Population Below the Federal Poverty Level (2010)



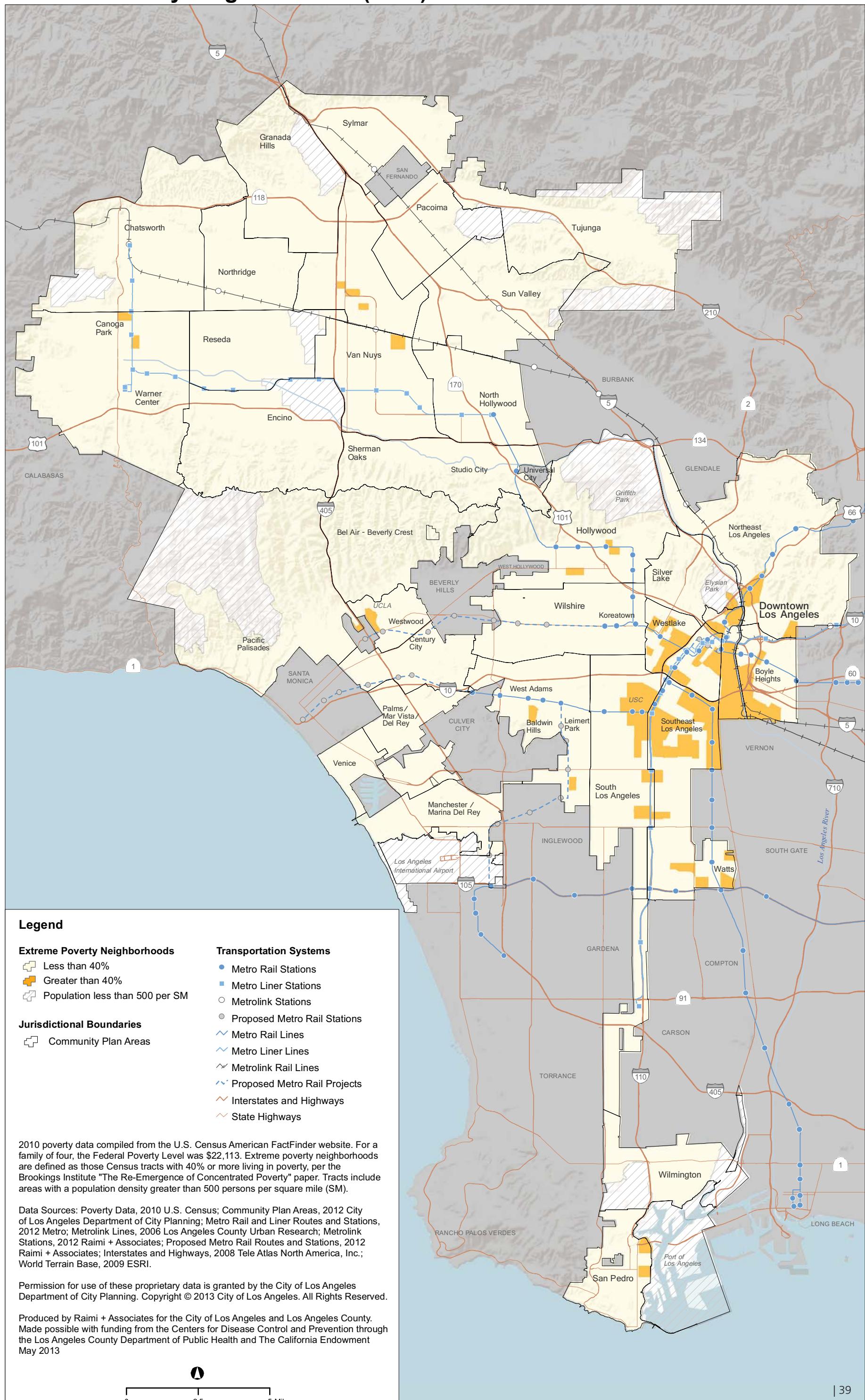
Map 24

Percentage of the Population 200% Below the Federal Poverty Level (2010)



Map 25

Extreme Poverty Neighborhoods (2010)



This page is intentionally left blank.

5 | Education

Graduating from high school or college has demonstrated economic and health benefits. Educational attainment is associated with work opportunities that offer higher incomes, which allows for greater housing and healthy food options, and better working conditions with lower exposure to hazards. Education enhances an individual's knowledge and literacy and influences one's behavior, which can lead to better nutrition, increased exercise, reduced use of drugs and alcohol, and better health management. People with higher educational levels tend to possess more self-control, social standing, and social support networks, which when taken together, reduce overall stress and provide more social and economic resources.²⁷

Individuals with higher educational attainment can expect to live longer and healthier lives. Infants born to mothers who did not finish high school are almost two times more likely to die before their first birthdays.²⁸ College graduates can expect to live five years longer than those who have not finished high school.²⁹ Four additional years of education decrease rates of diabetes by 1%, heart disease by 2%, overweight by 5%, and smoking by 12%.³⁰

MAPS AND INDICATORS

The Education Chapter shows the geographical distribution of educational attainment for the City of Los Angeles. The following describes each of the maps included within this section and the key indicators associated with each map.

- **Percentage of Population Age 25 and Over that Did Not Graduate from High School:** The map shows the proportion of residents age 25 and over within a census tract that did not graduate from high school in 2010. Data is from the U.S. Census ACS 5-year Estimates.
- **Percentage of the Population Age 25 and over that Graduated from High School:** The map shows the prevalence of residents age 25 and over who graduated from high school in 2010. Data is displayed at the census tract scale and is from the U.S. Census ACS 5-year Estimates.
- **Percentage of Population Age 25 and Over with a Bachelor's Degree or Higher:** The map shows the percentage of residents age 25 and over with a Bachelor's degree or higher in 2010. Data is displayed at the census tract scale and is from the U.S. Census ACS 5-year Estimates.
- **Median Earnings for the Population Age 25 and over that Did Not Graduate from High School:** The map shows the median earnings for the population that did not graduate high school. Data is displayed at the census tract scale, and is from the 2010 U.S. Census ACS 5-year Estimates.
- **Poverty Rate for the Population Age 25 and Over Who Did Not Graduate High School:** The map shows the percentage of the population age 25 and over who did not graduate from high school and were below the Federal Poverty Level (FPL) in 2010. The FPL for a family of four was \$22,050 in 2010. Data is displayed at the census tract scale and is from the U.S. Census ACS 5-year Estimates.
- **Academic Performance Index by School for Public Elementary Schools:** The map shows the Academic Performance Index (API) score for public elementary schools in the City of Los Angeles for 2011. The API score is a composite number, ranging from a low of 200 to a high of 1000, based on the results of statewide testing. Data is from the California Department of Education and is displayed for each school.
- **Academic Performance Index for Public Middle and Junior High Schools:** The map shows the API score for public middle and junior high schools in 2011. Data is from the California Department of Education and is displayed for each school.
- **Academic Performance Index for Public High Schools:** The map shows the API score for public high schools in 2011. Data is from the California Department of Education and is displayed for each school.
- **Percentage of Primary School Students Eligible for Free and Reduced-Priced Lunches:** The map contains data showing the percentage of public primary school students eligible for the free or reduced-fee lunch (FRPL) program during the 2009/2010 academic year. Data is derived from the U.S. Department of Education's National Center for Education Statistics and is displayed for each school.
- **Percentage of Middle School Students Eligible for Free and Reduced-Price Lunches:** The map contains data showing the percentage of public middle school students eligible for the FRPL program during the 2009/2010 academic year. Data is derived from the U.S. Department of Education's National Center for Education Statistics and is displayed for each school.
- **Percentage of High School Students Eligible for Free and Reduced-Price Lunches:** The map contains data showing the percentage of public high school students eligible for the FRPL program during the 2009/2010 academic year. Data is derived from the U.S. Department of Education's National Center for Education Statistics and is displayed for each school.

KEY FINDINGS

EDUCATIONAL ATTAINMENT

Compiled by the U.S. Census Bureau, educational attainment refers to the highest level of education that an individual has completed. In 2010, the proportion of the population age 25 and over that graduated from high school was 74% for the City of Los Angeles and 76% for the County. As shown in Figure 12, 21 CPAs exceed the average rate for the City. Eight CPAs (Bel Air-Beverly Crest, Sherman Oaks-Studio City-Toluca Lake-Cahuenga Pass, Brentwood-Pacific Palisades, Westchester-Playa del Rey, Westwood, Venice, West Los Angeles, and Encino-Tarzana) had high school graduation rates that exceeded 90%. Map 26 shows the percentage of the population that did not graduate from high school.

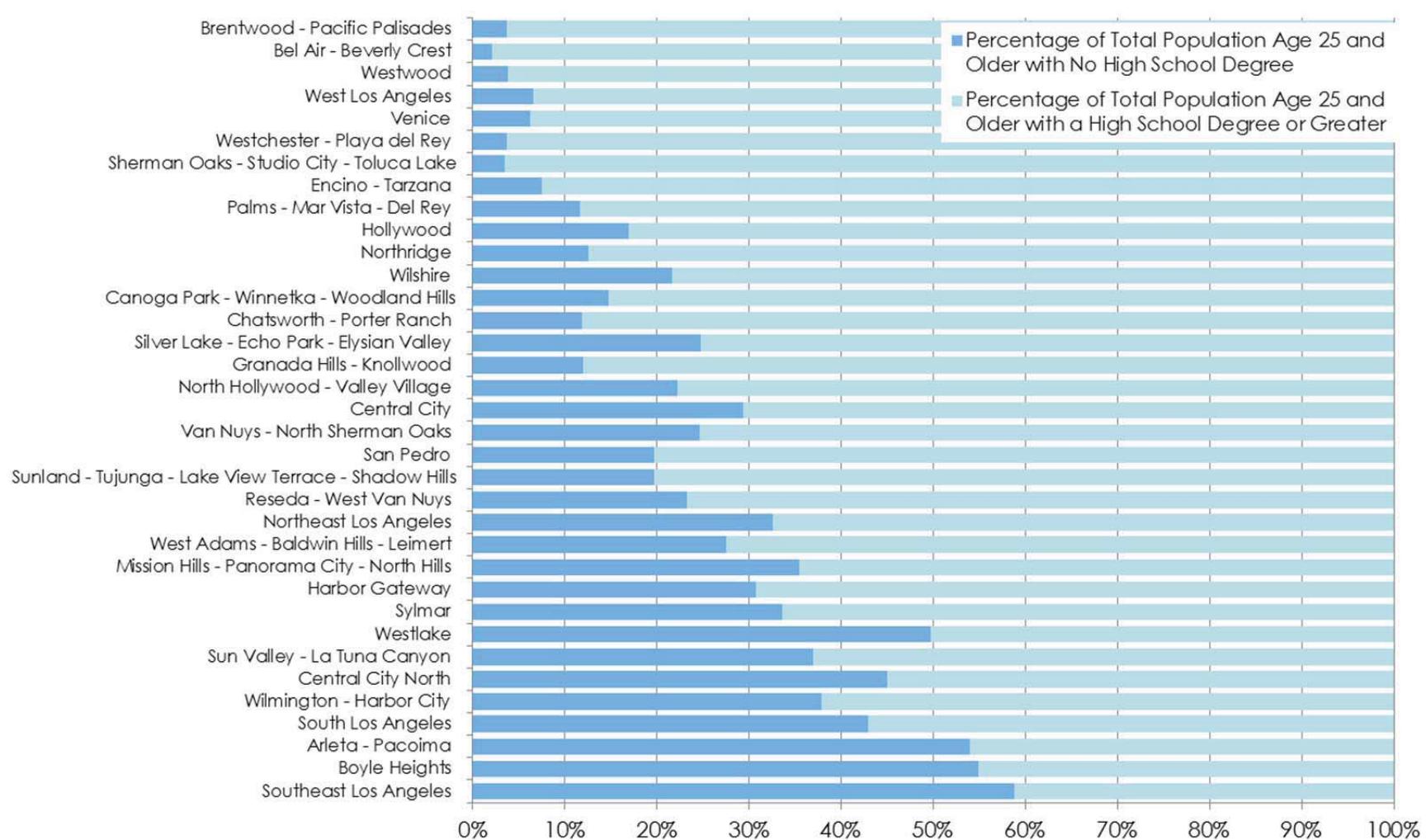
²⁷ Robert Wood Johnson Foundation. (2009, September). Exploring the Social Determinants of Health Series. Issue Brief #6: Education Matters for Health. Retrieved from <http://www.rwjf.org/content/dam/web-assets/2009/09/education-matters-for-health>

²⁸ Mathews, T.J., and MacDorman, M.F. (2007, May). Infant Mortality Statistics from the 2004 Period Linked Birth/Infant Death Data Set. National Vital Statistics Reports, Centers for Disease Control and Prevention, 55(14). Retrieved from http://www.cdc.gov/nchs/data/nvsr/nvsr55/nvsr55_14.pdf

²⁹ Robert Wood Johnson Foundation Commission to Build a Healthier America. (2008). More Education, Longer Life. Princeton, NJ: 2008. Data from the National Longitudinal Mortality Study, 1988-1998.

³⁰ Robert Wood Johnson Foundation. (2009, September). Exploring the Social Determinants of Health Series. Issue Brief #6: Education Matters for Health. Retrieved from <http://www.rwjf.org/content/dam/web-assets/2009/09/education-matters-for-health>

Figure 12: Percentage of the Total Population Age 25 and Older with a High School Degree and Percentage of the Total Population Age 25 and Older with No High School Degree by Community Plan Area in 2010

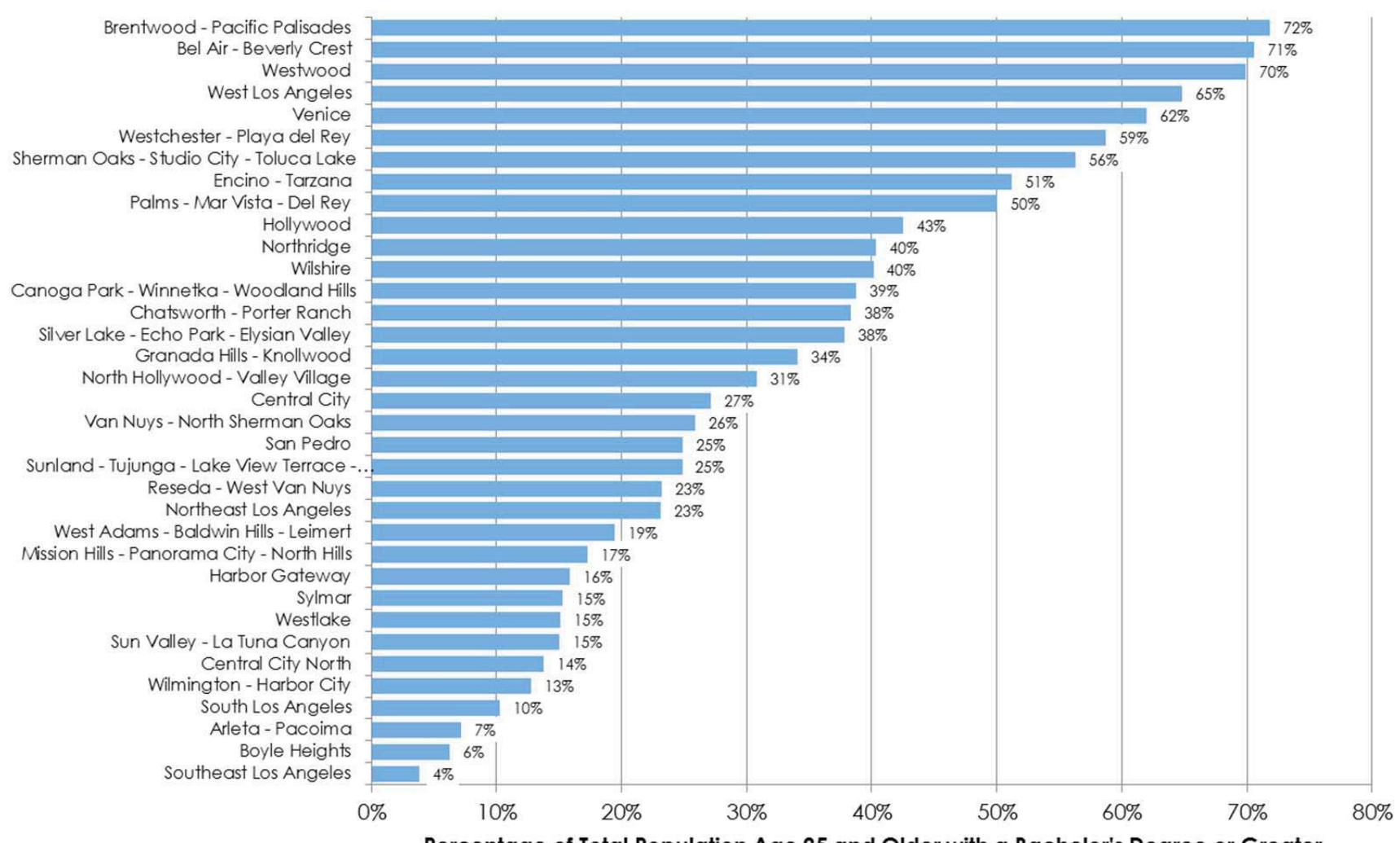


Source: 2010 U.S. Census. Accessed from American FactFinder.

In 2010, the proportion of the population age 25 and over that did *not* graduate from high school was 26% for the City of Los Angeles and 24% for the County. There were 14 CPAs that exceeded the citywide average. In the Southeast Los Angeles, Boyle Heights, Arleta- Pacoima, and Westlake CPAs, at least 50% of adults did not have a high school degree. Map 27 shows the proportion of the population that graduated from high school.

On average, 30% of the population age 25 and over in the City of Los Angeles had a bachelor's degree in 2010, 1% higher than the countywide average. Sixteen CPAs exceeded the citywide average, as shown in Figure 13. More than 70% of adults in the Bel Air- Beverly Crest, Brentwood-Pacific Palisades, and Westwood CPAs hold bachelor's degrees, while fewer than 5% in Southeast Los Angeles do. Map 28 shows the percentage of the population with bachelor's degrees

Figure 13: Percentage of the Total Population Age 25 and Older with a Bachelor's Degree or Higher by Community Plan Area in 2010

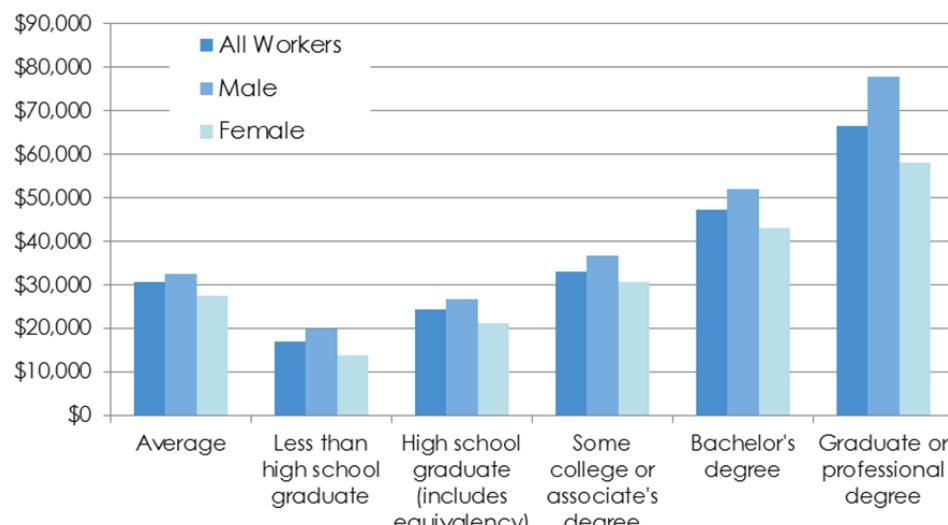


Source: 2010 U.S. Census. Accessed from American FactFinder.

Higher levels of educational attainment result in lower unemployment, higher wages, and less poverty. Nationwide, a worker with a bachelor's degree earned 1.6 times the wages of a worker that graduated from high school and 2.3 times the wages of a worker that did not graduate from high school. Even a worker with a high school degree earned 1.4 times the earnings of a worker without a high school degree.³¹

In Los Angeles, the differences between education level and wages are more significant, particularly for women. As shown in Figure 14, the median earnings for a worker with a bachelor's degree were \$47,349 in 2010, 2.8 times the wages of a worker who did not graduate from high school (\$16,988). Similarly, a worker with a high school degree earned 1.4 times the earnings of a worker without a high school degree. A female worker with a bachelor's degree earned 3.2 times more than a woman who did not graduate high school. At every education level, male workers earned more than women. This ranged from 44% for workers without a high school diploma to 22% for a bachelor's degree.

Figure 14: Median Earnings by Education Attainment for the Population Age 25 Years and Older in 2011



Source: Bureau of Labor Statistics. (2013). *Education pays...*

ACADEMIC PERFORMANCE

Health and academic performance are strongly linked. Better academic performance is correlated with greater rates of high school completion, higher education attainment, better income, and lower levels of unemployment; it is a good predictor of adult health and well-being.³² At the same time, factors that influence health, such as hunger, abuse, and chronic illness, can lead to poor school performance.³³

Map 31, Map 32, and Map 33 show the Academic Performance Index (API) score for public schools in the City of Los Angeles. Elementary schools with the lowest quartile API scores were disproportionately located in the South Los Angeles, Southeast Los Angeles, Boyle Heights, and Westlake CPAs. The Arleta-Pacoima and Van Nuys-North Sherman Oaks CPAs are also over-represented with low-performing elementary schools. The same is true in South Los Angeles and Southeast Los Angeles for middle schools and high schools. Of note, there are success stories in South Los Angeles and Southeast Los Angeles. These two CPAs boast 5 high schools in the top quartile for API scores.

FREE AND REDUCED-PRICE LUNCHES

The percentage of students eligible for the free or reduced-price lunch (FRPL) program is a measure for the concentration of low-income students within a school.³⁴ In California, 54.1% of students enrolled in public elementary and secondary schools were eligible for FRPL, which is higher than the average for the other fifty states and District of Columbia (48%).³⁵ Citywide, 77.8% of the primary school students, 76% of middle school students, and 71% of high school students were eligible for FRPL.

Poverty is associated with lower-than-average academic performance and lower-than-average rates of school completion.³⁶ The U.S. Department of Education's National Center for Education Statistics defines low-poverty schools as public schools where 25% or fewer students are eligible for the FRPL program and high-poverty schools as schools where 76% or more students are eligible for the FRPL program. Citywide, 9% of the elementary schools and 2% of the high schools met the definition of a low-poverty school for the 2009/2010 academic year. No middle schools met the criteria for low-poverty based on the FRPL program. Seventy-seven percent of elementary schools, 76% of middle schools, and 48% of high schools were considered high-poverty due to eligible student populations. In nearly 40% of elementary schools, more than 90% of students were eligible for FRPL.

As shown on Map 34, Map 35, and Map 36, both low-poverty and high-poverty schools were distributed throughout the City. High-poverty schools tended to be located in areas with lower incomes, higher levels of poverty, and higher economic hardship, and low-poverty schools were located in higher income areas, with lower levels of poverty and economic hardship. For example, there were over 30 elementary schools where more than 76% of the students were eligible for the FRPL program (defined as high-poverty by the Center for Education Statistics), many of which are located in Arleta-Pacoima, South Los Angeles, Southeast Los Angeles, and Boyle Heights; whereas none of the elementary schools in the Westwood, Sherman Oaks-Studio City-Toluca Lake-Cahuenga Pass, Manchester-Marina Del Rey, or Brentwood-Pacific Palisades CPAs were considered high poverty by the Center for Education Statistics definition.

³¹ Bureau of Labor Statistics. (2013, January). *Education pays...* Retrieved from http://www.bls.gov/emp/ep_chart_001.htm.

³² Harper, S., and Lynch, J. (2007). Trends in socioeconomic inequalities in adult health behaviors among U.S. states, 1990–2004. *Public Health Reports*, 122(2): p.177–189.

³³ Dunkle, M.C., and Nash, M.A. (1991). *Beyond the Health Room*. Washington, DC: Council of Chief State School Officers, Resource Center on Educational Equity.

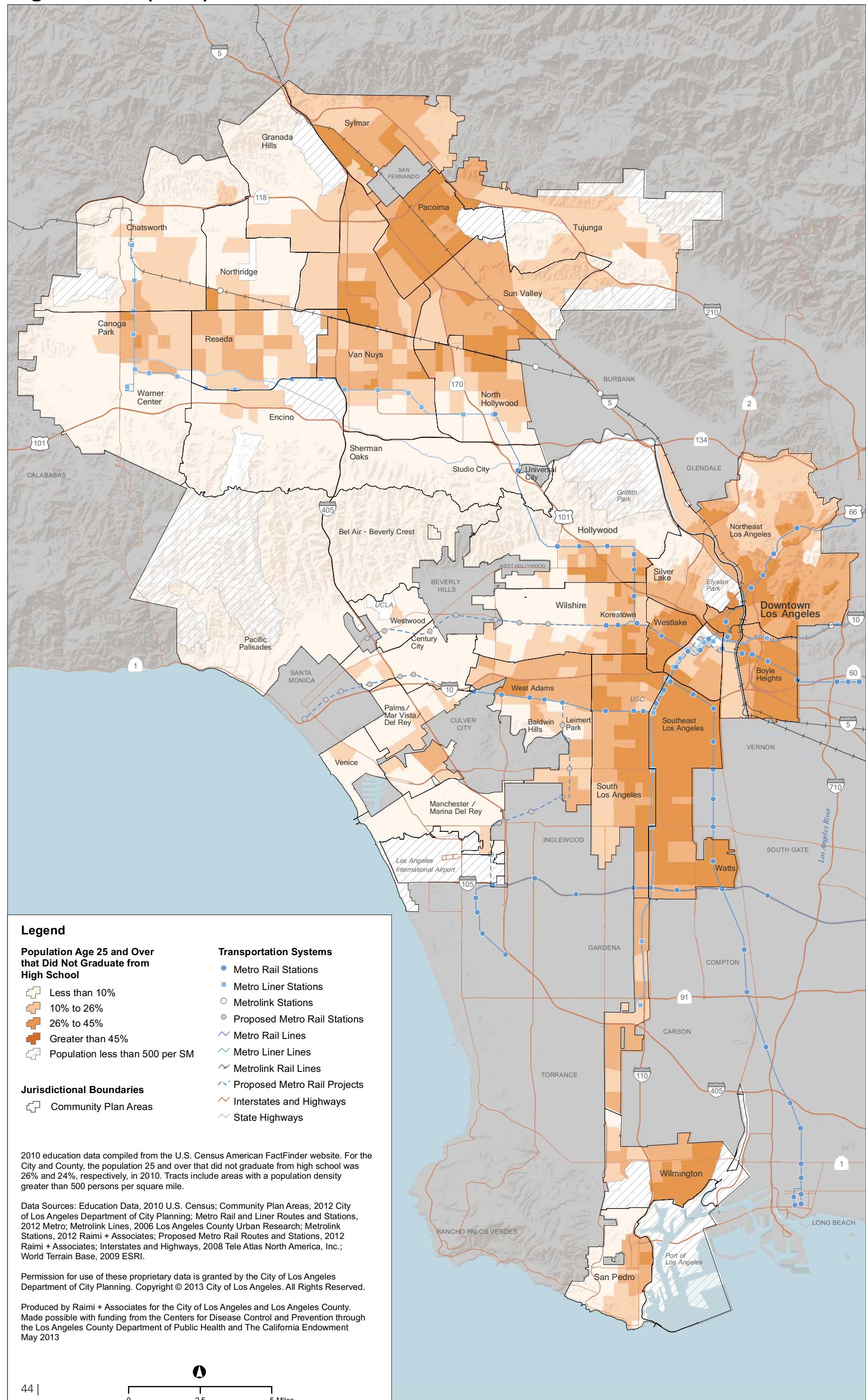
³⁴ National Center for Education Statistics. (2012). Concentration of Students Eligible for Free- or Reduced-Price Lunch: Indicator 13-2012. Retrieved from http://nces.ed.gov/programs/coe/indicator_pcp.asp

³⁵ National Center for Education Statistics. (2012, October). Numbers and Types of Public Elementary and Secondary Schools from the Common Core of Data: School Year 2010–11. Retrieved from http://nces.ed.gov/pubs2012/pesschools10/tables/table_07.asp

³⁶ Ross, T., Kena, G., Rathbun, A., KewalRamani, A., Zhang, J., Kristapovich, P., and Manning, E. (2012). *Higher Education: Gaps in Access and Persistence Study (NCES 2012-046)*. U.S. Department of Education, National Center for Education Statistics. Washington, DC: Government Printing Office.

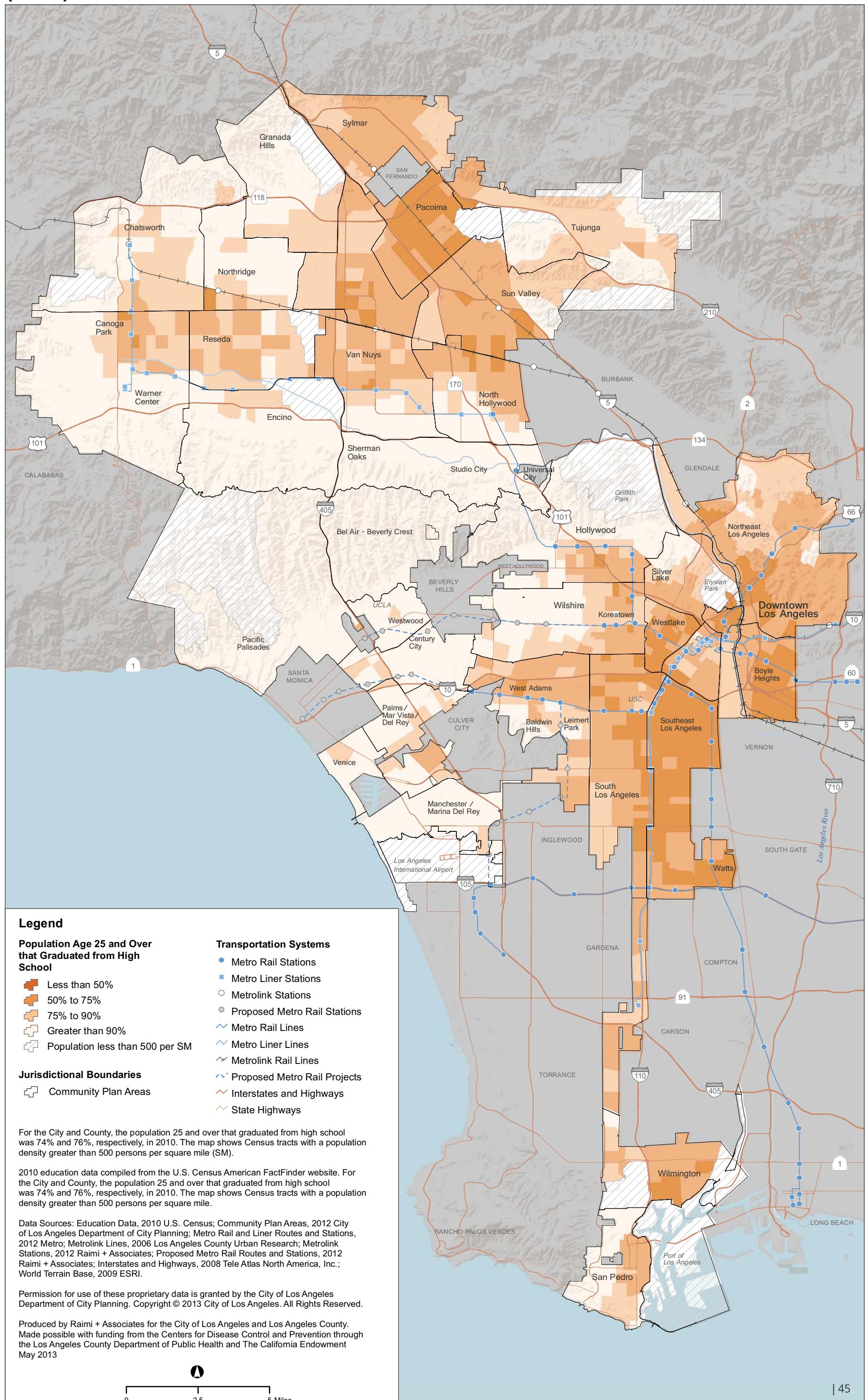
Map 26

Percentage of Population Age 25 and Over that Did Not Graduate from High School (2010)



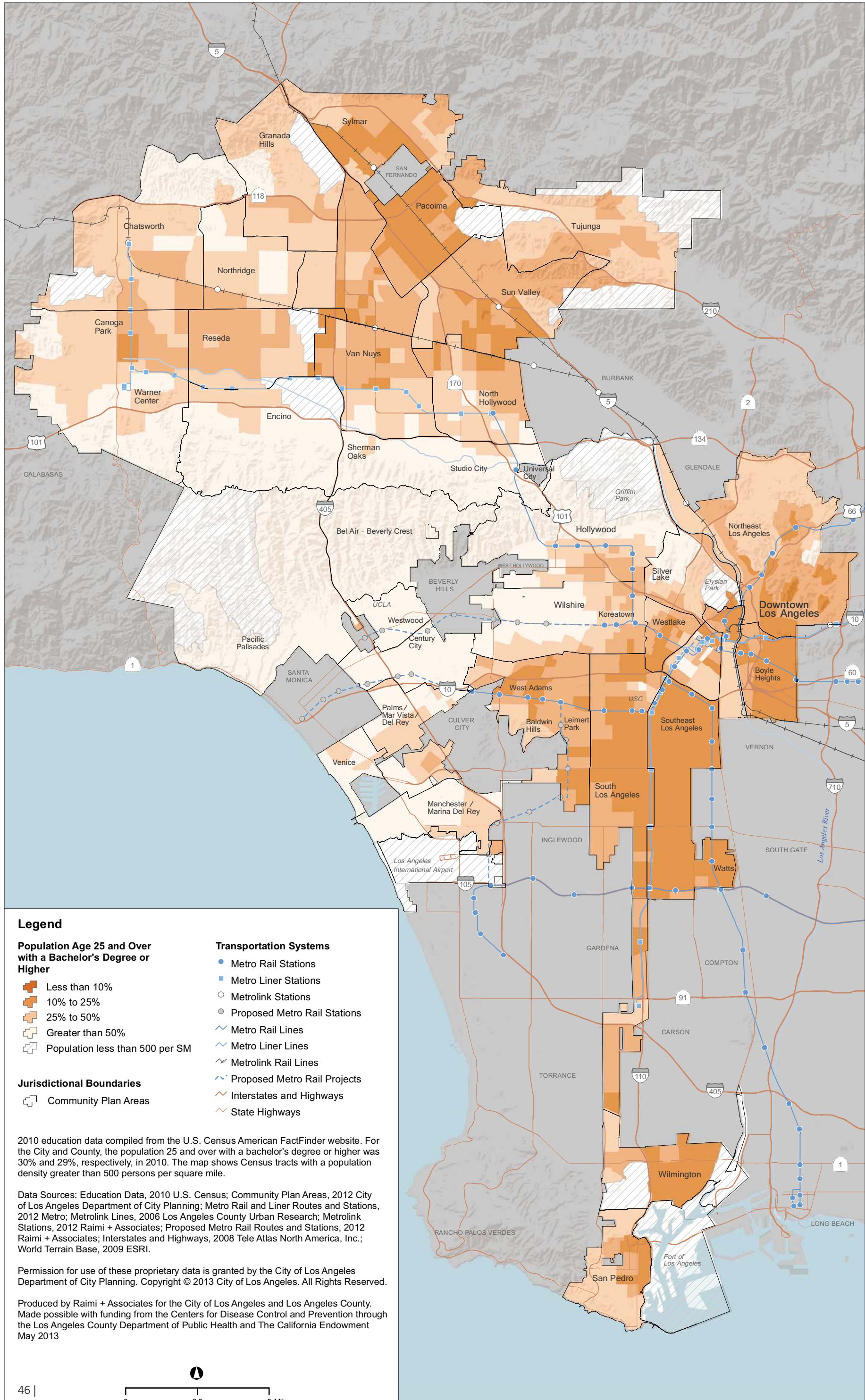
Map 27

Percentage of Population Age 25 and Over that Graduated from High School (2010)



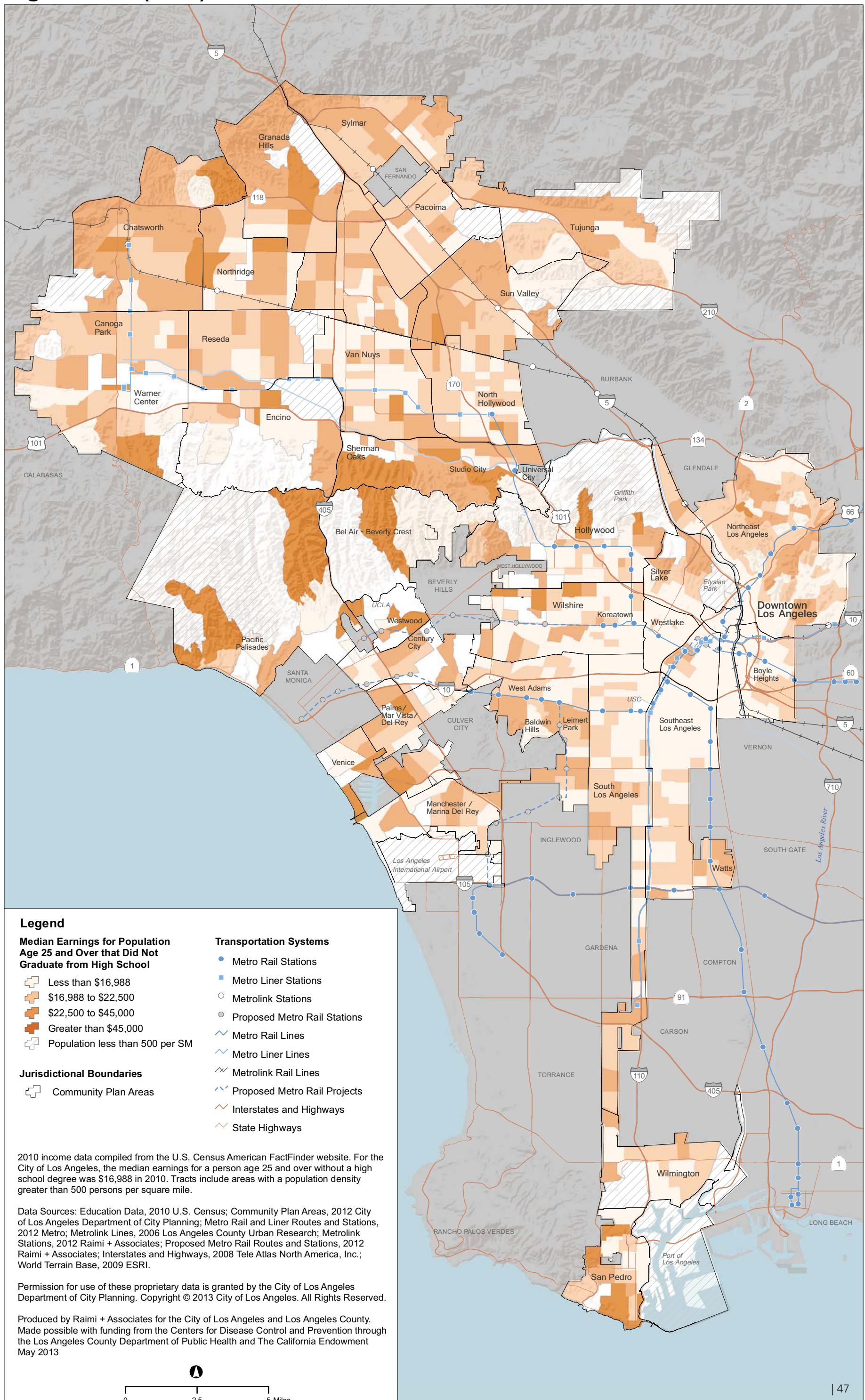
Map 28

Percentage of Population Age 25 and Over with a Bachelor's Degree or Higher (2010)



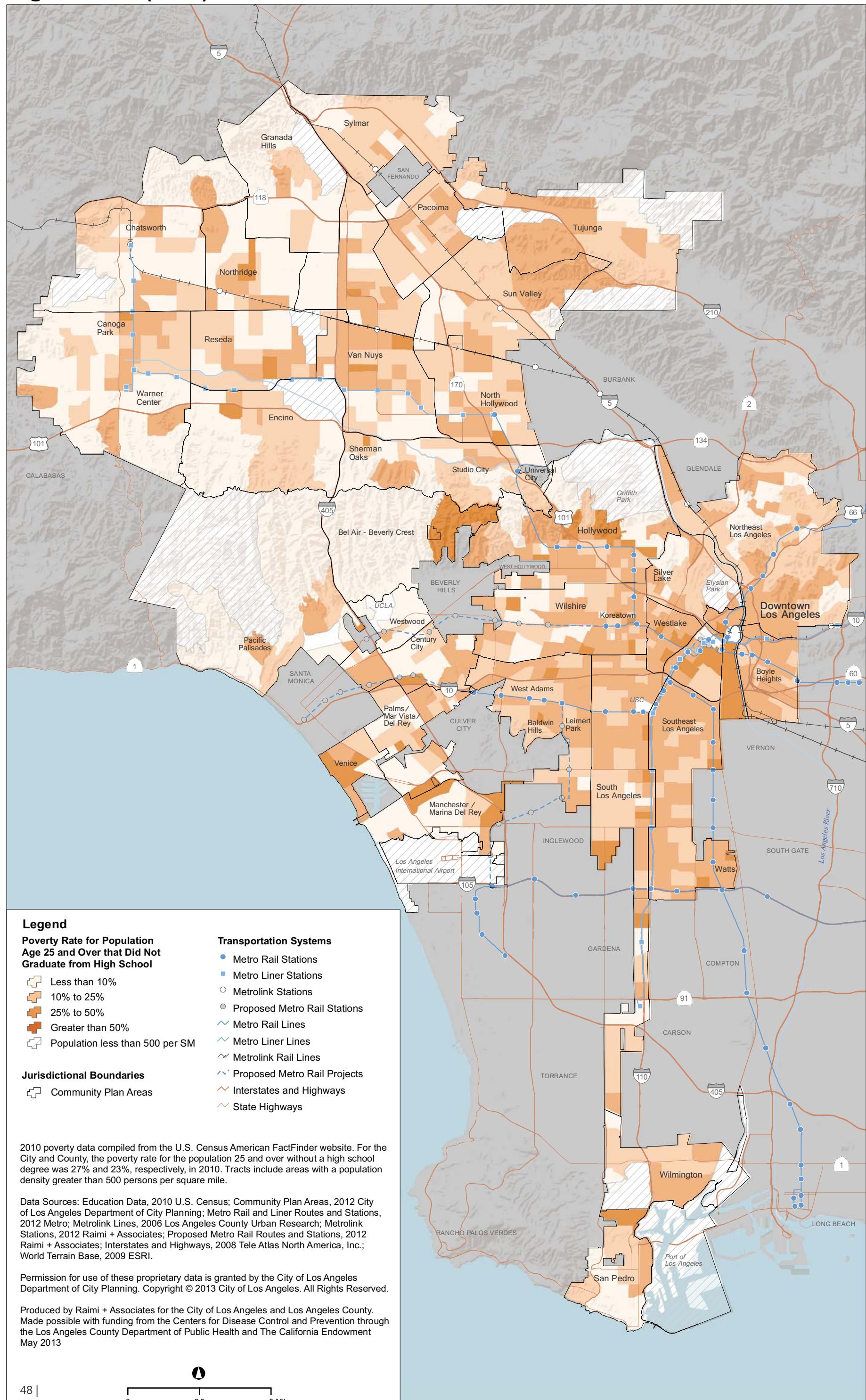
Map 29

Median Earnings for the Population Age 25 and Over that Did Not Graduate from High School (2010)



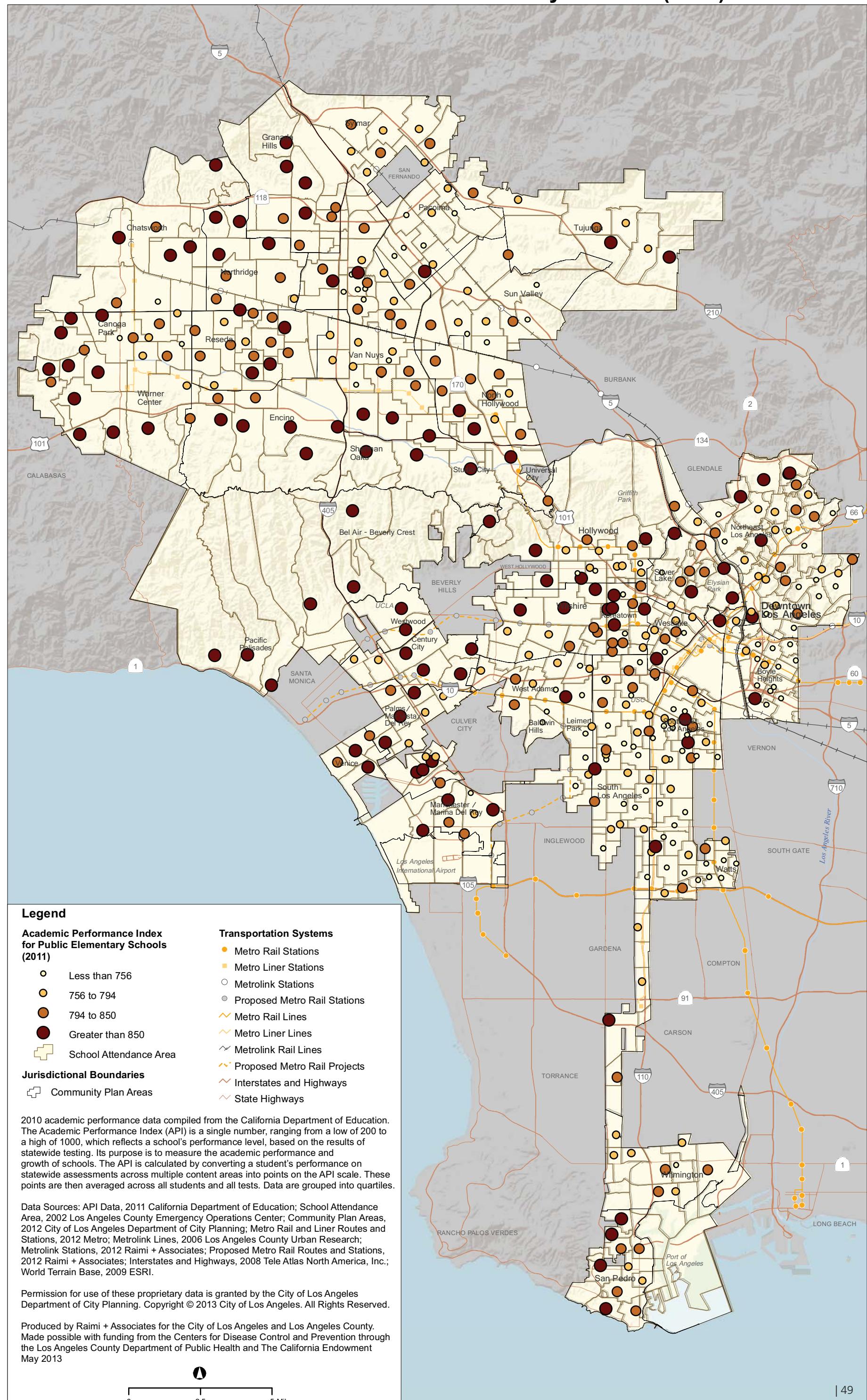
Map 30

Poverty Rate for the Population Age 25 and Over that Did Not Graduate from High School (2010)



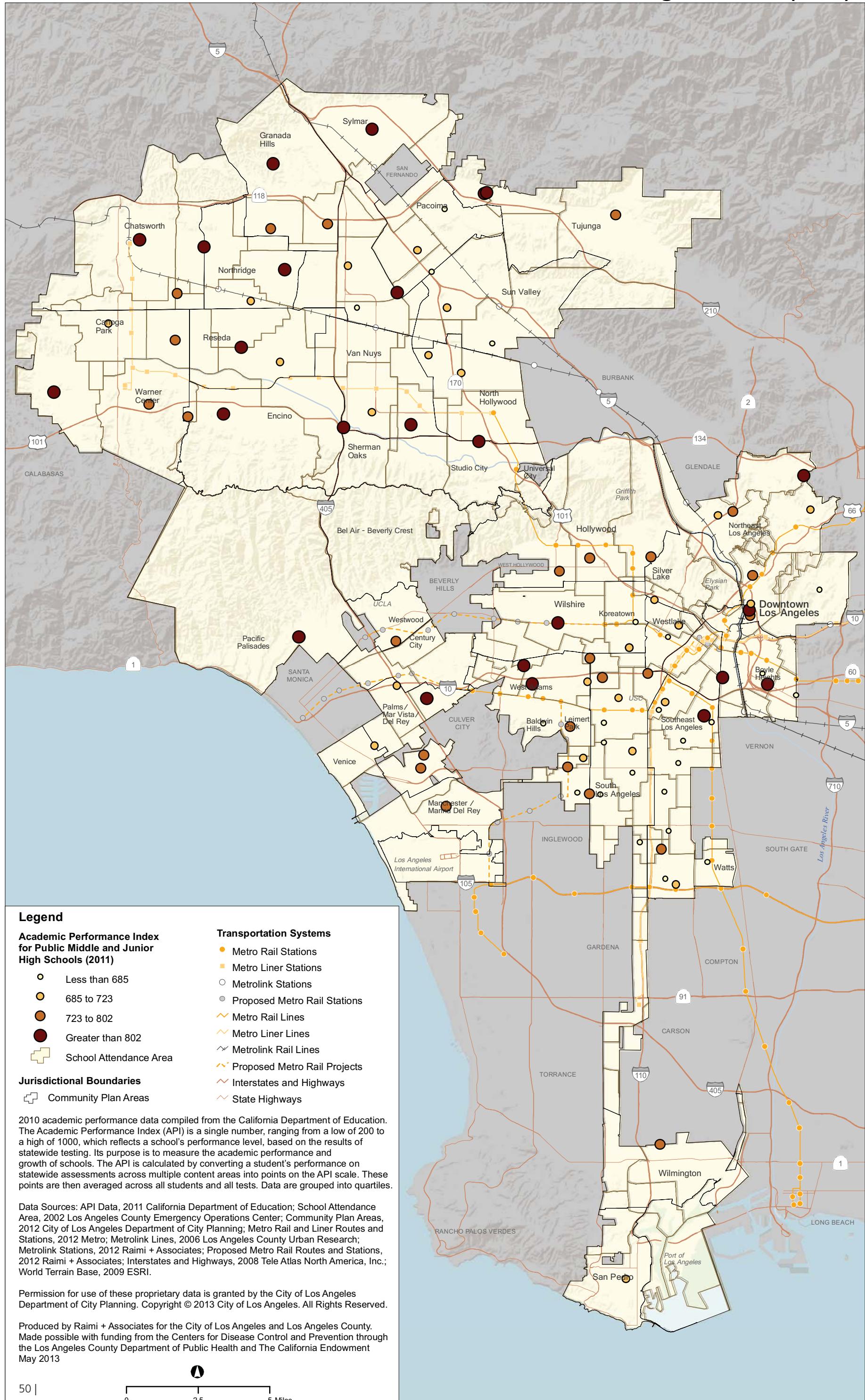
Map 31

Academic Performance Index for Public Elementary Schools (2011)



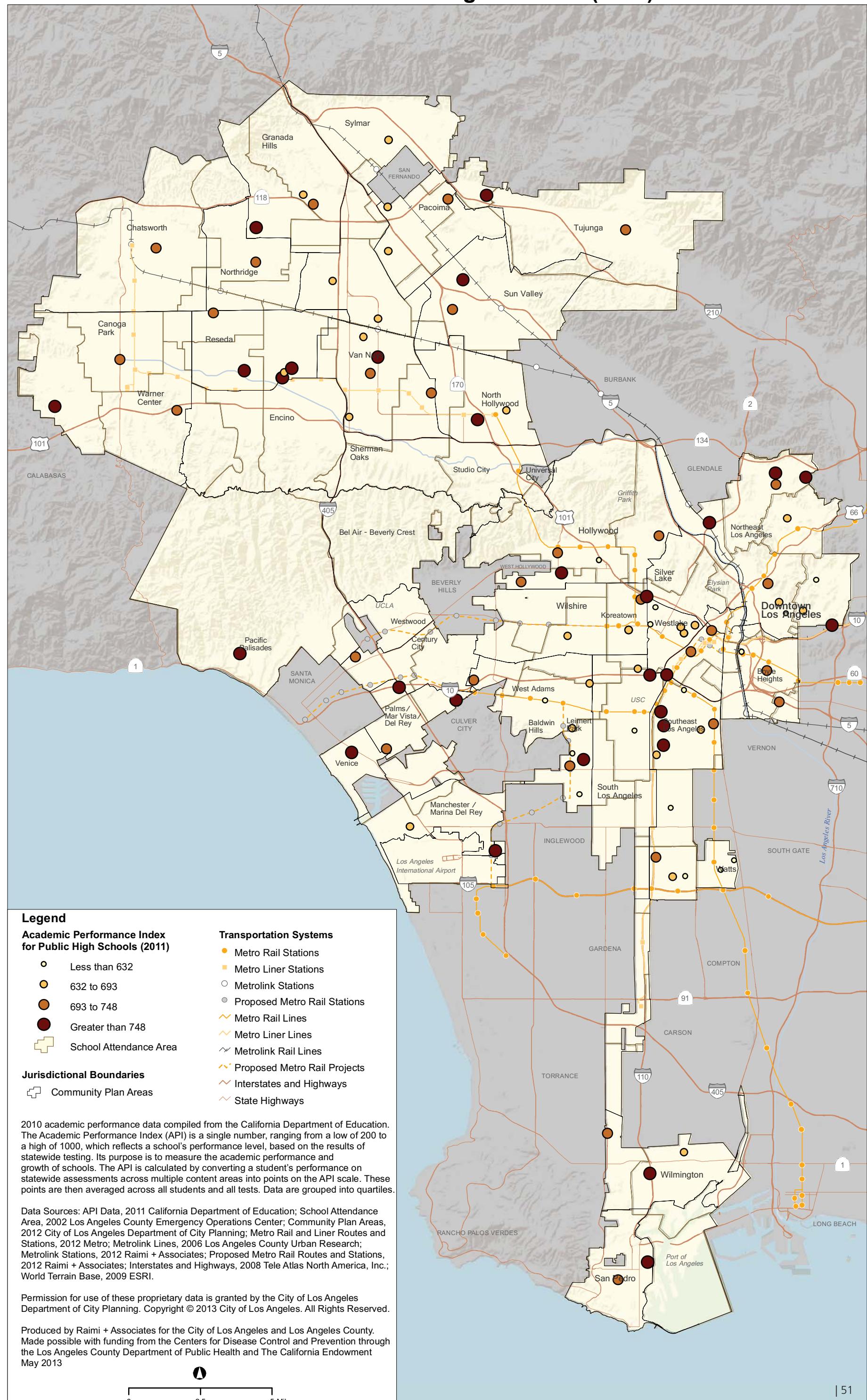
Map 32

Academic Performance Index for Public Middle and Junior High Schools (2011)



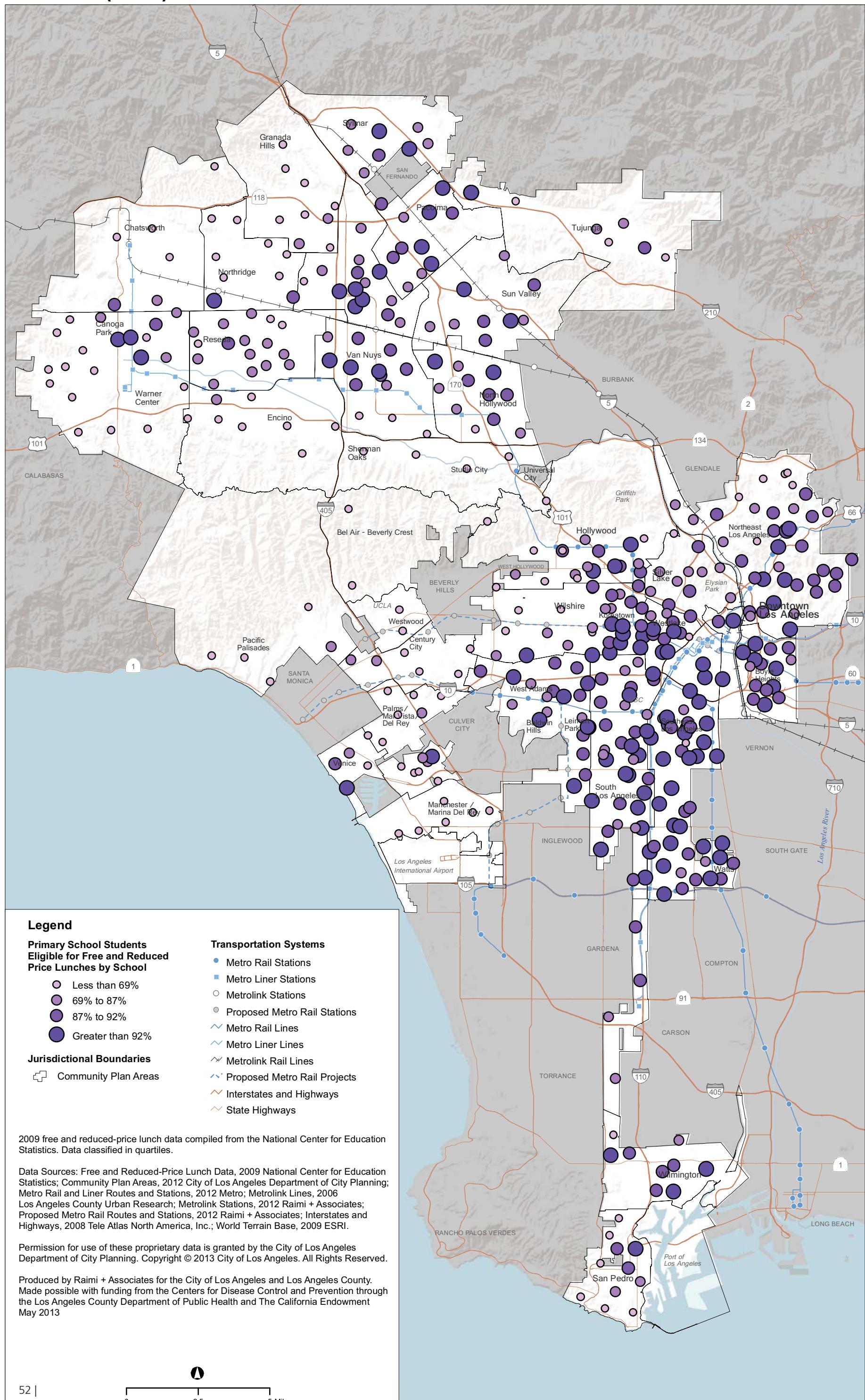
Map 33

Academic Performance Index for Public High Schools (2011)



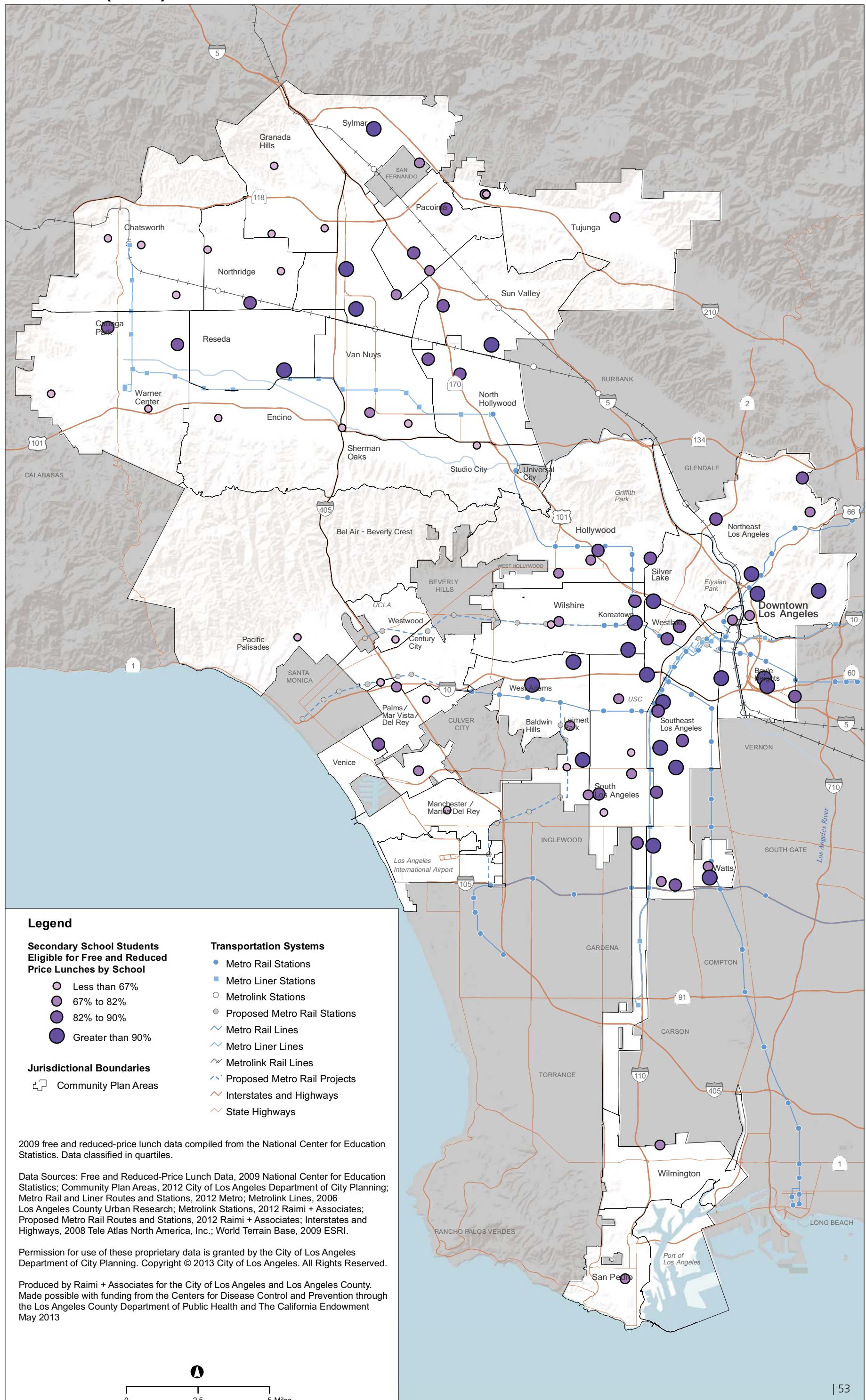
Map 34

Percentage of Primary School Students Eligible for Free and Reduced-Priced Lunches (2009)



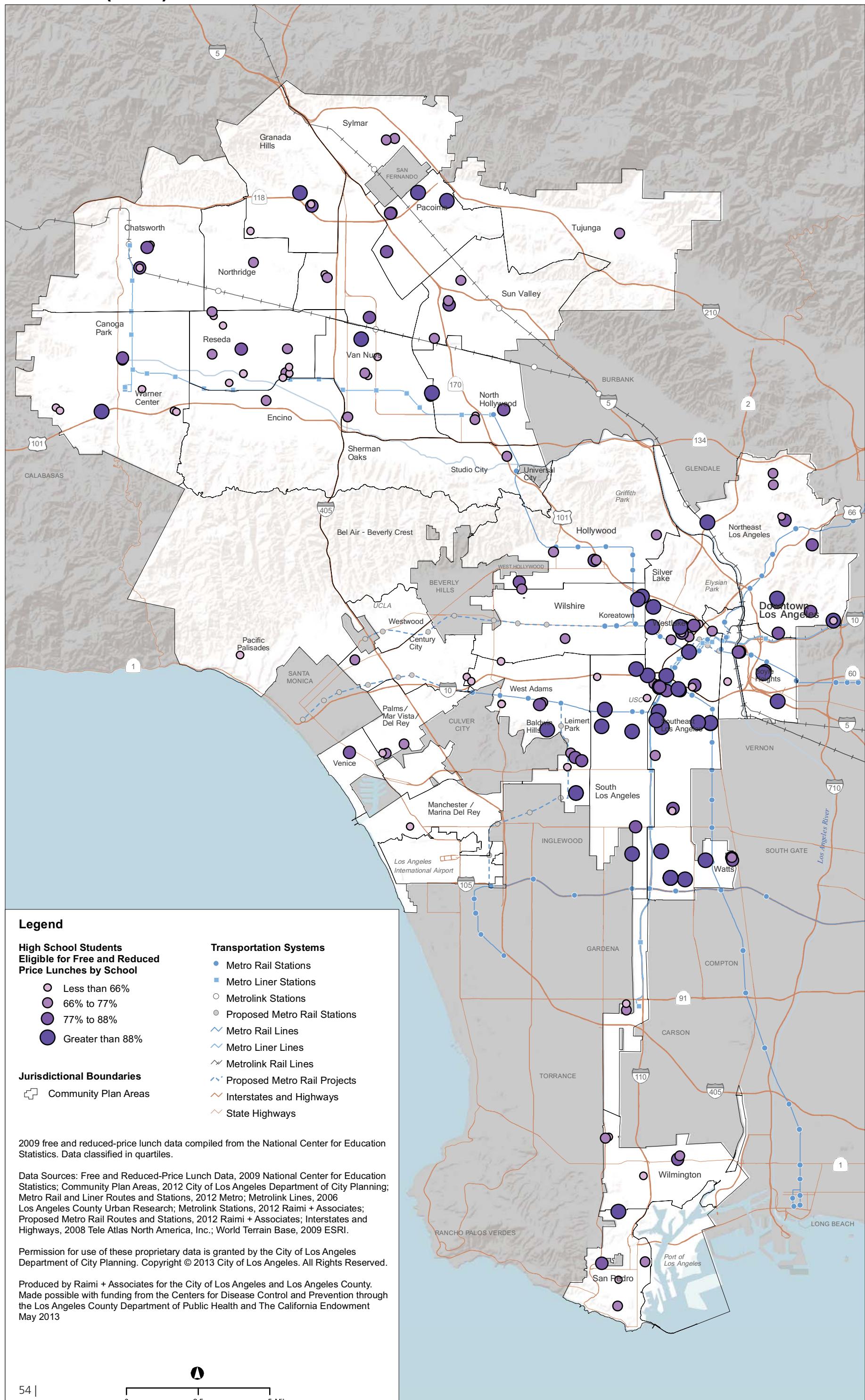
Map 35

Percentage of Secondary School Students Eligible for Free and Reduced-Priced Lunches (2011)



Map 36

Percentage of High School Students Eligible for Free and Reduced-Priced Lunches (2009)



6 | Health Conditions

Preventing disease and injury is central to improving the health of Los Angeles residents. To effectively promote health, reduce injury, and prevent disease we must better understand the leading causes of death and disability, as well as ways to transform the behavioral, social, economic, and environmental determinants of health. As described in this Health Conditions Chapter, many of the greatest health challenges facing Los Angeles are related to chronic disease, most of which have modifiable risk factors and opportunities for prevention.

The City of Los Angeles will benefit when every resident has the opportunity to live a long, healthy, and productive life; however, the burden of disease and injury does not fall equitably on the population. As highlighted throughout this chapter, city residents face many health disparities – defined as differences in health outcomes or risk factors based on race/ethnicity, geographic location, socio-economic status, gender, or other characteristics. Reducing these disparities in health will improve the quality of life for all residents.

Improving the health and quality of life of Angelenos will require focused and sustained efforts from a range of partners. This chapter, which provides an overview of the health conditions in the City of Los Angeles, is divided into four sections: 1) health outcomes, 2) health status, 3) health behaviors and risk factors, and 4) access to care. The topics highlighted in each section were chosen based on the most serious, yet modifiable, health challenges facing the City. Each section provides a detailed description of the most currently available data for Los Angeles and highlights relevant health disparities.

The **Health Outcomes** section focuses on overall causes of mortality, including:

- Life expectancy, which measures the length of time an average person is expected to live.
- The leading causes of death and premature death, including coronary heart disease, stroke, respiratory diseases, Alzheimer's disease, diabetes and injury.

The **Health Status** section focuses on indicators of health-related quality of life, including:

- Self-perceived health status
- Number of unhealthy days due to physical or mental health
- Mental health and mental illness

The **Health Behaviors and Risk Factors** section focuses on key opportunities for preventing disease and promoting health, including:

- Reducing tobacco use, which decreases the risk for cardiovascular and respiratory diseases and cancers.
- Reducing adult and childhood obesity, which decreases the risk for diabetes, heart disease, stroke, and cancers.
- Promoting physical activity, which can help control weight, improve mental health and physical functioning, and reduce the risk of disease.
- Reducing low birth weight, which helps decrease infant mortality and improve long-term physical and mental health.

Finally, the **Access to Care** section identifies challenges to residents' ability to get the preventative and acute care they need. This section describes:

- The location of health care facilities and physical barriers to accessing care.
- Areas where there are shortages of hospitals, health care clinics, and mental health providers.

Additional health data related to alcohol use (Chapter 8), motor vehicle injuries (Chapter 9), and physical violence (Chapter 10) is included in subsequent chapters.

MAPS AND INDICATORS

The maps presented in this section, along with their associated indicators, are described below. This is not a comprehensive evaluation of all health indicators, but rather, a selection of key indicators that paint a broad picture of health conditions and health disparities for the City of Los Angeles.

- **Life Expectancy at Birth:** The map shows the life expectancy at birth in years by Public Use Microdata Area (PUMA). Life expectancy at birth was calculated by the American Human Development Project with mortality data from the California Department of Public Health, Center for Health Statistics, and population estimates from the U.S. Census Bureau for the years 2006-2008. PUMAs are geographic areas that are built on census tracts and counties, and each contains a population of 100,000.
- **Coronary Heart Disease Mortality Rate per 100,000 Residents by City Council District:** The map shows the age-adjusted rate of coronary heart disease mortality per 100,000 residents by City Council District from 2004-2008. Mortality data is from Los Angeles County mortality records, and mortality rates were calculated by the Los Angeles County Public Health Department.³⁷
- **Rate of Heart Attacks in Population Ages 45 and Over:** The map shows the age-adjusted heart attack rate per 10,000 residents age 45 and older at the zip code level. Data is derived from the California Office of Statewide Health Planning and Development (OSHPD) 2010 Emergency Department and Patient Discharge Databases.³⁸
- **Stroke Mortality Rate per 100,000 Residents:** The map shows the age-adjusted rate of stroke mortality per 100,000 residents by City Council District from 2004-2008. Mortality data is from Los Angeles County mortality records, and mortality rates were calculated by the Los Angeles County Public Health Department.³⁹
- **Diabetes Mortality Rate per 100,000 Residents by City Council District:** The map shows the age-adjusted rate of diabetes mortality per 100,000 by City Council District from 2004-2008. Mortality data is from Los Angeles County mortality records, and mortality rates were calculated by the Los Angeles County Public Health Department.⁴⁰
- **Respiratory Disease Mortality Rate per 100,000 Residents by Community Plan Area:** The map shows the crude rate of respiratory disease mortality per 100,000 by CPA in 2009. Mortality data is from Los Angeles County mortality records and is collected by the Los Angeles County Public Health Department.⁴¹

³⁷ The ICD-10 codes of coronary heart disease are I11 and I20-I25.

³⁸ Heart attack counts include hospitalizations with a principal diagnosis of ICD-9 code 410, which includes cardiac infarction; coronary embolism, occlusion, rupture, or thrombosis; infarction of the heart, myocardium, or ventricle; rupture of the heart, myocardium or ventricle.

³⁹ The primary ICD-10 codes for stroke are I60-I69.

⁴⁰ The ICD-10 codes for diabetes are E10-E14.

⁴¹ Diseases of the respiratory system include all deaths classified by the ICD-10 diagnoses code J.

- **Rate of Asthma Emergency Department Visits in Population Age 17 and Under:** The map shows the age-adjusted rate of asthma-related emergency department (ED) visits per 10,000 residents age 17 and under by zip code. Data is derived from the OSHPD 2010 Emergency Department and Patient Discharge Databases.⁴²
- **Rate of Asthma Emergency Department Visits in Population Age 18 and Over:** The map shows the age-adjusted rate of asthma-related ED visits per 10,000 residents age 18 and over by zip code. The rates are age-adjusted and per 10,000. Data is from the OSHPD 2010 Emergency Department and Patient Discharge Databases.
- **Rate of Asthma Hospitalizations in Population Age 17 and Under:** The map shows the age-adjusted rate of asthma-related hospitalizations per 10,000 residents age 17 and under by zip code. Data is from the OSHPD 2010 Emergency Department and Patient Discharge Databases.
- **Rate of Asthma Hospitalizations in Population Age 18 and Over:** The map shows the age-adjusted rate of asthma-related hospitalizations per 10,000 residents age 18 and over by zip code. Data is from the OSHPD 2010 Emergency Department and Patient Discharge Databases.
- **Self-Perceived Health Status:** Self-perceived health status is a measure of how a person perceives his or her health. 2011 data is tabulated for each Health District (HD) by the Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health as part of the Los Angeles County Health Survey.
- **Unhealthy Days and Days Limited by Physical or Mental Health:** These indicators measure the average number of days during the previous 30 days when the respondent felt that either his or her physical or mental health was not good and the number of days in the previous 30 days when a person indicates his or her activities are limited due to physical or mental difficulties. 2011 data is tabulated for each HD by the Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health as part of the Los Angeles County Health Survey.
- **Prevalence of Child Obesity:** The map shows the prevalence of child obesity by CPA in Los Angeles. The percentage of obese children was derived using Body Mass Index (BMI) measurements of 5th, 7th, and 9th grade school children from the California Physical Fitness Testing Program (2007-2008). Children were categorized as obese if their BMI exceeded the 95th percentile by age and gender. Data is from the Los Angeles County Public Health Department.
- **Low Birth Weight:** The map shows the percentage of low birth weight infants. Infants are considered low birth weight if they weigh less than 2,500 grams (or 5.51 pounds). Data is from OSHPD 2010 Patient Discharge Database.
- **Health Professional Shortage Areas (HPSAs):** The map contains areas that lack a sufficient number of primary care, dental, and mental health professionals. HPSA is a federal designation that applies to areas with unmet health care needs. This designation is based on a ratio of population to health professionals and access to healthcare. Data is from OSHPD for 2010.
- **Health Care Facilities:** The map shows a snapshot of hospitals, health care clinics, and mental health providers in the City of Los Angeles. Data is from OSHPD for 2012 and the Los Angeles County Department of Mental Health for 2011.

KEY FINDINGS

HEALTH OUTCOMES

Life Expectancy

Life expectancy measures the length of time an average person is expected to live and is considered a key indicator of the overall health of a population. It measures the risks of a population for disease and premature death. Life expectancy for California residents slightly exceeds that of the United States. Statewide, California's life expectancy was 80.1 years from 2006-2008, compared to 78.6 years for the U.S. The life expectancy for the Los Angeles Metropolitan Area (80.7 years) is similar to the statewide average.⁴³

As shown on Map 37 and Figure 15, life expectancy across the City of Los Angeles varies significantly, with a nearly 12-year difference between the areas with the highest and lowest life expectancy. Residents in the Watts PUMA have a life expectancy of 72.8 years compared to 84.7 years in the Bel Air-Brentwood-Pacific Palisades PUMA.⁴⁴ The PUMAs with the highest life expectancy were located on the Westside of Los Angeles, in the Santa Monica Mountains, and along the southern portion of the San Fernando Valley. In fact, the Bel Air-Brentwood-Pacific Palisades and West Los Angeles PUMAs ranked among the top 20 areas for life expectancy in California. The areas with the lowest life expectancy included the PUMAs south of Downtown Los Angeles along the Interstate 110 corridor, the neighborhoods west of Downtown, and the West Adams-Baldwin Hills-Leimert neighborhood. Five of these areas were in the bottom 20 neighborhoods for the entire state. The Watts PUMA has the lowest rate in California, representing the same life expectancy rate for the U.S. from almost 40 years ago.⁴⁵

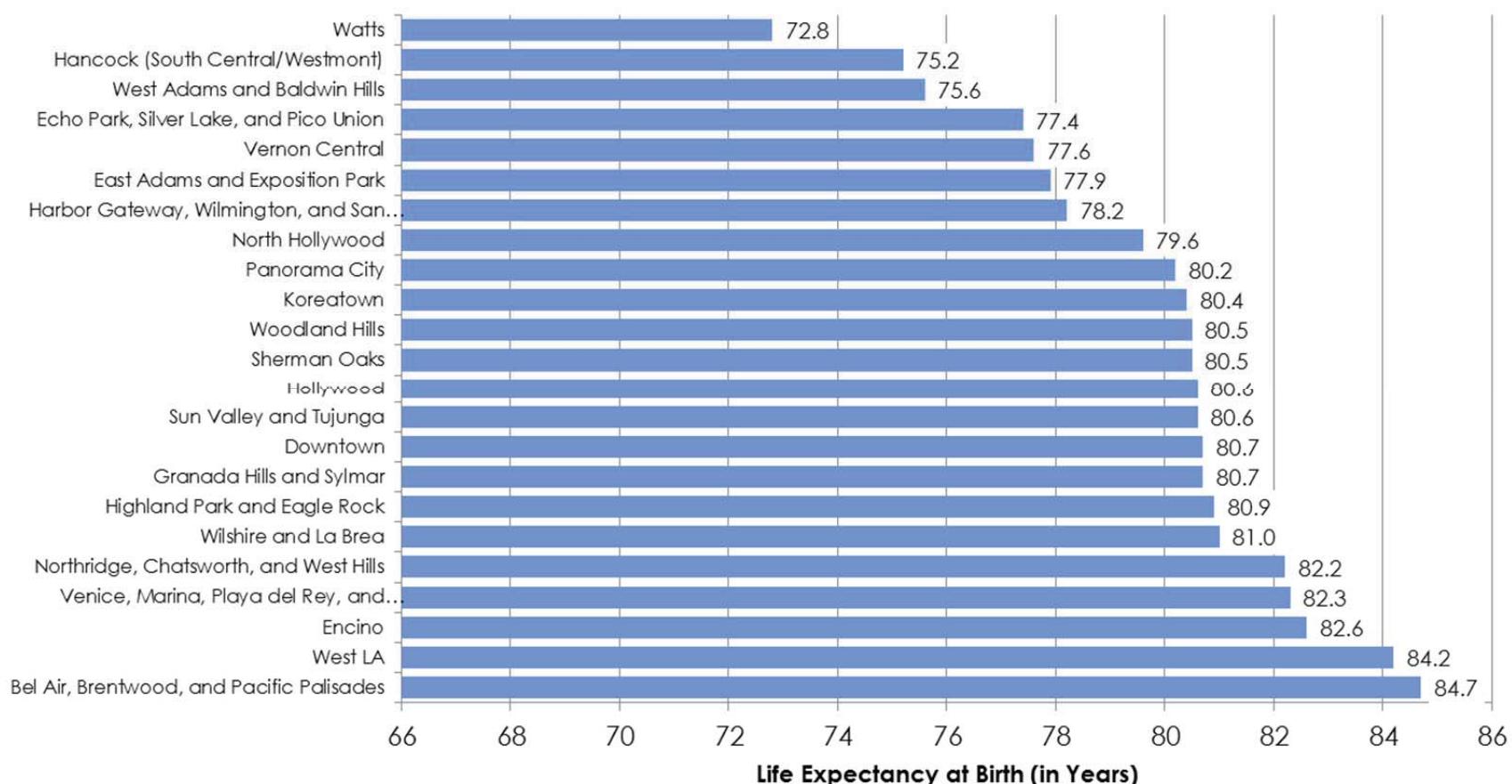
⁴² Asthma counts include ED visits and hospitalizations with a principal diagnosis of ICD-9 code 493.

⁴³ Burd-Sharps, Sarah and Lewis, K. (2011). A Portrait of California: California Human Development Report 2011. The American Human Development Project of the Social Science Research Council. Retrieved from <http://www.measureofamerica.org/docs/APortraitOfCA.pdf>

⁴⁴ Due to the fact that many PUMAs span portions of the City of Los Angeles and neighboring jurisdictions, caution should be shown in interpreting results for the City. Furthermore, the Census Bureau's PUMA designations do not align with recognized community boundaries for the City, and often the Census Bureau uses names no longer recognized by the City or neighborhood organizations. For example, the Census Bureau defines the South Los Angeles CPA as Hancock (South Central / Westmont) and East Adams-Exposition Park. For more information on PUMAs, Map 5 shows the PUMA designations with CPA boundaries for the City.

⁴⁵ Burd-Sharps, Sarah and Lewis, K. (2011). A Portrait of California: California Human Development Report 2011. The American Human Development Project of the Social Science Research Council. Retrieved from <http://www.measureofamerica.org/docs/APortraitOfCA.pdf>

Figure 15: Life Expectancy at Birth by Public Use Microdata Area for 2006-2008



Source: Social Science Research Council. (2011). *A Portrait of California. California Human Development Report*. Life expectancy data for 2006-2008.

Leading Causes of Death

The leading causes of death refer to the most common causes of death, based on the frequency of their occurrence. Identifying which risk factors are associated with certain causes of death can help prevent disease and keep people healthier. Some lifestyle-related risk factors for the leading causes of death include an unhealthy diet, high blood pressure, smoking, insufficient physical activity, obesity/overweight, and diabetes.⁴⁶

The death rate among residents in Los Angeles County has declined over 30% during the 15-year period from 1995 through 2009. While mortality rates have declined in the County, the City still experiences a number of challenges with several leading causes of death. As shown in Figure 16, coronary heart disease (CHD) was the leading cause of death across all five Service Planning Areas (SPAs) representing the City,⁴⁷ followed by stroke and lung cancer. Emphysema/chronic obstructive pulmonary disease (COPD) also ranked in the top five for the County and in five all SPAs in the City. Notably, Metro and South Bay SPAs were the only two with pneumonia/influenza in their top five ranks. Alzheimer's disease became an increasingly important cause of death in the County and in SPAs 2 (San Fernando Valley) and 5 (West). Furthermore, diabetes has emerged as a leading cause of death in SPA 6 (South).⁴⁸

Figure 16: Leading Causes of Death in Service Planning Areas Corresponding to the City of Los Angeles for 2009

Leading Causes of Death (Age-adjusted mortality rate per 100,000)					
	LA County	SPA 2: San Fernando	SPA 4: Metro	SPA 5: West	SPA 6: South
1	Coronary Heart Disease 129 per 100,000	Coronary Heart Disease 130 per 100,000	Coronary Heart Disease 119 per 100,000	Coronary Heart Disease 101 per 100,000	Coronary Heart Disease 178 per 100,000
2	Stroke 34 per 100,000	Stroke 32 per 100,000	Stroke 32 per 100,000	Stroke 28 per 100,000	Stroke 46 per 100,000
3	Lung Cancer 31 per 100,000	Lung Cancer 32 per 100,000	Lung Cancer 32 per 100,000	Lung Cancer 28 per 100,000	Stroke 40 per 100,000
4	Emphysema/COPD 30 per 100,000	Emphysema/COPD 27 per 100,000	Pneumonia/Influenza 21 per 100,000	Alzheimer's Disease 24 per 100,000	Diabetes 34 per 100,000
5	Alzheimer's Disease 21 per 100,000	Alzheimer's Disease 26 per 100,000	Emphysema/COPD 21 per 100,000	Emphysema/COPD 22 per 100,000	Emphysema/COPD 31 per 100,000

Source: Los Angeles County Public Health Department. (2009). *Mortality in Los Angeles County 2009 and Mortality Trends 2000-2009*.

The South SPA suffered from the highest overall age-adjusted mortality rate for the leading cause of death (coronary heart disease rate of 178 per 100,000 residents), over one-quarter higher than the County rate. Across the board, age-adjusted mortality rates for the South SPA were significantly higher than any other SPA in the City. South Bay SPA and San Fernando SPA followed closely with higher than average age-adjusted mortality rates. The West SPA had the lowest age-adjusted mortality rates.⁴⁹

By race and ethnicity and gender, Asian or Pacific Islander women had the lowest overall death rate (at 344 deaths for all causes per 100,000 population), while African American men had the highest (1,083 per 100,000 population). The death rate of African American men was nearly two times the age-adjusted death rate for the County (583 deaths per 100,000). Overall, Whites and Asian or Pacific Islanders lived longer than African American and Hispanics.⁵⁰

⁴⁶ U.S. Department of Health and Human Services. (2009). *Community Health Status Indicators*. Retrieved from <http://www.communityhealth.hhs.gov/homepage.aspx?j=1>.

⁴⁷ Due to the fact that many SPAs span portions of the City of Los Angeles and neighboring jurisdictions, caution should be shown in interpreting results for the City. For more information on the SPAs, visit <http://publichealth.lacounty.gov/chs/SPAMain/ServicePlanningAreas.htm>

⁴⁸ Los Angeles County Public Health Department. (2009). *Mortality in Los Angeles County 2009 and Mortality Trends 2000-2009*.

⁴⁹ Los Angeles County Public Health Department. (2009). *Mortality in Los Angeles County 2009 and Mortality Trends 2000-2009*.

⁵⁰ Los Angeles County Public Health Department. (2009). *Mortality in Los Angeles County 2009 and Mortality Trends 2000-2009*.

Premature Death

While over half of Los Angeles County residents lived to age 75 in 2009, 45% died before this age. If we expect people to live to at least 75 years of age, which is a standard cut-off point to quantify the impact of early death, then individuals who die earlier than age 75 are considered to have died prematurely. A person who dies at age 65 is considered to have lost 10 years of expected life, while an individual who lives to age 80 is considered to have exceeded expected life and does not lose any life years. By adding up the years of life lost, the leading causes of premature death can be identified. Premature deaths are monitored in order to better understand preventable deaths, health inequities, and access to medical care.⁵¹

Coronary heart disease was not only the leading cause of death in the County, but was also the leading cause of premature death for all of Los Angeles County. Homicide was the second leading cause of premature death in the Metro, South, and South Bay SPAs, and suicide was the second leading cause of premature death in the San Fernando and West SPAs and the fourth leading cause of death in the Metro SPA. Breast cancer was a leading cause of premature death in the West SPA, while diabetes caused a significant number of premature deaths in the South SPA. The number of years lost from premature death was highest in the San Fernando SPA (12,132 deaths resulting in 84,124 years of life lost [YLL]), followed by South Bay (9,455 deaths resulting in 76,521 YLL), San Gabriel (10,636 deaths resulting in 71,001 YLL), and South (5,638 results resulting in 65,813 YLL) SPAs, while the West SPA had the fewest years of life lost (3,967 deaths resulting in 20,426 YLL). Figure 17 shows the leading causes of premature death for each SPA corresponding to the City of Los Angeles and the estimated number of YLL.⁵²

Figure 17: Leading Causes of Premature Death (Years of Life Lost Before Age 75) in Service Planning Areas Corresponding to the City of Los Angeles for 2009

Rank	LA COUNTY		SPA 2: San Fernando		SPA 4: Metro		SPA 5: West		SPA 6: South		SPA 8: South Bay	
	Cause of Death / YLL	Death Rank	Cause of Death / YLL	Death Rank	Cause of Death / YLL	Death Rank	Cause of Death / YLL	Death Rank	Cause of Death / YLL	Death Rank	Cause of Death / YLL	Death Rank
1	Coronary Heart Disease 59,440	1	Coronary Heart Disease 11,516	1	Coronary Heart Disease 5,993	1	Coronary Heart Disease 2,664	1	Coronary Heart Disease 8,926	1	Coronary Heart Disease 10,507	1
2	Homicide 31,270	16	Suicide 5,131	12	Homicide 3,207	17	Suicide 1,703	9	Homicide 8,891	6	Homicide 6,623	13
3	Motor Vehicle Crash 22,017	19	Drug Overdose 4,736	17	Liver Disease 2,843	8	Drug Overdose 1,237	19	Motor Vehicle Crash 3,480	15	Lung Cancer 3,282	2
4	Liver Disease 21,515	9	Motor Vehicle Crash 4,203	18	Suicide 2,831	13	Liver Disease 1,078	15	Diabetes 2,661	4	Drug Overdose 3,222	18
5	Suicide 20,835	14	Liver Disease 3,609	11	Drug Overdose 2,650	16	Breast Cancer 1,072	8	Stroke 2,545	2	Liver Disease 2,895	1

Note: Death Rank denotes rank among the leading causes of all deaths.

Source: Los Angeles County Public Health Department. (2009). Mortality in Los Angeles County 2009 and Mortality Trends 2000-2009.

Community health interventions can help reduce preventable causes of death, such as coronary heart disease, diabetes, and motor vehicle collisions. Factors such as unhealthy eating, sedentary lifestyles, tobacco use, high blood pressure, presence of alcohol while driving, and roadway speeds are risk factors for many of the leading causes of premature death in Los Angeles.

Heart Disease

Heart disease is a general term used to refer to a range of diseases that affect the heart. Some types of heart disease include diseases of the blood vessels (such as coronary artery disease); heart rhythm problems (arrhythmias); and heart conditions that people are born with (congenital heart defects).⁵³ Coronary artery disease, which is a term often used interchangeably with coronary heart disease (CHD), is the most common type of heart disease. It is a disease in which plaque builds up on the inside walls of the coronary arteries. Over time, the plaque can harden and/or rupture, reducing blood flow to the heart and potentially resulting in angina (chest pain) or heart attack. Long-term, CHD can also lead to arrhythmia and heart failure.⁵⁴

Heart disease is the leading cause of death in the U.S. Each year more than 600,000 people die from heart disease. CHD alone accounts for 385,000 deaths annually. Furthermore, 715,000 Americans have a heart attack each year, and 73% of these heart attacks are the first heart attack for an individual. The major risk factors for heart disease include high blood pressure, high low-density lipoprotein (LDL) cholesterol, and smoking. Other medical conditions and lifestyle factors contribute to a higher risk for heart disease, including diabetes, being overweight or obesity, poor diet, physical inactivity, and excessive alcohol use.⁵⁵

Similar to national trends, CHD was the leading cause of death across Los Angeles County and the City of Los Angeles. The age-adjusted mortality rate due to CHD across the City of Los Angeles was 165 CHD deaths per 100,000 residents between 2004 and 2008. In City Council Districts 11 and 5, the rates were 126 and 135, well below the City's average as shown on Map 38. The highest rates of CHD deaths were in Council Districts 2, 8, and 9. Council District 9 had the highest rate of CHD at 218 per 100,000.⁵⁶

In 2010, the rate of heart attacks in the population age 45 and over revealed a similar spatial pattern to the CHD map, as shown on Map 39. Many of the zip codes with the lowest heart attack rates were located in Council District 5 and 11, while most of the zip codes with the highest rates were adjacent to Council Districts 2, 8, and 9. The average heart attack rate for all zip codes in Los Angeles was 40.1 per 100,000. Four zip codes were two standard deviations above the City average, and these included zip codes 91401, 91405, 90027, and 90003.

Stroke

Stroke is a leading cause of death in the U.S.,⁵⁷ and is the second leading cause of death in Los Angeles County.⁵⁸ A stroke can occur when a blood vessel in the brain ruptures or a clot blocks the blood supply to the brain, which can cause death or disability. The risk of stroke can be reduced through healthy lifestyle choices, such as eating a healthy diet, being active, limiting smoking and alcohol use, and maintaining a healthy weight.⁵⁹

⁵¹ Los Angeles County Public Health Department. (2009). Mortality in Los Angeles County 2009 and Mortality Trends 2000-2009.

⁵² Los Angeles County Public Health Department. (2009). Mortality in Los Angeles County 2009 and Mortality Trends 2000-2009.

⁵³ Mayo Clinic. (2013, January). Heart Disease. Retrieved from <http://www.mayoclinic.com/health/heart-disease/DS01120>

⁵⁴ National Institutes of Health. (2012, August). What is Coronary Heart Disease? Retrieved from <http://www.nhlbi.nih.gov/health/health-topics/topics/cad/>

⁵⁵ Centers for Disease Control and Prevention. (2012, October). Heart Disease Facts. Retrieved from <http://www.cdc.gov/heartdisease/facts.htm>

⁵⁶ Los Angeles County Public Health Department, Office of Health Assessment and Epidemiology. (2011, September). Obesity and Related Mortality in Los Angeles County.

⁵⁷ CDC. (2013). Stroke. Retrieved from <http://www.cdc.gov/stroke/>

⁵⁸ Los Angeles County Public Health Department. (2009). Mortality in Los Angeles County 2009 and Mortality Trends 2000-2009.

⁵⁹ CDC. (2013). Stroke. Retrieved from <http://www.cdc.gov/stroke/>

Map 40 shows the stroke mortality for the City. In terms of stroke mortality, Council Districts 8 and 9 had the highest rates in the City at 59 and 48 per 100,000 residents, ranking among the communities in Los Angeles County with the highest stroke mortality rates. Conversely, Council Districts 4, 5, 13, and 14 had among the lowest rates of stroke mortality in the County.⁶⁰

Diabetes

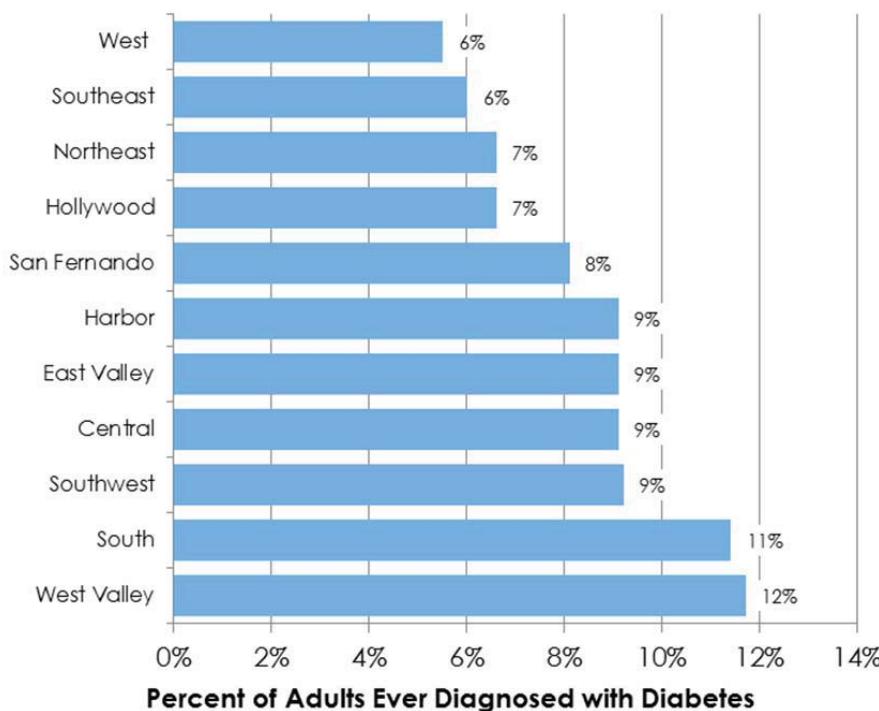
Diabetes is the seventh leading cause of death in the United States, and is a health problem that is growing in severity and concern. Since the 1970s, the risk of developing diabetes has increased by over 50% for American adults. Researchers have attributed this increased risk to higher rates of obesity, poorer diet, and reduced physical activity levels.⁶¹

Diabetes is a disease that affects how a person's body uses blood sugar (glucose). The body produces insulin to convert glucose, which is derived from food, to energy in order to fuel the body's cells. Insulin takes the glucose from the blood into the cells. Diabetes is a disease in which the body is unable to make insulin (type 1 diabetes) or produce enough or use insulin well (type 2 diabetes), resulting in a buildup of glucose in the blood. Complications from diabetes include heart disease, blindness, kidney failure, and lower-extremity amputations.⁶²

In 2011, 9% of Los Angeles County adults over age 18 reported having been diagnosed with diabetes, an increase from 6% in 1997. The percentage of adults with diabetes increased with age. Twenty-four percent of adults age 65 and over reported having been diagnosed with diabetes, the highest percentage in any age category. By race and ethnicity, 13% of African American respondents reported having been diagnosed with diabetes, the highest rate among race and ethnicity groups, while White respondents (9%) had the lowest rate.⁶³

Figure 18 shows the percentage of adults who reported having been diagnosed with diabetes for each Health District (HD).⁶⁴ The West (6%) and Southeast (6%) HDs had the lowest proportions of adults diagnosed with diabetes. The West Valley (12%) and South (11%) HDs had the highest percentages.⁶⁵

Figure 18: Percentage of Adults Ever Diagnosed with Diabetes by Health District in 2011



Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. 2011 Los Angeles County Health Survey: Ever Diagnosed Diabetes [Data File].

The diabetes mortality rate in the City of Los Angeles was 24 per 100,000 residents from 2004 through 2008.⁶⁶ Within the City, Council Districts 11, 4, and 5 had the lowest rate of diabetes mortality at 14, 15, and 15 per 100,000 as shown on Map 41. Council District 2 and 3 also had rates below the City average. Council Districts 8 and 9 had the highest diabetes mortality rates at 43 and 39, respectively.

Respiratory Disease and Asthma

Diseases of the respiratory system are an important public health issue. Respiratory diseases include a range of conditions, including upper respiratory infections, such as the common cold; influenza and pneumonia; and chronic lower respiratory diseases, such as asthma and chronic obstructive pulmonary disease (COPD).

In the U.S., more than 13.6 million adults have been diagnosed with COPD and 23 million people have asthma.⁶⁷ COPD is a preventable and treatable disease that results in airflow blockage and breathing problems. Exposure to cigarette smoke is a key factor in developing COPD, but asthma, exposure to air pollutants, genetic factors, and respiratory infections play a role in the development of COPD.⁶⁸ Asthma is a chronic lung disease that includes inflammation and intermittent narrowing of the airways. Asthma can cause repeated episodes of wheezing, chest tightness, shortness of breath, and coughing. Asthma attacks are triggered

⁶⁰ Los Angeles County Public Health Department, Office of Health Assessment and Epidemiology. (2011, September). Obesity and Related Mortality in Los Angeles County.

⁶¹ Pavkov, M.E., et. al. (2006). Effect of Youth-Onset Type 2 Diabetes Mellitus on Incidence of End-Stage Renal Disease and Mortality in Young and Middle-Aged Pima Indians. *Journal of the American Medical Association*, 296(4), pp. 421-426.

⁶² CDC. (2012, September). Basics about Diabetes. Retrieved from <http://www.cdc.gov/diabetes/consumer/learn.htm>

⁶³ Los Angeles County Public Health Department. (2011). Los Angeles County Health Survey: Ever Diagnosed Diabetes [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

⁶⁴ Due to the fact that many HDs span portions of the City of Los Angeles and neighboring jurisdictions, caution should be shown in interpreting results for the City.

⁶⁵ Los Angeles County Public Health Department. (2011). Los Angeles County Health Survey: Ever Diagnosed Diabetes [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

⁶⁶ Los Angeles County Public Health Department, Office of Health Assessment and Epidemiology. (2011, September). Obesity and Related Mortality in Los Angeles County.

⁶⁷ U.S. Department of Health and Human Services. (2013, April). Respiratory Diseases. Retrieved from <http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=36>

⁶⁸ Centers for Disease Control and Prevention. (2012, March). Chronic Obstructive Pulmonary Disease (COPD). Retrieved from <http://www.cdc.gov/copd/>

by a number of factors, including smog, dust, pollen, and smoke. Although asthma cannot be cured, it can be managed with appropriate treatment and medication.⁶⁹

Over 1,900 people in Los Angeles died from diseases of the respiratory system in 2009. As shown on Map 42, the highest rates of respiratory disease were in the Encino-Tarzana and Sunland-Tujunga-Shadow Hills-Lake View Terrace-East La Tuna Canyon CPAs, where the rate exceeded 80 respiratory disease deaths per 100,000 residents. Rates of respiratory disease deaths were lowest in the Southeast Los Angeles, Arleta-Pacoima, Mission Hills-Panorama City-North Hills, and Sylmar CPAs.

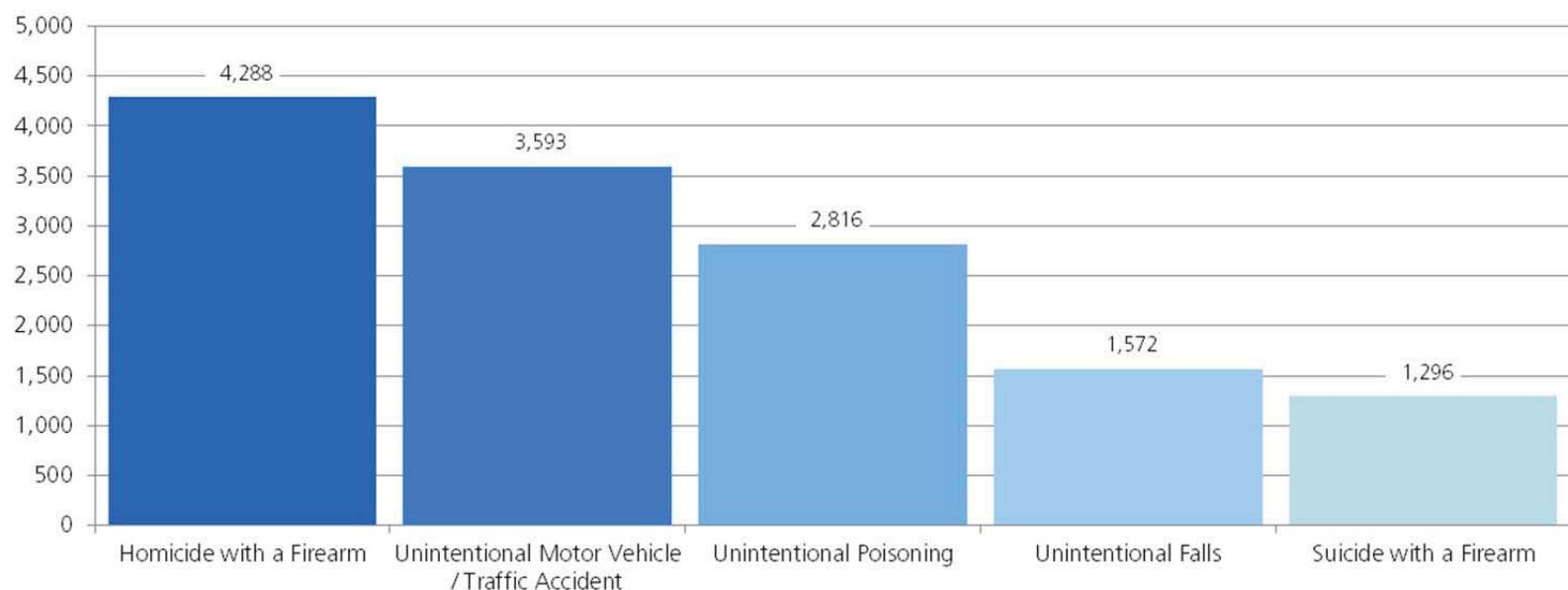
In general, the spatial pattern of emergency department visits and hospitalizations related to asthma for the City of Los Angeles were similar to those of respiratory disease mortality. Map 43 and Map 44 show emergency department visits for asthma, and Map 45 and Map 46 show asthma-related hospitalizations. Zip codes within and adjacent to the South Los Angeles, Southeast Los Angeles, Boyle Heights CPAs, the eastern San Fernando Valley, and the area near the Port of Los Angeles had the highest rates of asthma hospitalizations and emergency department visits for adults and children. The Westside and Santa Monica Mountains areas had the lowest rates of asthma hospitalizations and emergency department visits.

Zip code 90013 (Central City and Central City North CPA) has the highest rate of asthma-related emergency room visits for children age 17 and under (314 per 10,000). The next five zip codes with the highest rates of asthma-related emergency room visits for children (all greater than 150 per 100,000) are 90043, 90247, 90008, 90047, and 90302. These zip codes intersect with the West Adams-Baldwin Hills-Leimert, South Los Angeles, and Harbor Gateway CPAs.

Leading Causes of Injury Death

From 2000 to 2009, the leading causes of injury death in the City of Los Angeles were from firearm homicides (4,288) followed by unintentional motor vehicle traffic deaths (3,593) and unintentional poisoning, including drug overdoses (2,816).⁷⁰ Figure 19 shows the five leading causes of injury death in the City.

Figure 19: Leading Causes of Injury Death in the City of Los Angeles from 2000-2009



Source: California Department of Health Services, Center for Health Statistics. Death Statistical Master File. Leading Causes of Injury Death prepared by Los Angeles County Public Health Department in 2012.

From 2000-2009, the zip codes with the largest number of homicides with a firearm were 90003 (224 homicides), 90011 (219 homicides), and 90044 (298 homicides), but the highest rates of homicide with a firearm per 100,000 residents were in zip codes 90047 (35.0 homicides per 100,000 residents), 90059 (38.1 homicides per 100,000 residents) and 90061 (40.2 homicides per 100,000 residents), which are all in the southern area of Los Angeles. For more information on homicides, Chapter 10 includes additional discussion. The number of traffic fatalities were highest in zip code 90011 (97 fatalities), 90044 (111 fatalities), and 91331 (107 fatalities), but the highest rates of motor vehicle and traffic deaths per 100,000 residents were in zip codes 90047 (13.2 deaths per 100,000 residents), 90059 (12.9 deaths per 100,000), and 91306 (12.9 deaths per 100,000). Chapter 9 includes additional information about motor vehicle collisions and injuries. The highest rates for unintentional poisoning occurred in 90014 (62.8 deaths per 100,000) and 90021 (53.2 deaths per 100,000), which are in the general downtown Los Angeles area. The highest rate for unintentional falls occurred in 90048 (around the mid-Wilshire area) and the highest rate for suicide by firearm occurred in 90292 (near Venice). The data indicates that certain causes of injury death are clustered in Los Angeles, with homicides occurring at higher rates in the south of Downtown and firearm suicides and unintentional poisoning and falls occurring at higher rates on the Westside.⁷¹

HEALTH STATUS

Measures of health status provide information on the health-related quality of life for Los Angeles residents. This section includes information on self-perceived health status, the average number of unhealthy days due to physical or mental health, the average number of days limited by physical or mental health, and mental health and mental illness.

Self-Perceived Health Status

Self-perceived health status is a measure of how a person perceives his or her health and is a useful indicator of health, allowing comparisons across different populations and geographies. Individuals may choose excellent, very good, good, fair, or poor when responding to this survey question. In 2011, 21% of adults (age 18 and over) and 6% of children (age 17 and under) in Los Angeles County reported their health to be fair or poor. Health status varied by age, as higher proportions of older children and older adults reported fair or poor health. Figure 20 shows the proportion of adults and children who reported fair or poor mental health for

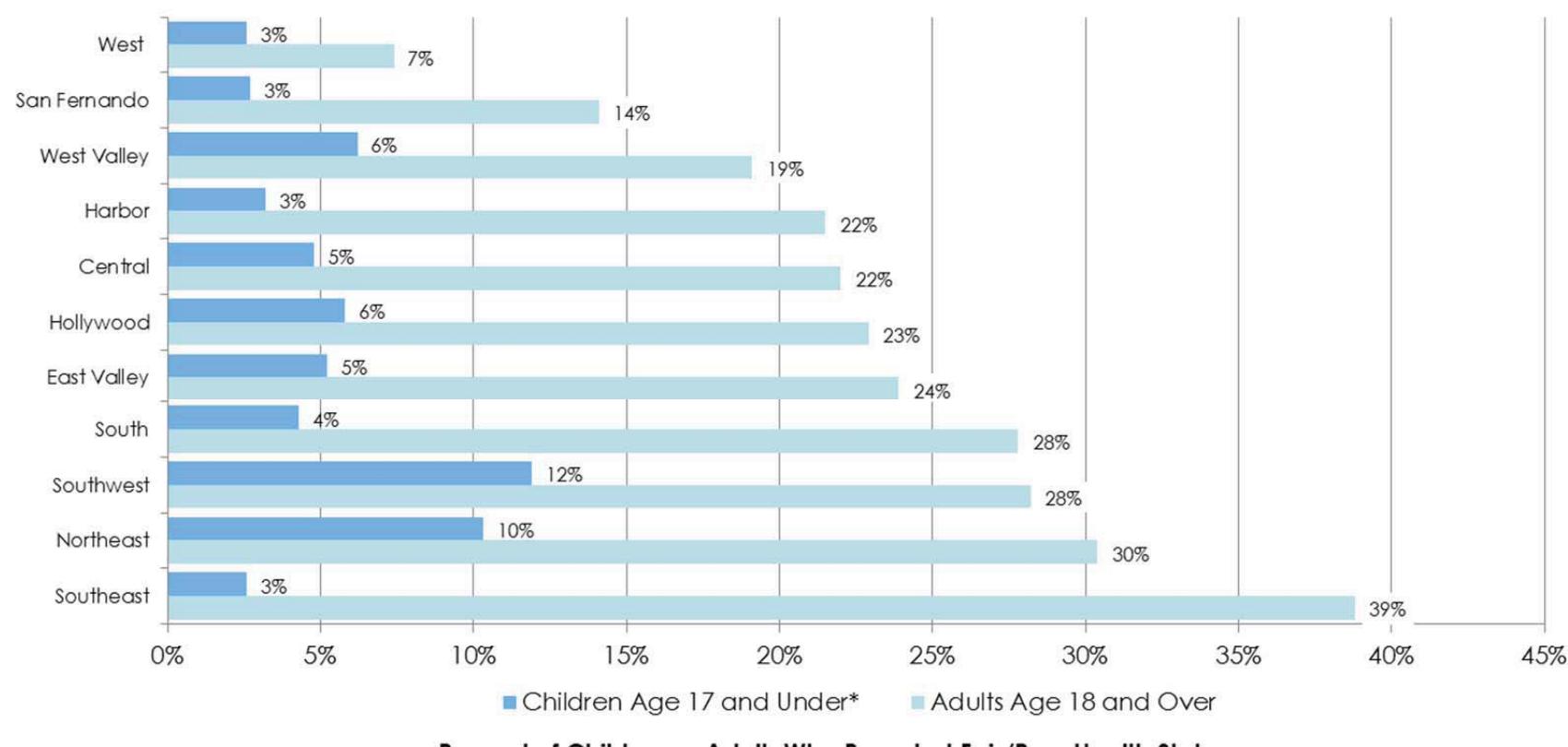
⁶⁹ Centers for Disease Control and Prevention. (2012, August). Asthma: Basic Information. Retrieved from <http://www.cdc.gov/asthma/faqs.htm>

⁷⁰ Unintentional poisoning includes the excessive use of drugs or chemicals for nonmedical purposes, such as an overdose. It also includes the excessive use of drugs or chemicals for non-recreational purposes, such as by a child.

⁷¹ California Department of Health Services, Center for Health Statistics. (2012). Death Statistical Master File. Leading Causes of Injury Death prepared by Los Angeles County Public Health Department in 2012.

each HD corresponding to the City of Los Angeles.⁷² Adults in the South (28%), Southwest (28%), Northeast (30%), and Southeast (39%) HDs had higher proportions of the population that reported having fair or poor health. Children in the Northeast (10%) and Southwest (12%) HDs reported the highest levels of fair or poor health, though this estimate may be statistically unstable.⁷³

Figure 20: Percent of Adults (18+ years old) and Children (Age 17 and under) who Reported Fair or Poor Health by Health District in 2011



*The estimate is statistically unstable (relative standard error >23%) and therefore may not be appropriate to use for planning or policy purposes.

Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. 2011 Los Angeles County Health Survey: Self-Perceived Health Status - Fair/Poor [Data Files].

Unhealthy Days and Days Limited by Physical or Mental Health

Physically and mentally unhealthy days indicate the average number of days during the last month that an individual rated their physical or mental health as not good. In 2011, individuals in Los Angeles County reported an average of 5.4 unhealthy days (physical and/or mental) in the past 30 days. Females in Los Angeles County reported a higher average number of unhealthy days (6.1) than males (4.8), the age group 50 to 59 had the largest number of unhealthy days (7.3) among age groups, and American Indians/Alaskan Natives (8.4) and African Americans (7.8) reported the most unhealthy days by race and ethnicity. Persons with a disability reported 2.4 times more unhealthy days a month (13) than the average county resident.

Figure 21 shows the average number of unhealthy days due to physical or mental health in the past 30 days for each HD corresponding to the City of Los Angeles.⁷⁴ Residents of the South (6.9), East Valley (6.4), and Hollywood (6.4) HDs exceeded the Los Angeles County average by one full day, while residents of the West HD (4.2) had the lowest average number of unhealthy days in 2011.⁷⁵

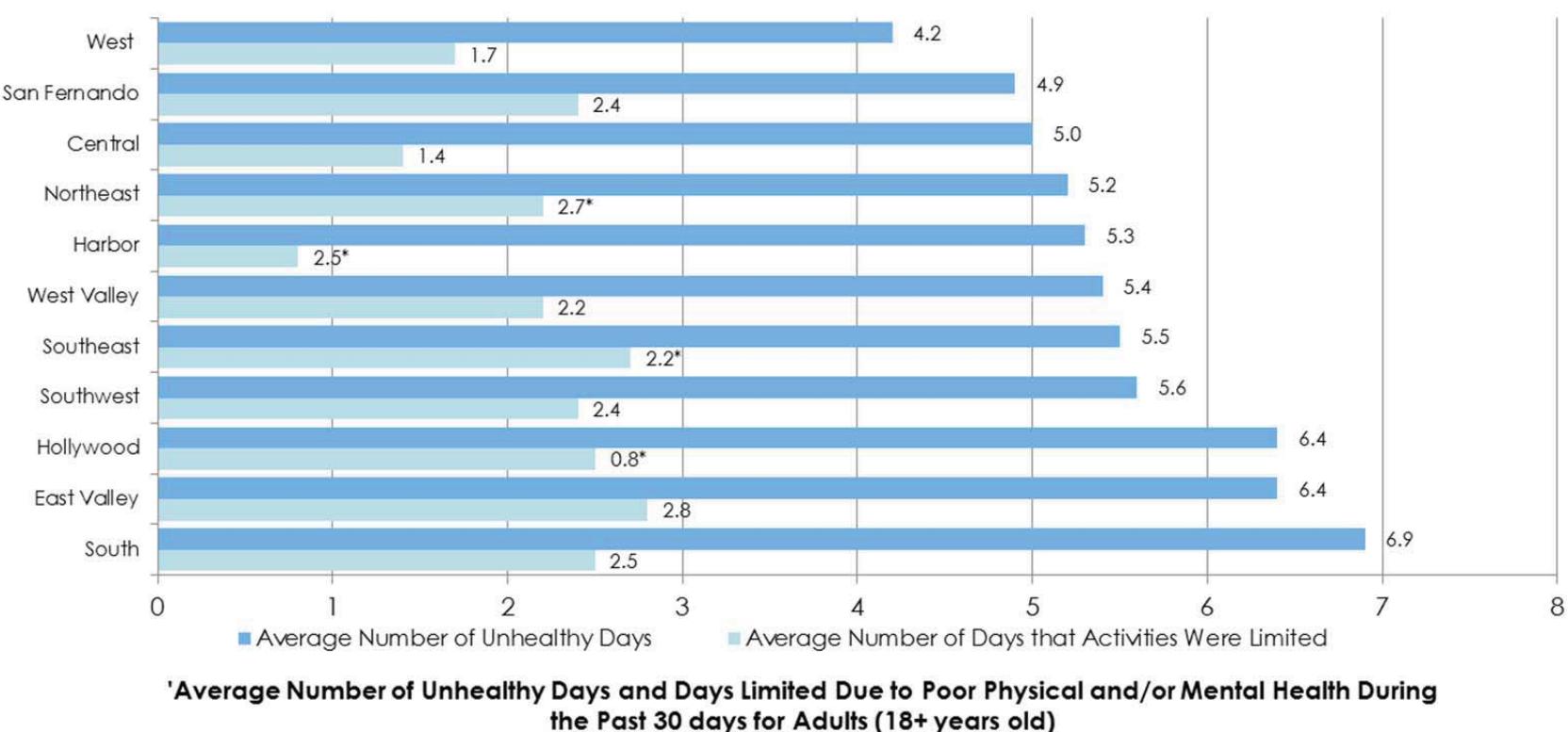
⁷² Due to the fact that many HDs span portions of the City of Los Angeles and neighboring jurisdictions, caution should be shown in interpreting results for the City.

⁷³ Office of Health Assessment and Epidemiology, (2013). Los Angeles County Department of Public Health. 2011 Los Angeles County Health Survey: Self-Perceived Health Status - Fair/Poor [Data File]. <http://www.publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

⁷⁴ Due to the fact that many HDs span portions of the City of Los Angeles and neighboring jurisdictions, caution should be shown in interpreting results for the City.

⁷⁵ Office of Health Assessment and Epidemiology, (2013). Los Angeles County Department of Public Health. 2011 Los Angeles County Health Survey: Average Number of Unhealthy Days [Data Files]. <http://www.publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

Figure 21: Average Number of Unhealthy Days and Days Limited Due to Poor Physical and/or Mental Health during the Past 30 days for Adults (18+ years old) by Health District in 2011



*The estimate is statistically unstable (relative standard error >23%) and therefore may not be appropriate to use for planning or policy purposes.

Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. 2011 Los Angeles County Health Survey: Average Number of Unhealthy Days and Average Number of Limited Activity Days [Data Files].

Physical and mental health can also limit a person's ability to do his or her usual activities, such as eating, walking, and getting out of bed. In 2011, the average number of days in the past 30 days that a Los Angeles County adult's activities were limited due to poor physical and/or mental health was 2.1. The average number of days increased with age and disability status. Residents in the Northeast (2.7) and East Valley (2.8) HDs reported having the largest number of days limited by physical or mental health, while residents of the Hollywood HD had the lowest (less than one).⁷⁶

Mental Health and Mental Illness

Although mental health is often used to describe mental illness and the two are related, mental health and mental illness represent different psychological states. Mental health describes a person's overall psychological, emotional, and social well-being. Good mental health is a state of well-being in which a person is able to cope with everyday events, work productively, and contribute to their community. It is estimated that only 17% of U.S. adults are considered in a state of good mental health.⁷⁷

The U.S. Surgeon General defines mental illness as "collectively all diagnosable mental disorders" or "health conditions that are characterized by alterations in thinking, mood, or behavior (or some combination thereof) associated with distress and/or impaired functioning." Serious mental illnesses include schizophrenia, bipolar disorder, obsessive compulsive disorder, panic disorder, post-traumatic stress disorder, and borderline personality disorder. Mental illness can affect persons of any age, race, ethnicity, or income, and is treatable.⁷⁸ Nationally, 75% of mental illnesses appear by age 24, yet less than half of children with diagnosable mental health problems receive treatment.⁷⁹

Social and emotional ties play a beneficial role in mental health outcomes, such as stress, psychological well-being, depression, and anxiety. In 2011, 64% of adults in Los Angeles County reported receiving sufficient social and emotional support. The portion of adults who reported receiving social and emotional support declined with age (younger adults reported receiving more support) and increased with income and education level (wealthier and better educated adults reported receiving more support). Seventy-seven percent or more of adult respondents in the West, Northeast, Central, San Fernando, and Harbor HDs reported receiving sufficient social and emotional support. Less than half of the adults in the South and Southwest HDs responded that they received sufficient support; however, these estimates may be unreliable due to variability in the surveyed/sampled population.⁸⁰

⁷⁶ Office of Health Assessment and Epidemiology, (2013). Los Angeles County Department of Public Health. 2011 Los Angeles County Health Survey: Average Number of Days of Limited Activity [Data File]. <http://www.publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

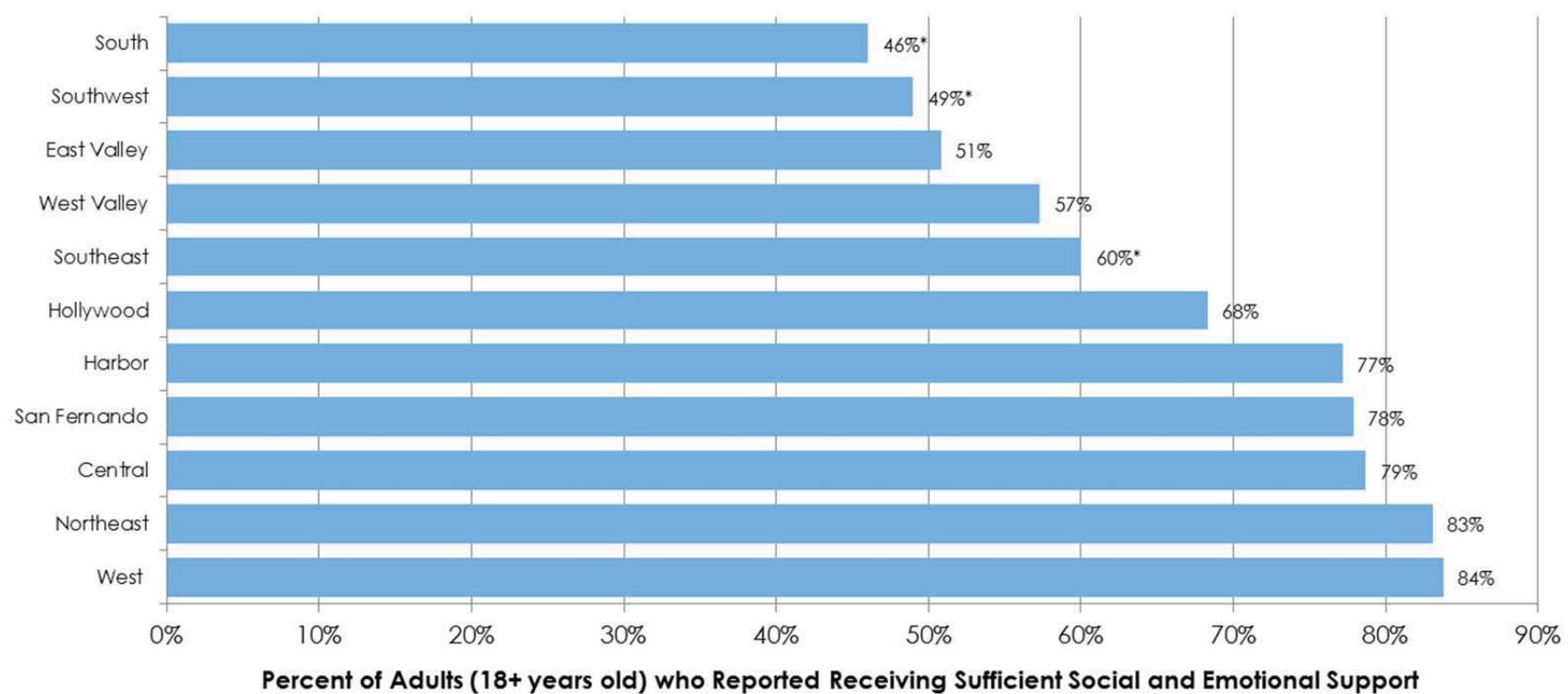
⁷⁷ U.S. Department of Health and Human Services. (1999). Mental Health: A Report of the Surgeon General. Rockville, MD: U.S. Department of Health and Human Services; Substance Abuse and Mental Health Services Administration, Center for Mental Health Services, National Institutes of Health, National Institute of Mental Health.

⁷⁸ CDC. (2011). Mental Health Basics. Retrieved from <http://www.cdc.gov/mentalhealth/basics.htm>

⁷⁹ President Obama's 23 Point Executive Order on Mental Health and Gun Control, January 2013.

⁸⁰ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Receive Social and Emotional Support Needed [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

Figure 22: Percentage of Adults who Received Sufficient Social and Emotional Support by Health District in 2011

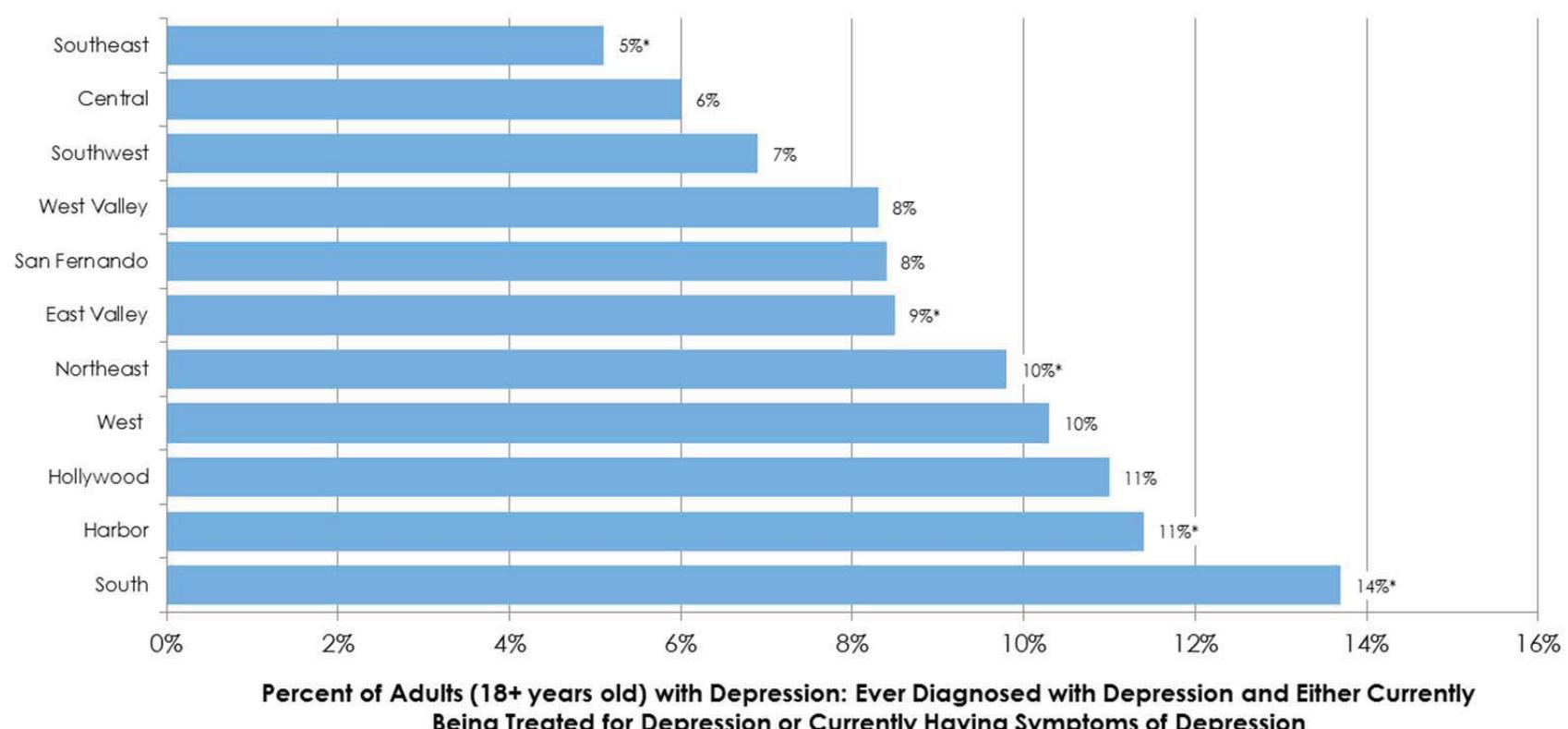


*The estimate is statistically unstable (relative standard error >23%) and therefore may not be appropriate to use for planning or policy purposes..

Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Receive Social and Emotional Support Needed [Data File].

Depression is the most common type of mental illness affecting adults in the U.S. The CDC estimates that by the year 2020, depression will be the second leading cause of disability throughout the world, after ischemic heart disease.⁸¹ In 2011, approximately 8% of adults in Los Angeles County reported having been diagnosed with depression and either being treated for depression or having symptoms of depression. Adults from the ages of 50 to 59 and 60 to 64 were the most likely age groups to have reported depression, while Whites and African Americans were the most likely race and ethnicity groups to report depression. Twenty-six percent of the persons with disabilities responded that they had depression. By HD, adult respondents in the Southeast (5%), Central (6%), and Southwest (7%) districts were less likely to report depression than the county average. Adults in the Northeast (10%), West (10%), Hollywood (11%), Harbor (11%), and South (14%) had proportions of the population with the highest self-reported depression, and each HD exceeded 10%.⁸²

Figure 23: Percentage of Adults with Depression by Health District in 2011



*The estimate is statistically unstable (relative standard error >23%) and therefore may not be appropriate to use for planning or policy purposes..

Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Adult Current Depression [Data File].

The Los Angeles County Department of Mental Health estimates the prevalence of serious emotional disturbance (SED) in children and serious mental illness (SMI) in adults for the County. An SED is defined by the Substance Abuse and Mental Health Services Administration as a person under age 18, which "currently has, or at any time during the last year, had a diagnosable mental, behavioral, or emotional disorder of sufficient duration to meet diagnostic criteria specified within the Diagnostic and Statistical Manual of Mental Disorders." Similarly, SMI is defined as having a diagnosable mental, behavioral, or emotional disorder that met criteria in the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) and that resulted in functional impairment that substantially interfered with or limited one or more major life activities.⁸³

⁸¹ CDC. (2011). Mental Health Basics. Retrieved from <http://www.cdc.gov/mentalhealth/basics.htm>

⁸² Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Adult Current Depression [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

⁸³ Substance Abuse and Mental Health Services Administration. (2010). Definitions. Retrieved from http://www.samhsa.gov/healthreform/healthhomes/Definitions_SIM_SUD_508.pdf

Countywide, an estimated 616,000 people, or approximately 6% of the population lived with a SED or SMI in 2010. Of the Service Planning Areas (SPA), SPA 2 (covering the San Fernando Valley) had the largest number of people living with a SED or SMI (132,816), followed by SPA 3 (109,077) and SPA 8 (95,212). Over 53% of the people living with a SED or SMI were Latino (7% of total Latino population), 27% were White (6% of total White population), 11% were Asian or Pacific Islander (5% of total Asian or Pacific Islander Population), and 9% were African American (7% of total African American population).⁸⁴ Map 49 shows the prevalence of SED and SMI for each census tract in Los Angeles. Within the City of Los Angeles, two census tracts (one in SPA 2 and one in SPA 4) were estimated to have a prevalence of a SED or SMI at greater than 10% of the total population. These tracts were located in the Mission Hills-Panorama City-North Hills CPA and adjacent to the Central City, Northeast Los Angeles, and Boyle Heights CPAs.

Map 50 shows the 2010 mental illness hospitalization rate per 100,000 residents in the City of Los Angeles. The zip codes with the lowest hospitalization rates tended to be located on the Westside of the City and in the Santa Monica Mountains. The zip codes with the highest hospitalization rates were 90095, 90071, 90014, 90013, 90731, 90021, 90043, 91040, and 90028. Each of these zip codes had rates greater than 1,000 hospitalizations per 100,000 residents or one hospitalization per 100 residents.

HEALTH BEHAVIORS AND RISK FACTORS

The health behaviors and risk factors section focuses on key opportunities for preventing disease and promoting health, focusing on healthy body weight, physical activity, smoking, and low birth weight.

Overweight and Obese Populations

Obesity is the most prevalent, chronic, and relapsing disorder of the 21st century. It is a leading cause of the nation's mortality, morbidity, disability, healthcare utilization, and healthcare costs. California has experienced a dramatic increase in obesity during the last few decades. In 1985, less than 10% of California's population was obese; by 2010, over 20% of Californians were considered obese.⁸⁵

The terms "overweight" and "obese" describe weight ranges that are above what is medically accepted as healthy. The most common measure of healthy and unhealthy weight is the "Body Mass Index" (BMI), which is a function that takes into account both height and weight. Table 1 presents standard BMI score ranges and their definitions, including underweight, healthy weight, overweight, and obese for adults.⁸⁶

Table 1: Standard Body Mass Index Categories

BMI	Considered
Below 18.5	Underweight
18.5 to 24.9	Healthy weight
25.0 to 29.9	Overweight
30 or higher	Obese

Source: CDC. (2012). *Standard Body Mass Index Categories*.

BMI is also used to evaluate healthy and unhealthy weight in children. Overweight is defined as a BMI at or above the 85th percentile and below the 95th percentile for children of the same sex and age. Obesity is defined as a BMI at or above the 95th percentile for children of the same sex and age.⁸⁷

Excess body weight can increase a person's risk for other diseases or health problems. Studies have found statistically significant associations between obesity and increased incidence of type II diabetes, many types of cancer, heart disease and stroke, asthma, gallbladder disease, osteoarthritis, and chronic back pain. When compared to normal weight females, overweight females are four times more likely to develop type II diabetes, while obese females are over 12 times more likely to develop type II diabetes compared to normal weight females. In men, these corresponding risk levels are over two times and nearly seven times to develop type II diabetes, respectively.⁸⁸

In Los Angeles County, the prevalence of adult obesity increased from 14% in 1997 to 24% in 2011, while the percentage of overweight adults increased from 34% in 1997 to 37% in 2011. As shown on Figure 24 the West HD had the lowest prevalence of adult obesity and the second lowest proportion of overweight adults. The Harbor HD had the second lowest percentage of obese adults (17%), but the second highest prevalence of overweight adults (44%). The South, Southeast, Southwest, and San Fernando HDs had higher proportions of obese adults than the County average, with the South and Southeast HDs exceeding 30%.⁸⁹

⁸⁴ Los Angeles County Department of Mental Health. (2012, March). Quality Improvement Work Plan Evaluation Report for Calendar Year 2011. Retrieved from <http://psbqi.dmh.lacounty.gov/QUALITY%20IMPROVEMENT/QI%20Evaluation%20Report%202011.pdf>

⁸⁵ CDC. (2011, October). Overweight and Obesity: US Obesity Trends. Retrieved from www.cdc.gov/obesity/data/trends.html.

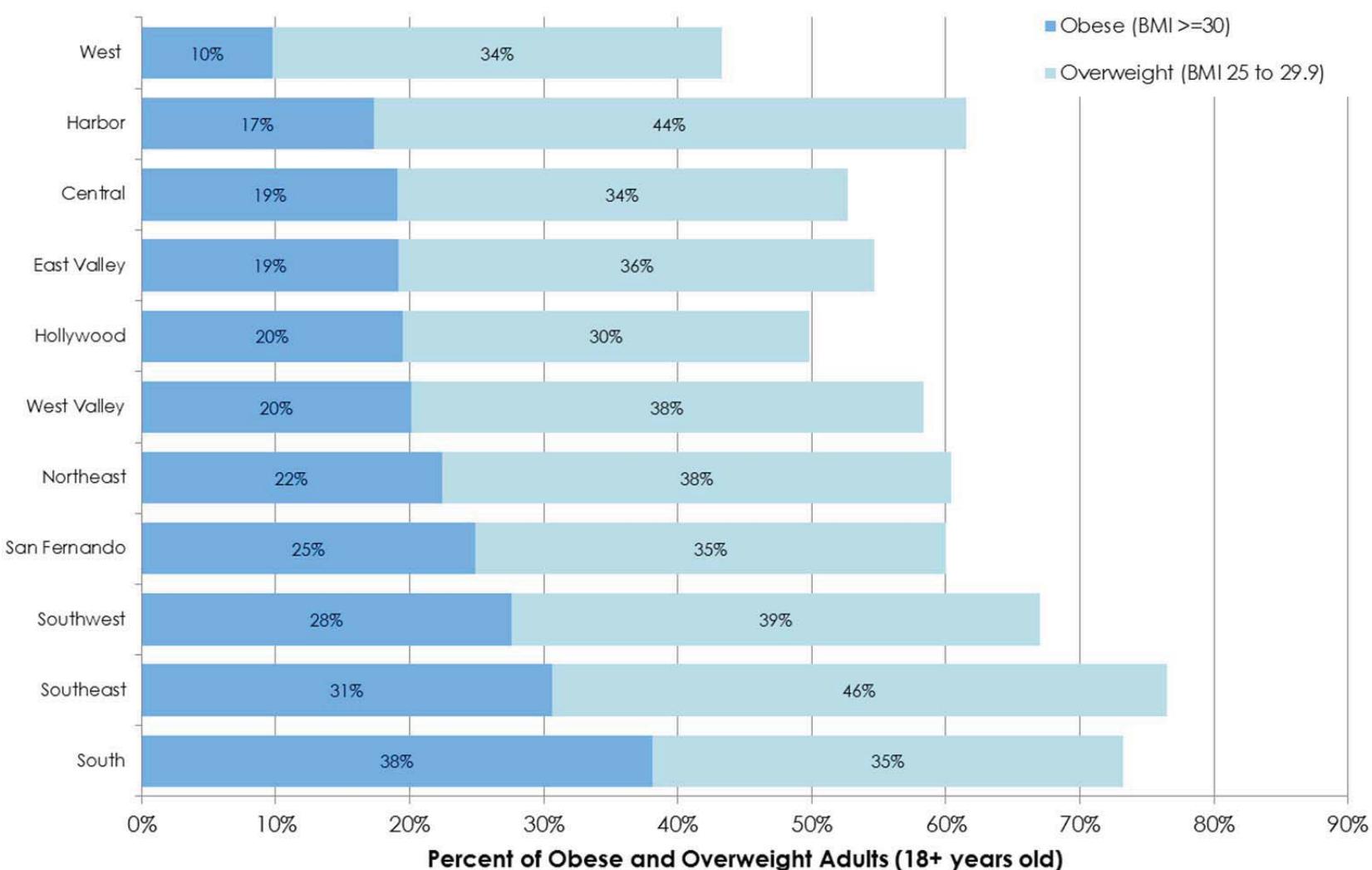
⁸⁶ CDC. (2012, April). Defining Overweight and Obesity. <http://www.cdc.gov/obesity/adult/defining.html>

⁸⁷ CDC. (2012, April). Basics about Childhood Obesity. Retrieved from <http://www.cdc.gov/obesity/childhood/basics.html>

⁸⁸ Guh, Daphne P; Zhang, Wei; Bansback, Nick; Amarsi, Zubin; Birmingham, C Laird; and Anis, Aslam H. (March 2009). "The incidence of co-morbidities related to obesity and overweight: A systematic review and meta-analysis" *BMC Public Health*, 9:88 Retrieved from <http://www.biomedcentral.com/1471-2458/9/88>

⁸⁹ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Obesity/Overweight [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

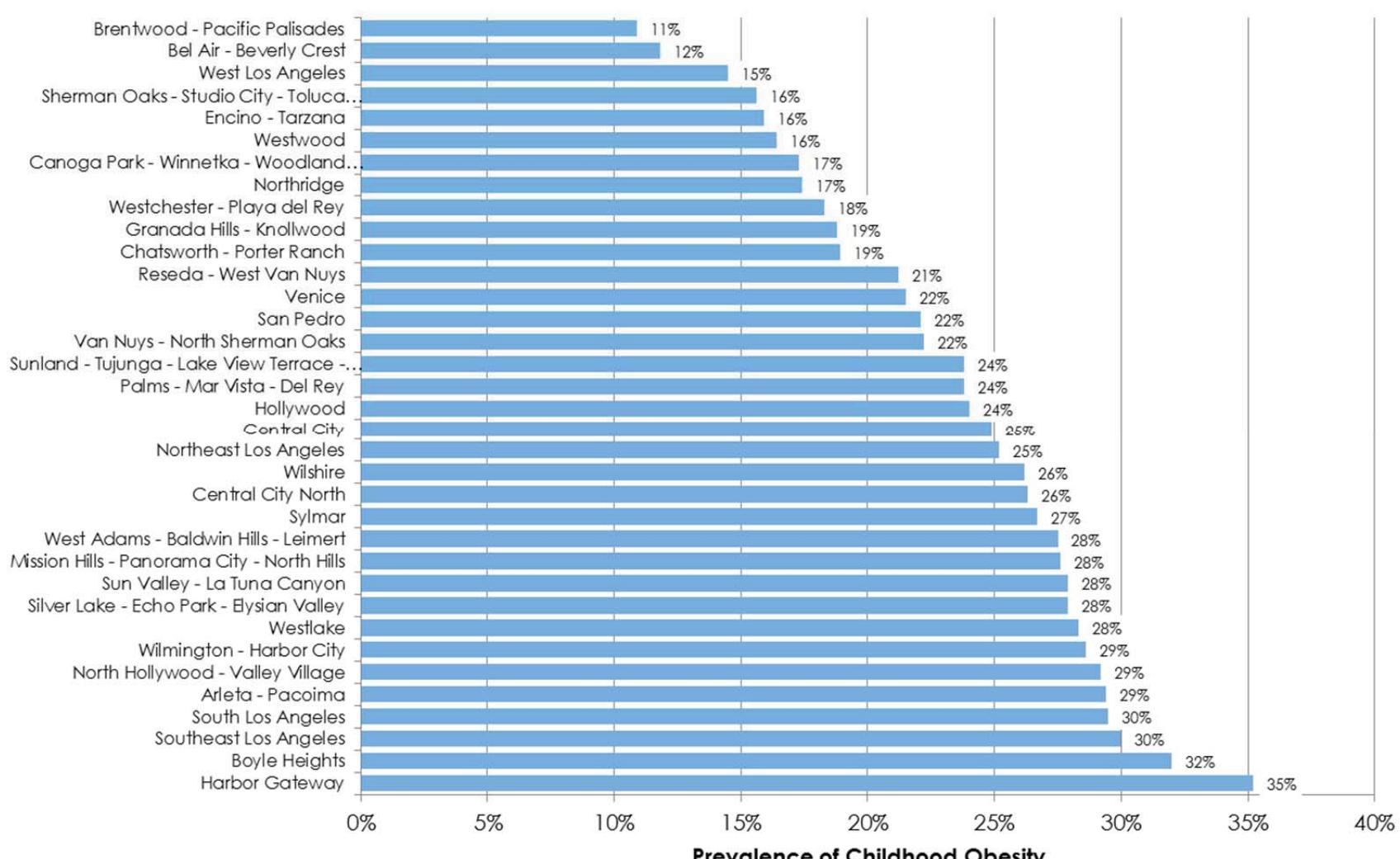
Figure 24: Prevalence of Overweight and Obesity Adults by Health District in 2011



Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. 2011 Los Angeles County Health Survey: Obesity/Overweight [Data File].

In Los Angeles County, obesity rates among school-aged children increased from 19% in 1999 to 22% in 2010. Map 47 and Figure 21 shows the prevalence of childhood obesity by CPAs. The percentage of obese children was derived using Body Mass Index measurements of 5th, 7th, and 9th grade school children from the California Physical Fitness Testing Program. Children were categorized as obese if their BMI exceeded the 95th percentile by age and gender. In five of the 35 CPAs, the prevalence of childhood obesity exceeds 30%, including the Harbor Gateway (35%), Boyle Heights (32%), Southeast Los Angeles (30%), and South Los Angeles (30%) CPAs. The Brentwood-Pacific Palisades (11%) and Bel Air-Beverly Crest (12%) CPAs have the lowest proportions of childhood obesity, and both are less than half the citywide average of 25%.⁹⁰

Figure 25: Prevalence of Childhood Obesity by Community Plan Area in 2010



Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. 2011 Los Angeles County Health Survey: Childhood Obesity by City of Los Angeles Community Planning Area [Data File].

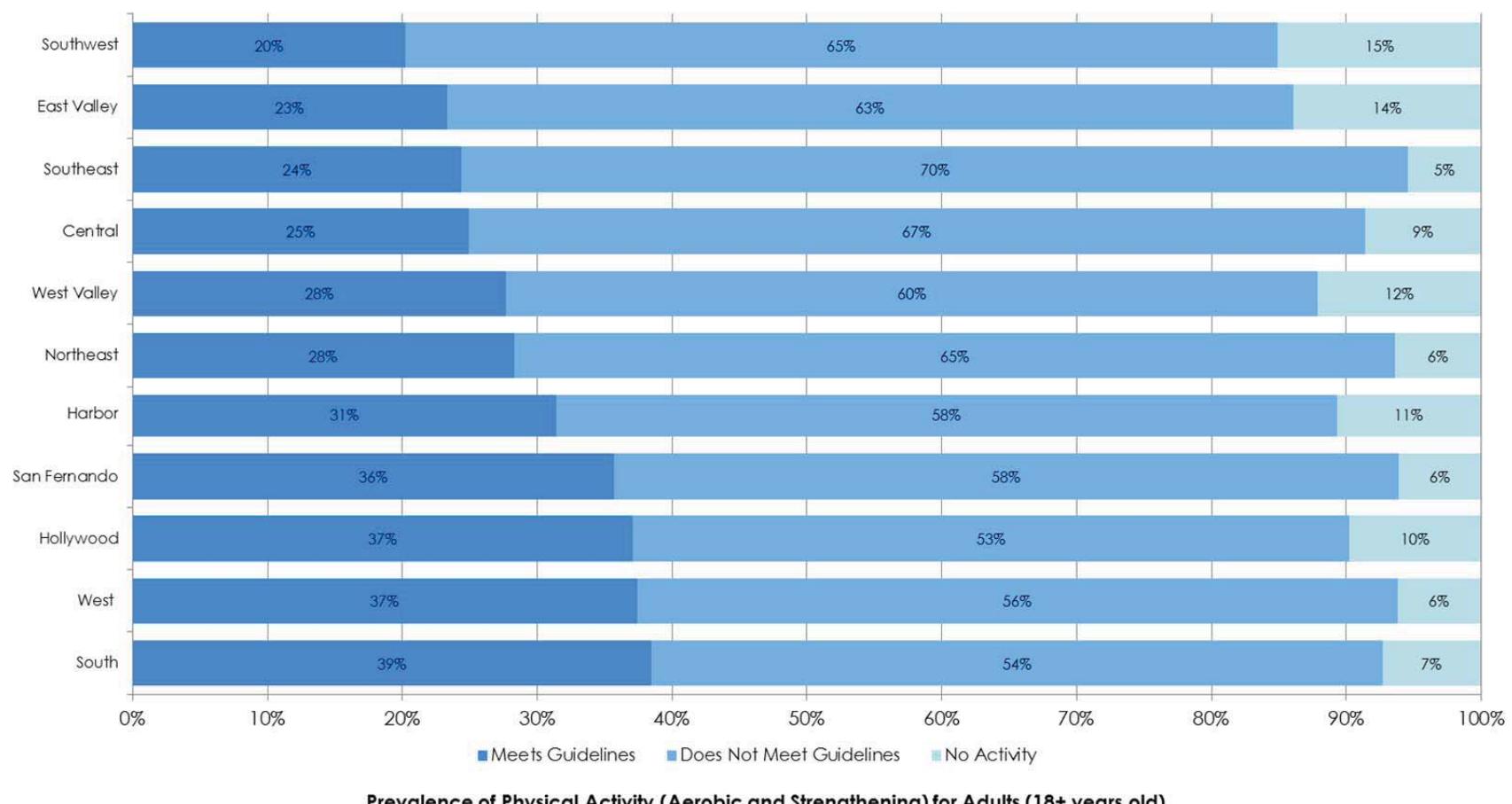
⁹⁰ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Childhood Obesity by City of Los Angeles Community Planning Area [Data File]. Provided by the Los Angeles County Public Health Department.

Physical Activity

Physical activity is important in maintaining health and preventing disease. Regular physical activity can help control weight and reduce the risk of obesity, cardiovascular disease, type II diabetes, and some cancers. Exercise also helps to strengthen bones and muscles and improve mental health and mood, both of which can lead to a longer life.⁹¹ According to the *2008 Physical Activity Guidelines for Americans*, adults should participate in at least 150 minutes a week of moderate intensity physical activity (such as walking), or 75 minutes a week of vigorous-intensity aerobic physical activity (such as running). While no specific amount of time is recommended for muscle-strengthening exercise, such as push-ups, pull-ups, carrying heavy loads, or heavy gardening, the guidelines suggest adults should engage in muscle-strengthening activities two days a week. Children and adolescents should engage in 60 minutes or more of physical activity daily, and muscle-strengthening and bone-strengthening physical activity on at least 3 days of the week.⁹²

In 2011, approximately 30% of Los Angeles County adults age 18 and over reported meeting the physical activity guidelines for aerobic and muscle-strengthening activity. Figure 26 shows the percentage of adults who meet the physical activity guidelines for each HD. The South, West, Hollywood, San Fernando, and Harbor HDs all exceeded the County average. Less than 30% of the adults in the Southwest, East Valley, Southeast, Central, and West Valley HDs reported meeting the physical guidelines. Adults in the Southwest (15%) and East Valley (14%) HDs were the most likely to report engaging in no physical activity.⁹³

Figure 26: Percentage of Adults who Met Physical Activity Guidelines for Aerobic and Muscle-Strengthening Activity Each Week by Health District in 2011



Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. 2011 Los Angeles County Health Survey: Physical Activity - Aerobic & Strengthening [Data File].

In 2011, approximately 29% of children countywide reported engaging in more than 60 minutes of physical activity five days a week. Approximately 60% reported participating in less than 60 minutes of physical activity five days a week, while 11% of the children did not participate in any physical activity. Children who identified as Asian or Pacific Islander (16%) were much less likely to report engaging in more than 60 minutes of physical activity five days a week, while African American children (44%) were the most likely to meet the guideline.⁹⁴

Figure 27 shows the percentage of children age 6 to 17 that reported participating in more than 60 minutes of physical activity, five days a week, for each health district in the City. Nearly half of the children in the South HD (45%) reported meeting the recommended level of physical activity, the highest of any district. Children in the Central HD (16%) were the least likely to report meeting the recommended level of physical activity, though this estimate may be statistically unstable.⁹⁵

⁹¹ CDC. (2011, February 11). Physical Activity and Health: The Benefits of Physical Activity. Retrieved from <http://www.cdc.gov/physicalactivity/everyone/health/index.html>

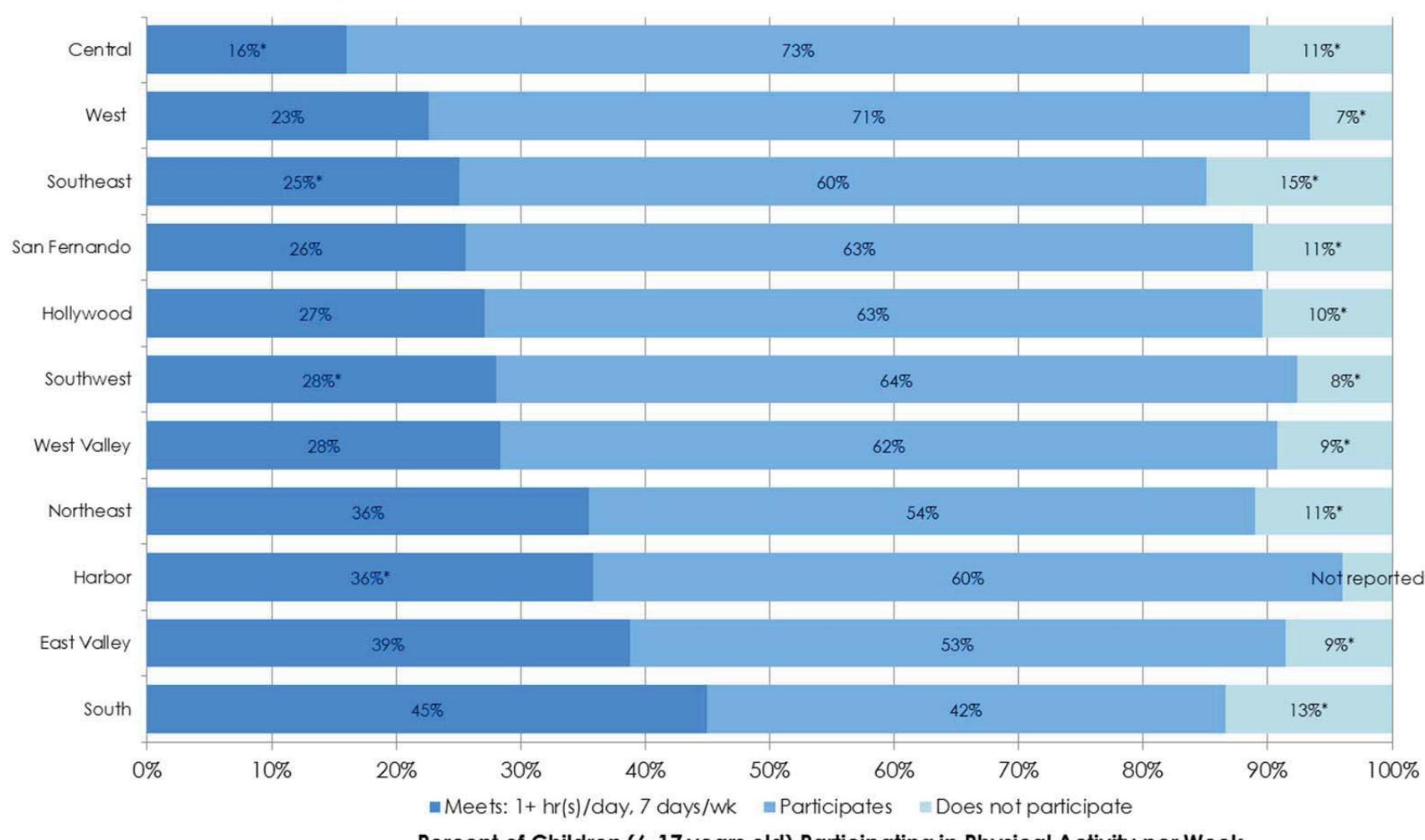
⁹² U.S. Department of Health and Human Services. (2009, August 21). 2008 Physical Activity Guidelines for Americans. Retrieved from <http://www.health.gov/paguidelines/guidelines/summary.aspx>

⁹³ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Physical Activity - Aerobic & Strengthening [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

⁹⁴ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Total Amount of Physical Activity [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

⁹⁵ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Total Amount of Physical Activity [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

Figure 27: Percentage of Children who Participated in Physical Activity per Week by Health District in 2011



*The estimate is statistically unstable (relative standard error ≥23%) and therefore may not be appropriate to use for planning or policy purposes.

Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. 2011 Los Angeles County Health Survey: Total Amount of Physical Activity [Data File].

Low Birth Weight

Low birth weight is a key indicator of overall health. Infants born with a low birth weight (under 2,500 grams or 5.51 pounds) have an increased risk of developing asthma, coronary heart disease, diabetes, and other potentially fatal conditions associated with air pollution or heat.^{96 97 98} Low birth weight infants are also at risk of developing behavioral problems and impaired cognitive growth.⁹⁹

The percentage of live births weighing less than 2,500 grams was 6.8% in California and 7.3% in Los Angeles County in 2010.¹⁰⁰ Map 48 shows the percentage of low birth weight infants by zip code in 2010. In the City, the percentage of low birth weight infants exceeded 10% in 15 zip codes, with zip code 90021 being over 17%. While these zip codes had the highest proportions of low birth weight babies, they did not necessarily have the largest total number. The total number of low birth weight babies in the zip codes 90002, 90003, 90011, 90044, 91331, 90001, 90059, and 91342 exceeded 95.

Smoking and Tobacco Use

In the U.S., tobacco use is the leading cause of preventable death and is responsible for one in five deaths annually. Smoking harms nearly every organ in the body and causes death, cardiovascular disease, respiratory disease, and many types of cancers. Smoking increases the risk and severity of many other health issues, such as infertility, preterm delivery, low birth weight, sudden infant death syndrome, coronary heart disease, and stroke. Even brief repeated exposure to secondhand smoke can be harmful, increasing the risk of heart disease, lung cancer and other health problems in adults and children. Additionally, secondhand smoke can stay in the air long after a cigarette has been extinguished, and can be involuntarily inhaled by nonsmokers.¹⁰¹

Cigarette smoking is linked to one out seven deaths in Los Angeles County and tobacco-related diseases cost the County \$4.3 billion per year.¹⁰² The leading causes of smoking-related deaths are lung cancer, coronary heart disease, and chronic airway obstruction.¹⁰³ In the City of Los Angeles, an estimated 14% of the adult population smoked cigarettes in 2007, accounting for about one million adults. It was estimated that City Council Districts 8 and 9 had among the highest percentages of the adults who smoked for communities in the County. These areas roughly correlate with the South and Southeast CPAs. There were marked characteristics among smokers – men were nearly twice as likely to be smokers as females and African Americans adults were more likely to smoke than adults in any other racial or ethnic group.¹⁰⁴

⁹⁶ Nepomnyaschy L, Reichman NE (2006). Low birthweight and asthma among young urban children. *American Journal of Public Health* 96(9):1604-10.

⁹⁷ Barker DJ, Eriksson JG, Forsen T, Osmond C. (2002). Fetal origins of adult disease: strength of effects and biological basis. *International Journal of Epidemiology* 31(6):1235-9.

⁹⁸ Bateson TF, Schwartz J (2004). Who is sensitive to the effects of particulate air pollution on mortality? A case-crossover analysis of effect modifiers. *Epidemiology* 15(2):143-9.

⁹⁹ Bhutta AT, Cleves MA, Casey PH, Cradock MM, Anand KJ (2002). Cognitive and behavioral outcomes of school-aged children who were born preterm: a meta-analysis. *JAMA* 288(6):728-37.

¹⁰⁰ Los Angeles County Public Health Department. (2010) Low Birthweight. Retrieved from http://publichealth.lacounty.gov/mch/fhop/FHOP2010/Low_very_low_BirthWeight_2010.pdf

¹⁰¹ U.S. Department of Health and Human Services. (2010). How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease, A Report of the Surgeon General. Retrieved from <http://www.surgeongeneral.gov/library/reports/tobaccosmoke/index.html>

¹⁰² County of Los Angeles Public Health. (June 2010). Cigarette Smoking in Los Angeles County: Local Data to Inform Tobacco Policy.

¹⁰³ Los Angeles County Department of Public Health, Office of Health Assessment and Epidemiology. (2006, August). LA Health Trends: Smoking Prevalence among Los Angeles County Adults. Retrieved from <http://publichealth.lacounty.gov/wwwfiles/ph/hae/ha/TobaccoTrends05.pdf>

¹⁰⁴ County of Los Angeles Public Health. (June 2010). Cigarette Smoking in Los Angeles County: Local Data to Inform Tobacco Policy.

Access to Care

Health Care Shortage Areas and Access

A Health Professional Shortage Area (HPSA) is a federal designation given to areas that demonstrate a shortage of healthcare professionals. This designation is based on a ratio of population to physicians and access to healthcare. HPSA are defined for primary care professionals, dentists, and mental health professionals.¹⁰⁵

There are shortages of primary care health professionals in the Southeast Los Angeles, South Los Angeles, Wilmington-Harbor City, North Hollywood-Valley Village, Arleta-Pacoima, and the Venice CPAs, which is a chronic problem in many underserved areas. As shown on Map 51, over 700,000 people lived in these HPSAs in 2010, with nearly half living in the Southeast Los Angeles and South Los Angeles CPAs. While there were fewer dental and mental HPSAs than primary care HSPAs in the City of Los Angeles in 2010, dental professional shortage areas covered portions of the Central City, Boyle Heights, and Southeast Los Angeles CPAs, and mental health shortage areas covered parts of the Palms-Mar Vista-Del Rey and Venice CPAs.

Along with health professional shortages, the distance and access to transportation and health care facilities can impact health care utilization among the elderly, poor, and Non-White populations.^{106 107} The distance to hospitals in central-city areas has a significant effect on whether children and the elderly received preventative care.¹⁰⁸

¹⁰⁵ For primary care services, the U.S. Department of Health and Human Services (HHS) defines an HPSA as having a population to physician ratio of 3,500 people to 1 physician, or 3,000 to 1 plus the population demonstrates an unusually high need for primary medical care services. HSS defines high need as having high rates of births or infant deaths, or a large proportion of the population with incomes below the poverty level. For dental services, the population to dentist ratio is 5,000 to 1, or 4,000 to 1 plus the population demonstrates an unusually high need. HSS defines high needs as a large proportion of the population with incomes below the poverty level or a large population that does not have access to fluoridated water. For mental health services, the HHS defines an HPSA as having a ratio of population to core mental health professionals¹⁰⁵ of 6,000 to 1 and a population to psychiatrist ratio of 20,000 to 1; or a population to CMHP ratio of 9,000 to 1: or a population to psychiatrist ratio of 30,000 to 1. For more information, visit the U.S. Department of Health and Human Services. (1993). HPSA Designation Criteria. Retrieved from <http://bhpr.hrsa.gov/shortage/hpsas/designationcriteria/designationcriteria.html>

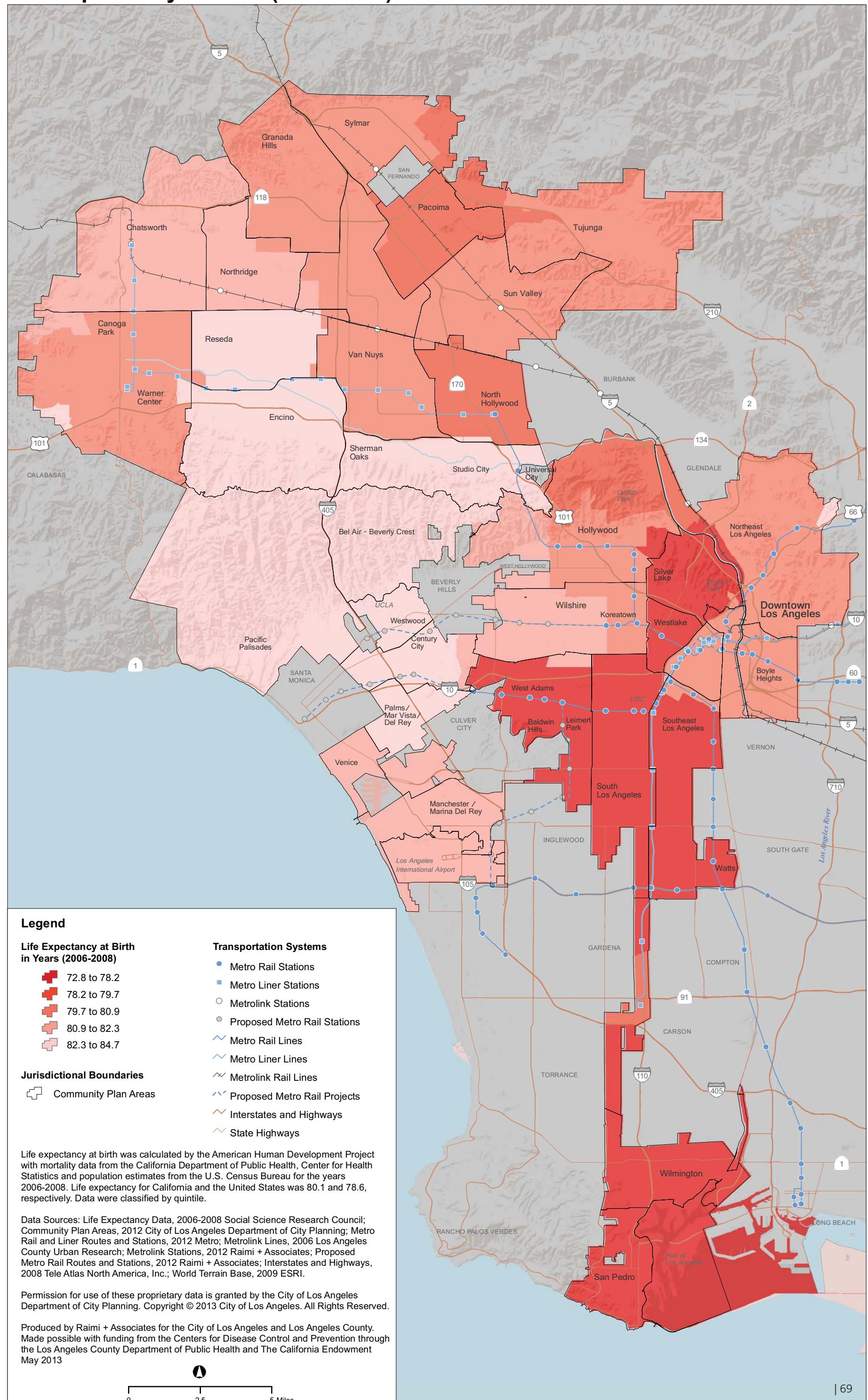
¹⁰⁶ Nemet, G. F., and Bailey, A. J. (2000). Distance and health care utilization among the rural elderly. *Social Science and Medicine*, 50(9), pp. 1197-1208.

¹⁰⁷ Mattson, J. (2010, December). Transportation, Distance, and Health Care Utilization for Older Adults in Rural and Small Urban Areas. Small Urban & Rural Transit Center Upper Great Plains Transportation Institute North Dakota State University, Fargo. Retrieved from <http://www.ugpti.org/pubs/pdf/DP236.pdf>

¹⁰⁸ Currie, J. (1999, July). Distance to Hospital and Children's Access to Care: Is Being Closer Better, and for Whom? National Bureau of Economic Research Working Paper Number 6836. Retrieved from <http://www.nber.org/papers/w6836>

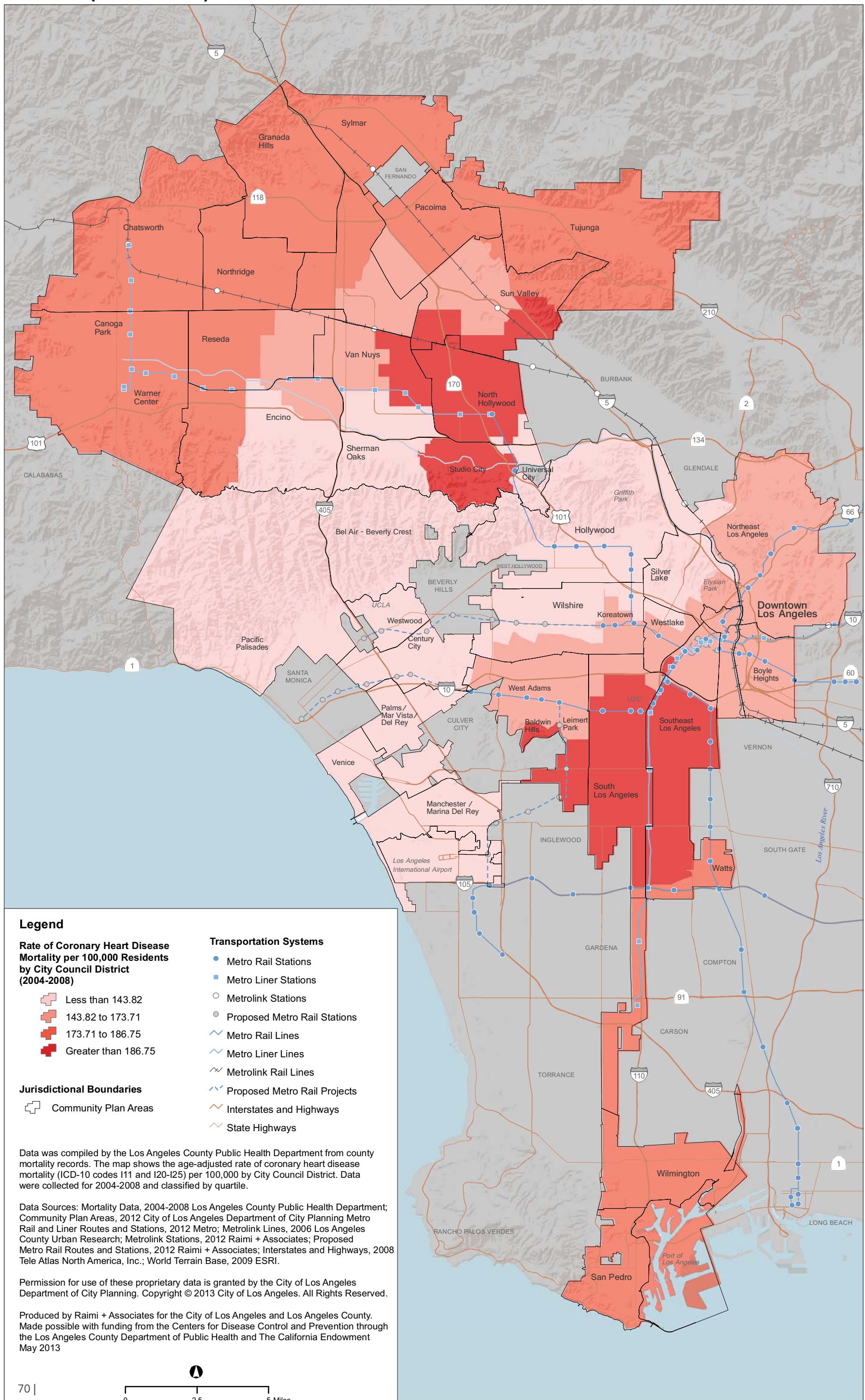
Map 37

Life Expectancy at Birth (2006-2008)



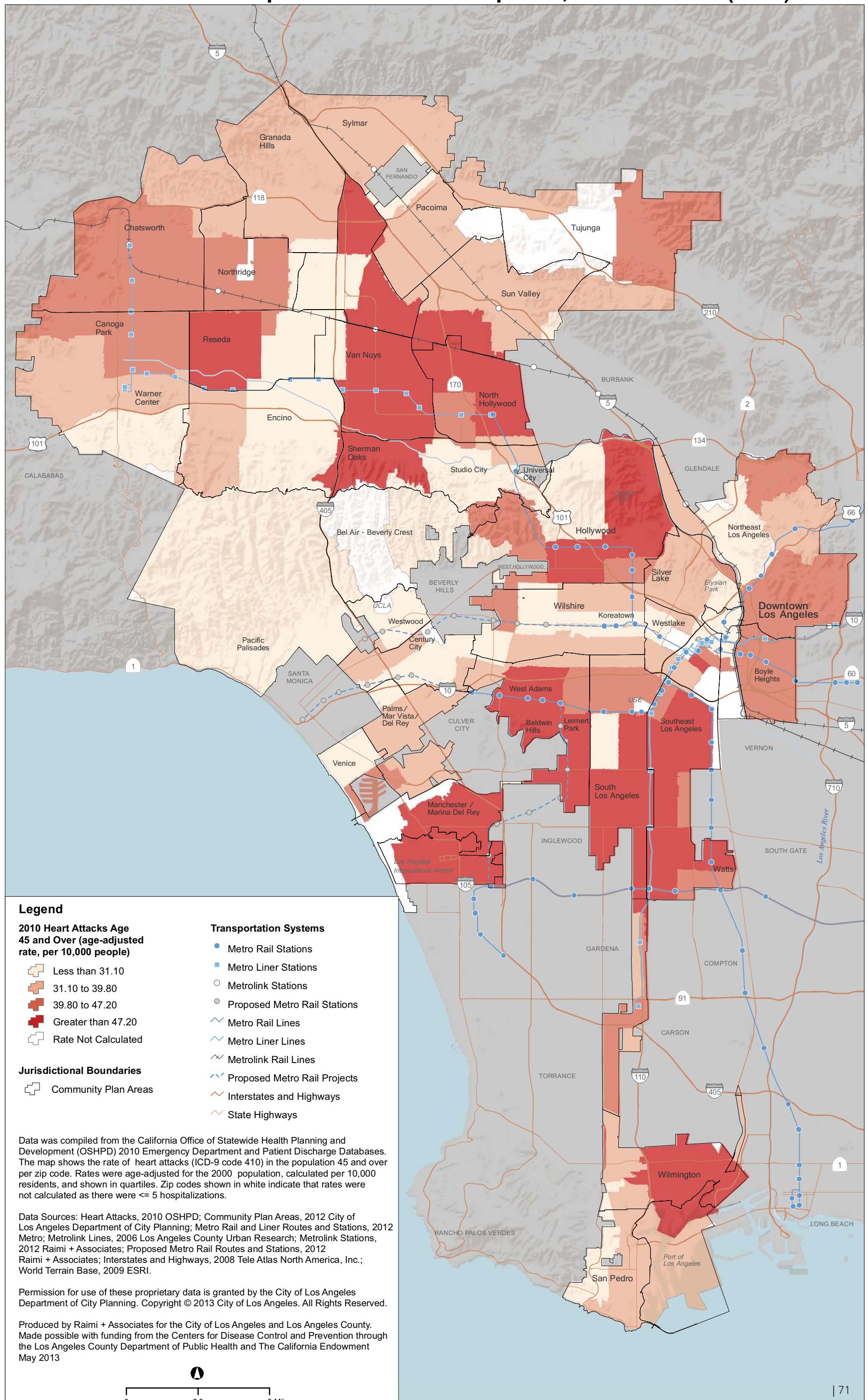
Map 38

Coronary Heart Disease Mortality Rate per 100,000 Residents by City Council District (2004-2008)



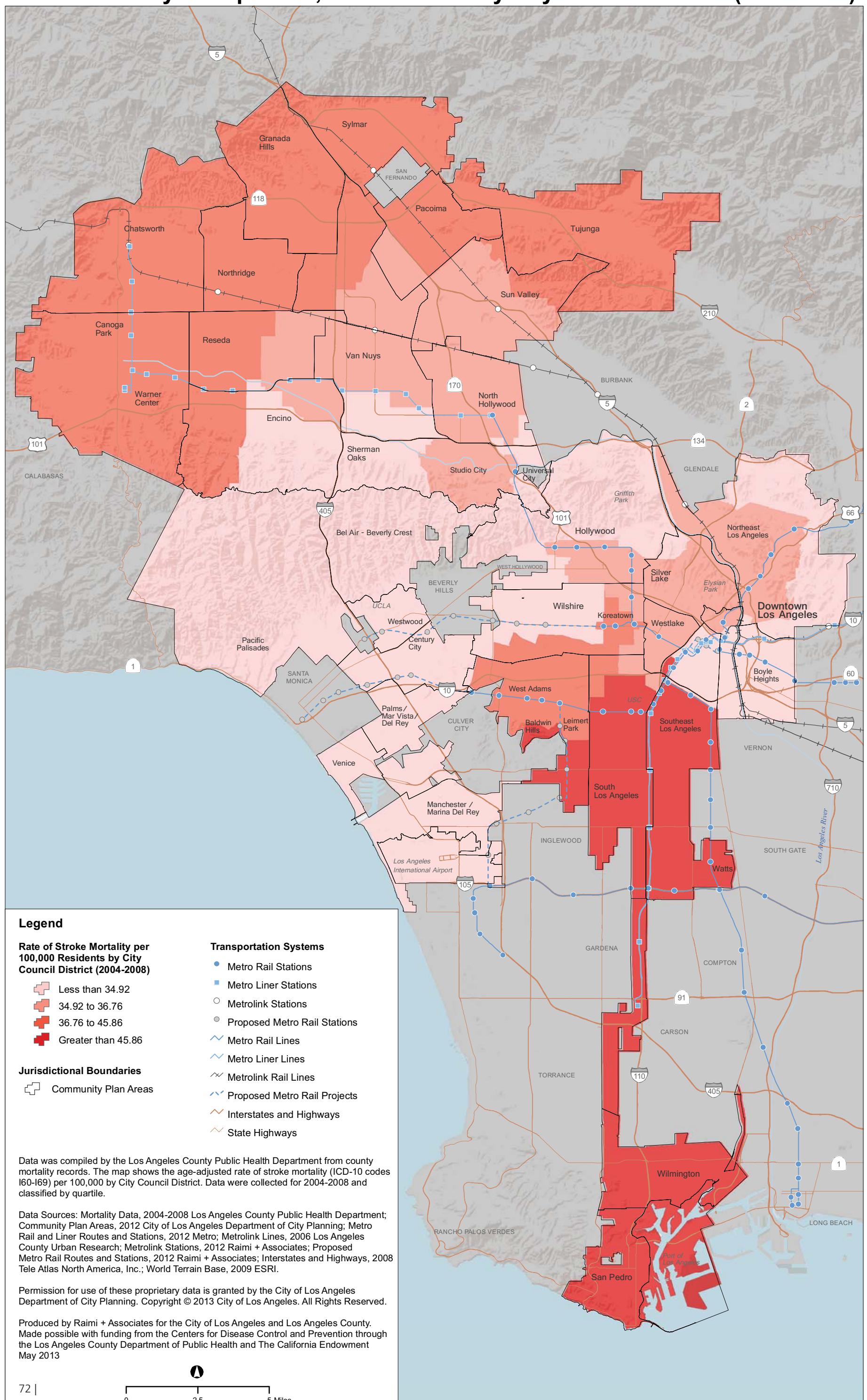
Map 39

Heart Attacks Rate in Population 45 and Over per 10,000 Residents (2010)



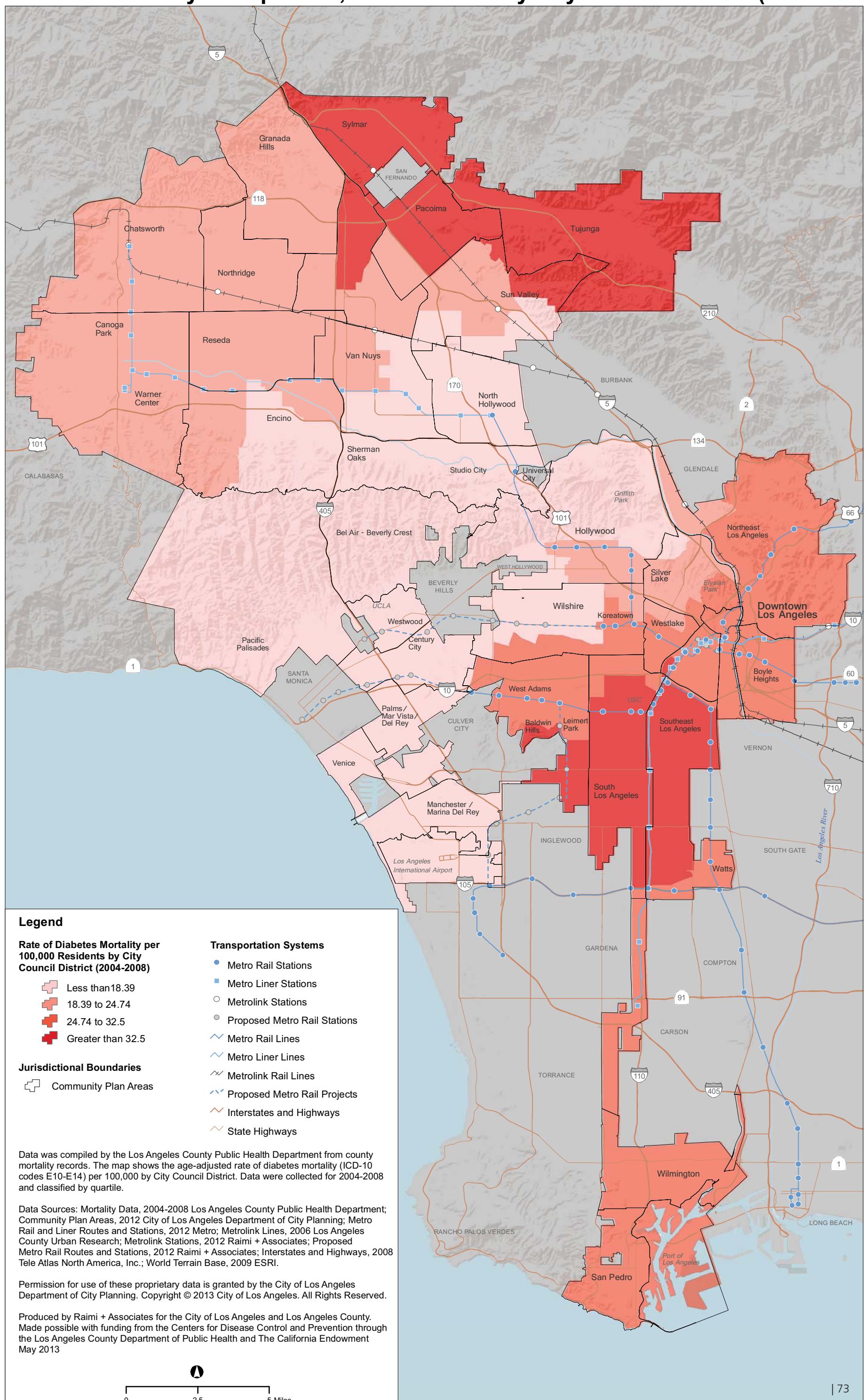
Map 40

Stroke Mortality Rate per 100,000 Residents by City Council District (2004-2008)



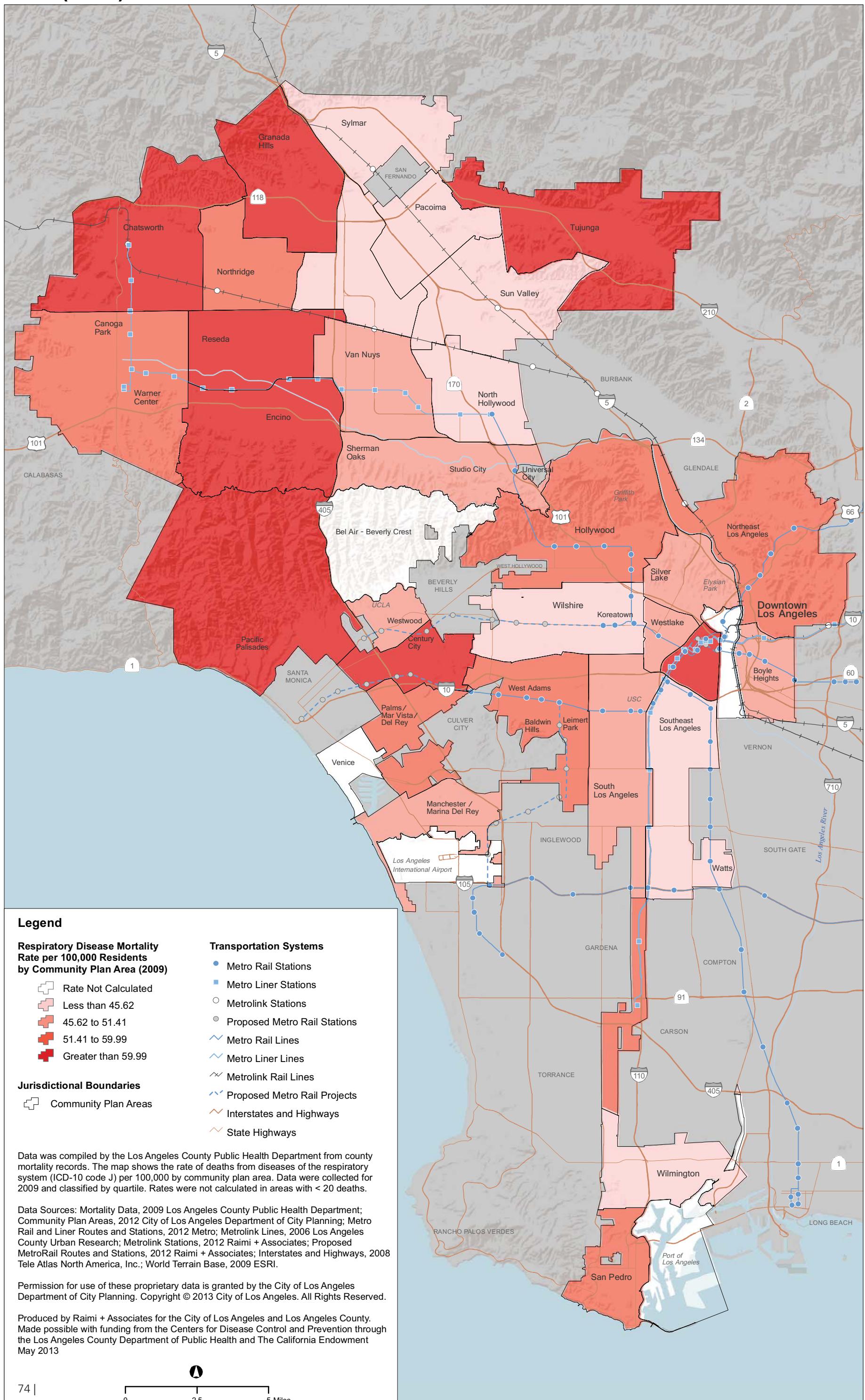
Map 41

Diabetes Mortality Rate per 100,000 Residents by City Council District (2004-2008)



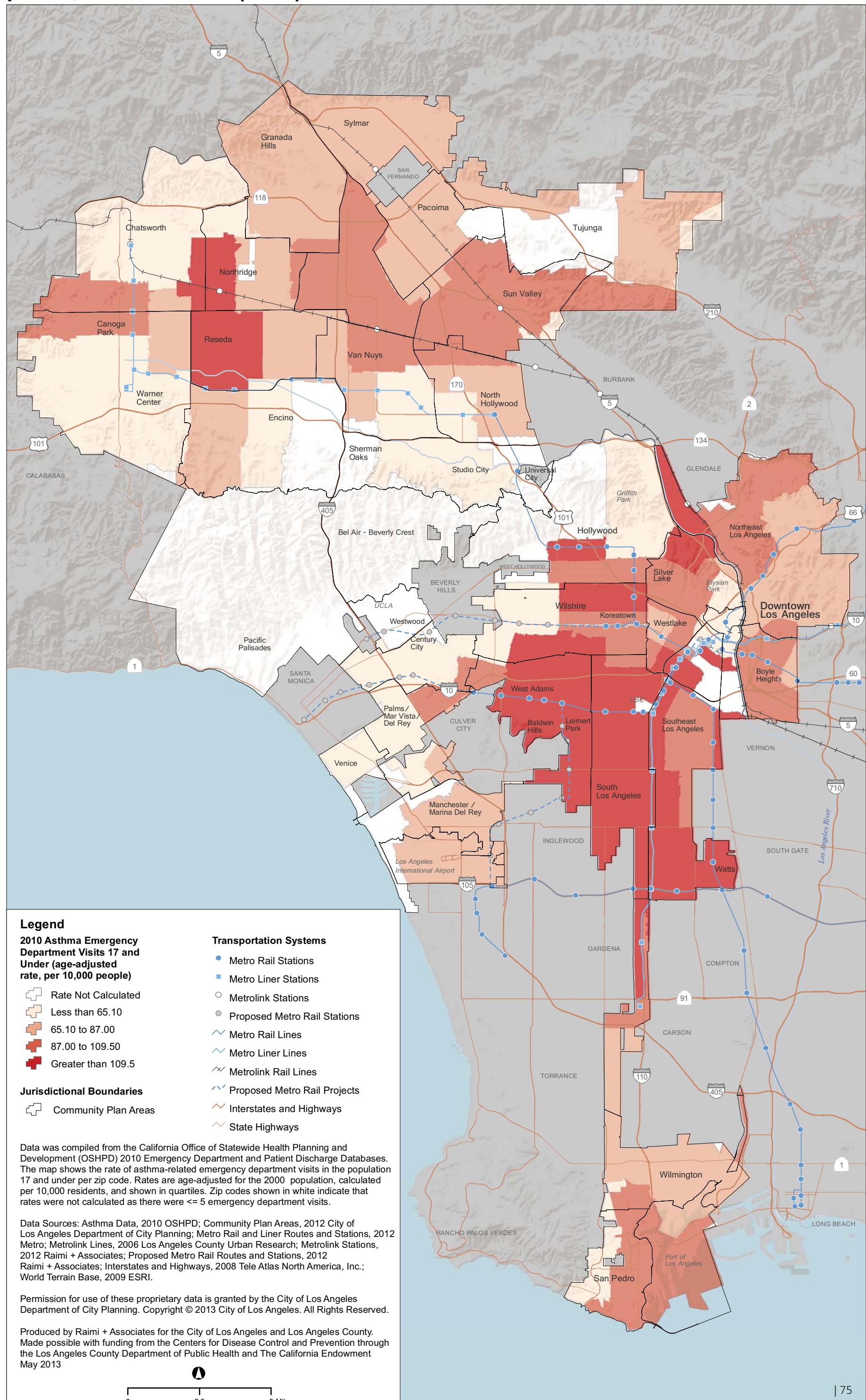
Map 42

Respiratory Disease Mortality Rate per 100,000 Residents by Community Plan Area (2009)



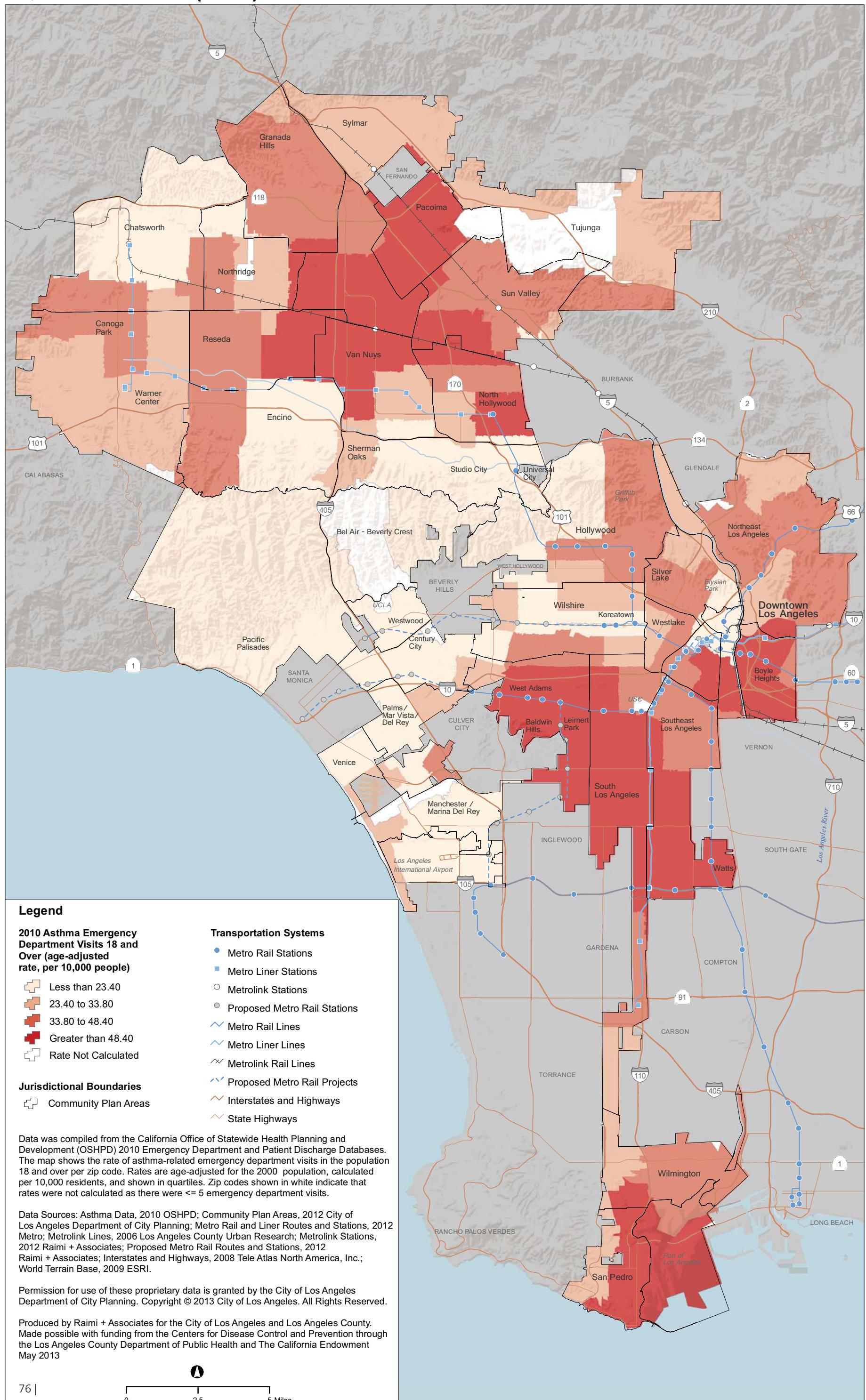
Map 43

Asthma-Related Emergency Department Visit Rate in Population 17 and Under per 10,000 Residents (2010)



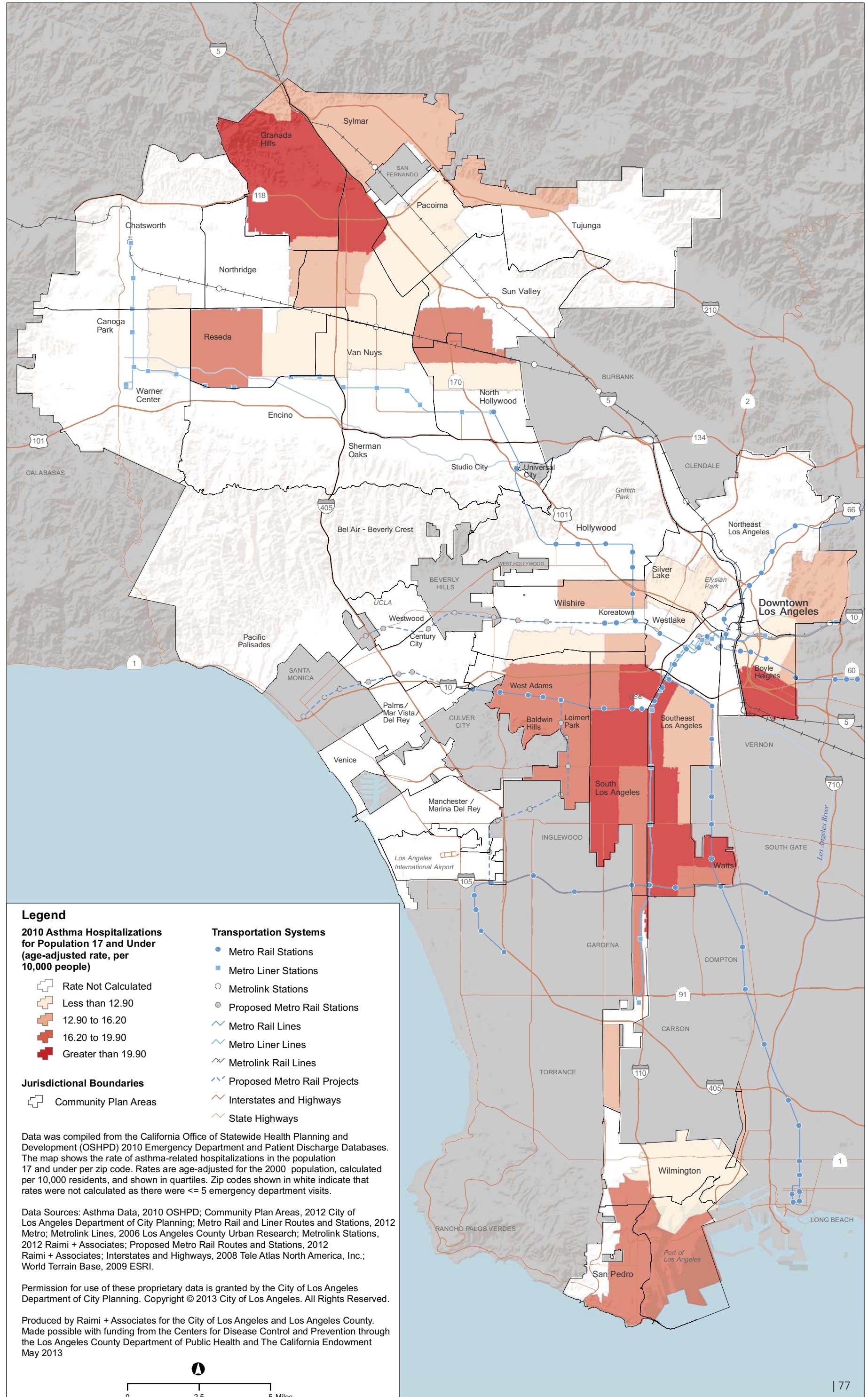
Map 44

Asthma-Related Emergency Department Visit Rate in Population 18 and Over per 10,000 Residents (2010)



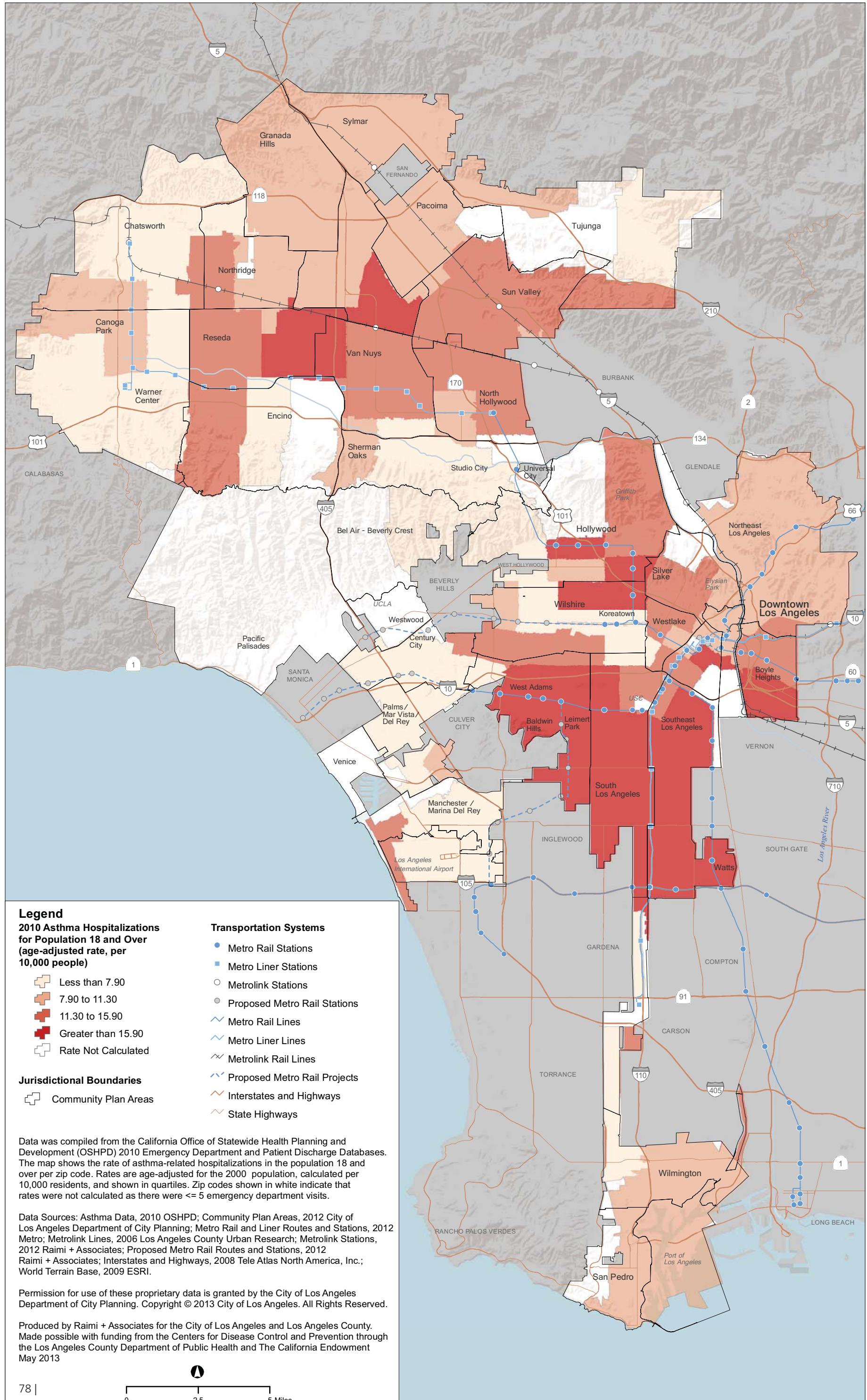
Map 45

Asthma-Related Hospitalization Rate in Population 17 and Under per 10,000 Residents (2010)



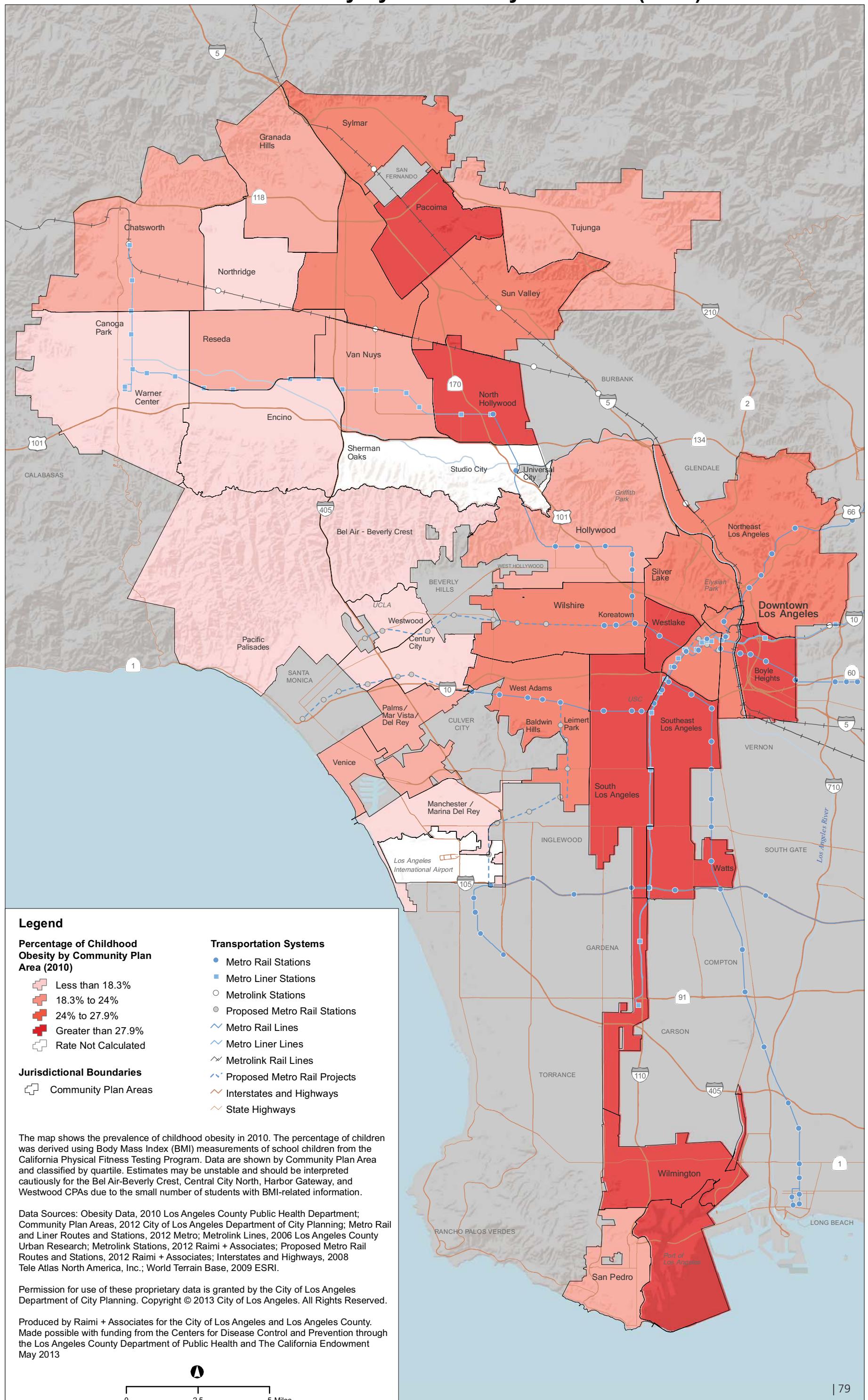
Map 46

Asthma-Related Hospitalization Rate in Population 18 and Over per 10,000 Residents (2010)



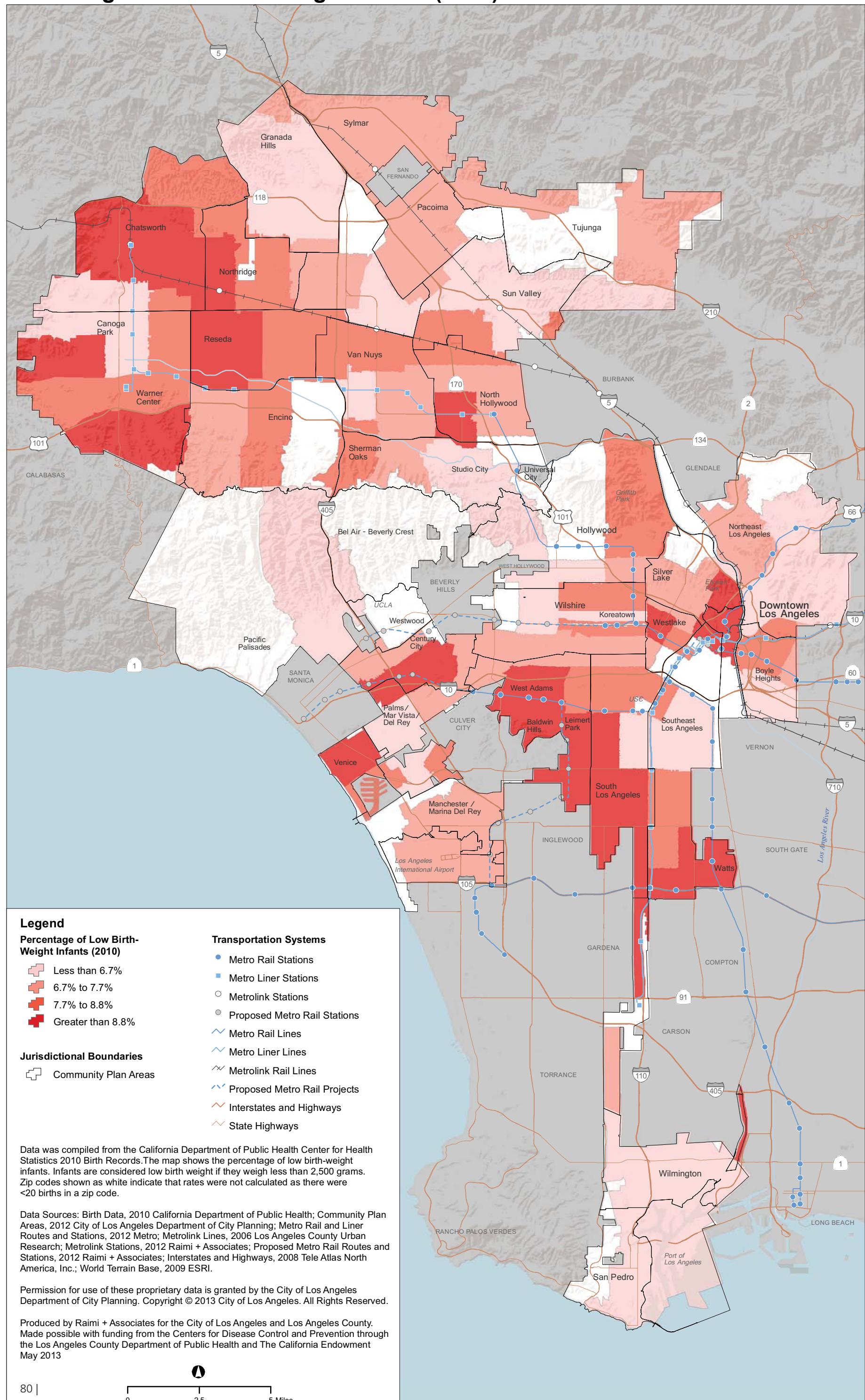
Map 47

Prevalence of Childhood Obesity by Community Plan Area (2010)



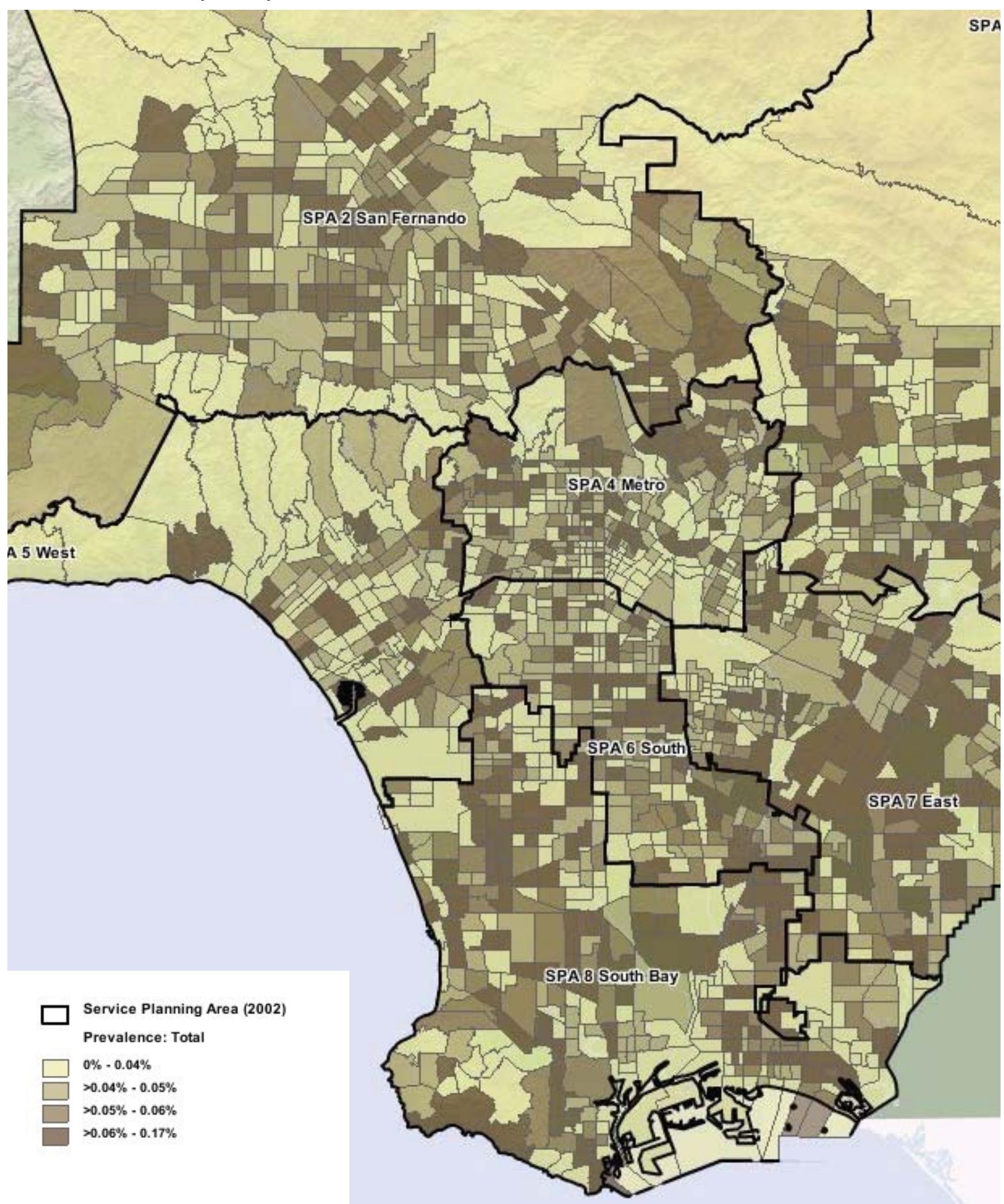
Map 48

Percentage of Low Birth-Weight Infants (2010)



Map 49

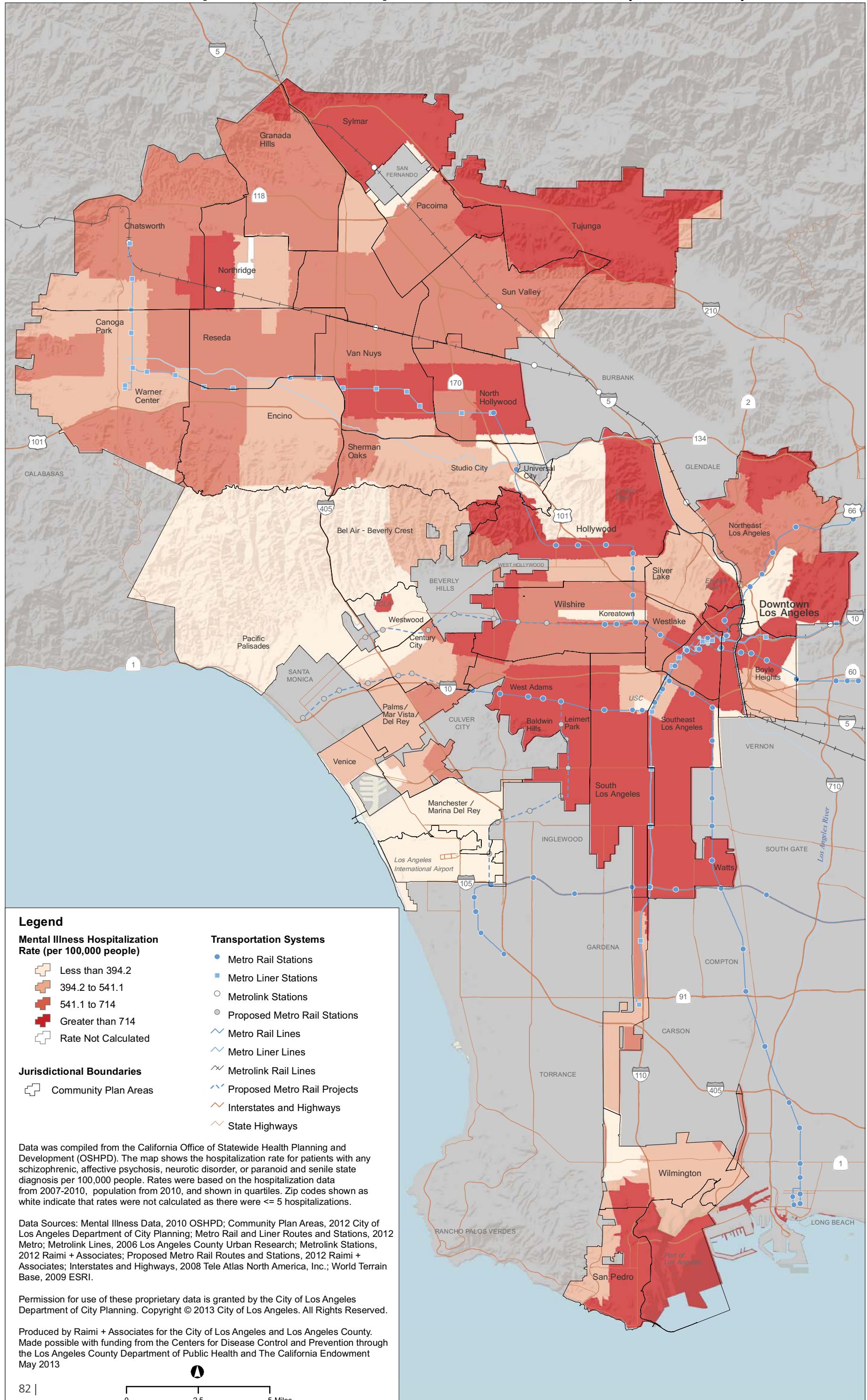
Estimated Prevalence of Serious Emotional Disturbance and Serious Mental Illness (2008)



Estimated Prevalence of Serious Emotional Disturbance and Serious Mental Illness: The map shows the proportion of the population with a serious emotional disturbance (SED) in children and serious mental illness (SMI) in adults. The map is from the Los Angeles County Department of Mental Health for 2008.

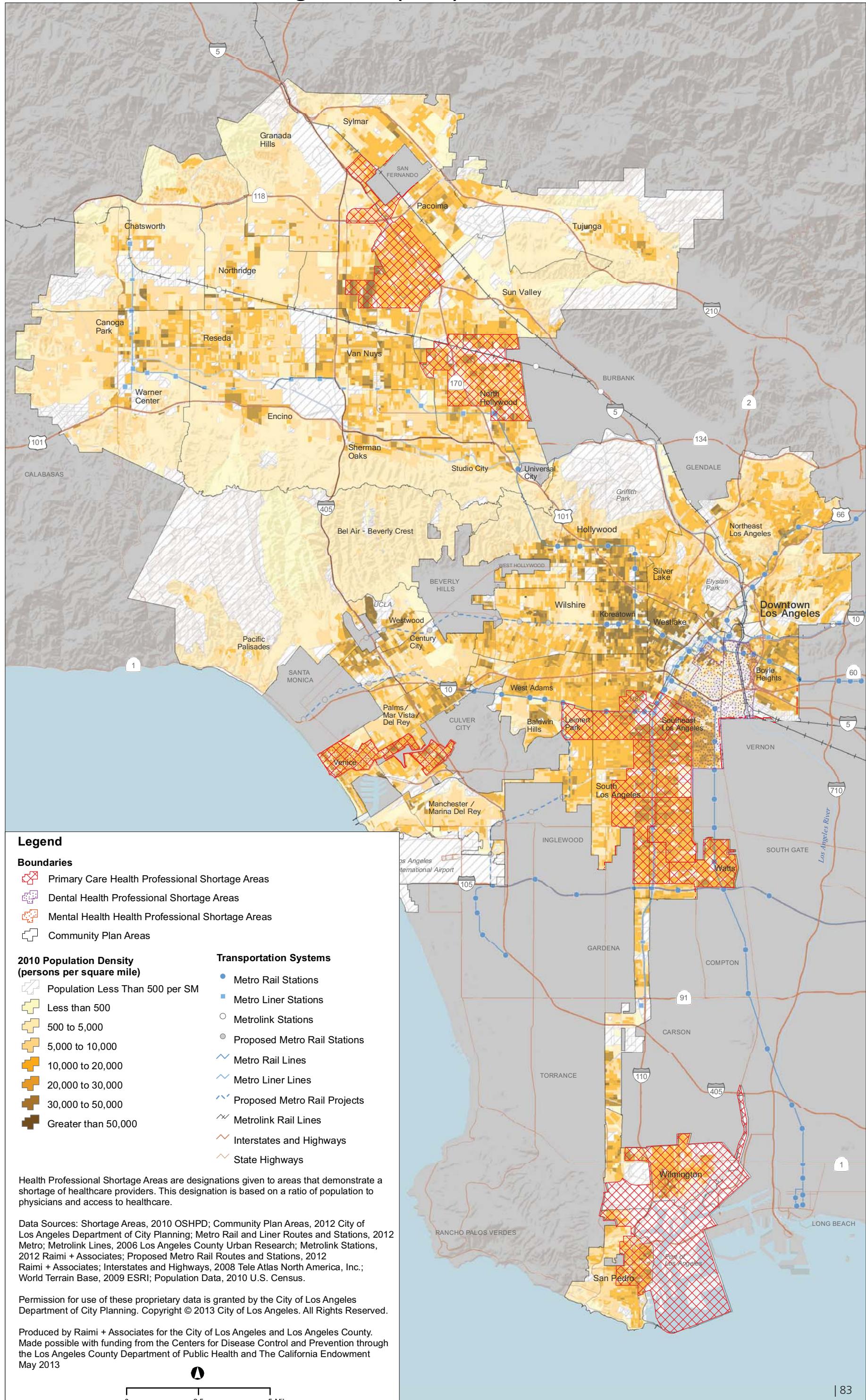
Map 50

Mental Illness Hospitalization Rate per 100,000 Residents (2007-2010)



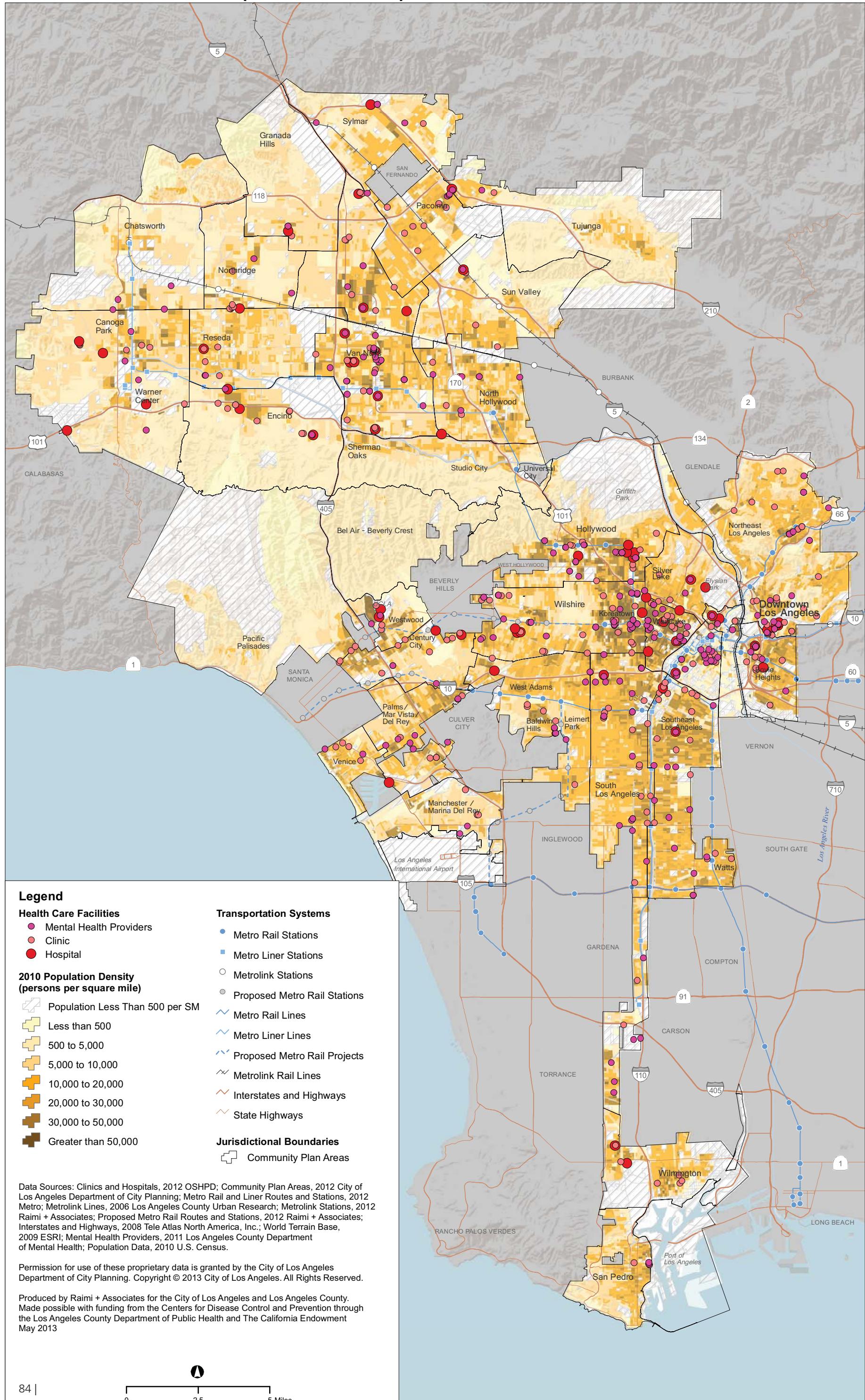
Map 51

Health Professional Shortage Areas (2010)



Map 52

Health Care Facilities (2011 and 2012)



7 | Land Use

Land use and the urban environment play a key role in the health and well-being of residents. These community characteristics affect a resident's level of physical activity, access to nutritious foods, and exposure to pollutants. Residents who live in car-dependent communities have an increased risk for health problems, such as obesity, diabetes, and social isolation. Research indicates that certain land use and urban design characteristics can encourage and facilitate healthier behaviors. These characteristics include:

- Walkable areas with a diverse mix of uses (i.e., homes and jobs are closer together and within walking distance of goods and services, schools, parks and other destinations);
- Attractive streetscapes and short block lengths with safe crossings;
- Higher population and employment densities in strategic areas; and
- A balance of employment within each jurisdiction.

Together, these land use and design characteristics can reduce the need to drive and increase a resident's opportunity to use active modes of transportation.

MAPS AND INDICATORS

The Land Use Chapter assesses data and information on land use, block size and structure, parks and open space, and employment areas. The following list describes the maps included at the end of this section and associated indicators in this section.

- **Walkability:** Walkability is a measure of the pedestrian environment within each census tract. The Walkability Index is based on a number of factors that influence whether a person will walk, including land use diversity, residential density, retail density, and intersection density. Higher scores represent more walkable areas. Land use and intensity data is from the 2012 Los Angeles County Office of the Assessor's parcel database and intersection density is from the City of Los Angeles for 2012.
- **Intersection Density:** The map shows the number of intersections per square mile for each census tract. Data is from the City of Los Angeles for 2012.
- **Block Size:** The map shows average block size in the City of Los Angeles. Data is from the 2010 U.S. Census.
- **Population Density on Blocks Smaller than 8.26 Acres:** The map shows the population density of blocks that are smaller than 8.26 acres (approximately 600-foot by 600-foot blocks). Data is from the 2010 U.S. Census.
- **Land Use Mix:** The map shows a composite score for land use mix within each census tract in the City of Los Angeles. The index assesses six different uses: single family residential, multifamily residential, retail, entertainment, office, and institutional or community-serving. Values were normalized between 0 and 1, with 1 representing an even distribution of the 6 uses within the tract. Land use data is derived from 2012 Los Angeles County Office of the Assessor's parcel information.
- **Land Use Diversity:** The map shows the number of diverse uses within each census tract. The list of diverse uses was derived from the LEED for Neighborhood Development Checklist. The list includes 19 uses separated into four categories: food retail, community-serving retail, services, civic and community facilities. The 2012 data was derived from Los Angeles County Office of the Assessor's parcel information and other data sources.
- **Existing Residential Land Use:** The map shows single family, manufactured housing (such as mobile homes) and multifamily housing units by parcel for 2012. Data is derived from Los Angeles County Office of the Assessor's parcel information.
- **Existing Commercial Land Use:** The map shows commercial uses by parcel. Commercial uses include stores, department stores, supermarkets, shopping centers (neighborhood and regional), office buildings, hotels and motels, professional buildings, restaurants, wholesale outlets, banks, service shops and stations, and auto services. The 2012 data is derived from Los Angeles County Office of the Assessor's parcel information.
- **Existing Industrial Land Use:** The map shows light and heavy industrial uses by parcel. The 2012 data is derived from Los Angeles County Office of the Assessor's parcel information.
- **Park Level of Service (Acres per 1,000 Residents):** The map shows the acres of parks per 1,000 residents for each community plan area. This includes city and county parks, state parks, and federal parks, but it does not include features such as cemeteries, golf courses, amusement parks, or senior centers. Data is from the City of Los Angeles and Los Angeles County for 2012.
- **Park Access:** The map shows the population density of census blocks within one-half mile of a park or open space. Distances are calculated based on the street network. Data is from the 2010 U.S. Census, the City of Los Angeles, and Los Angeles County.
- **Employment Density:** The map shows the employment density in jobs per square mile for 2010. Data is from the 2010 U.S. Census LEHD Survey and is displayed at the census block level.
- **Trade, Transportation, and Utility Sector Employment Density:** The map shows the employment density of utility, retail trade, wholesale trade, and transportation and warehousing jobs. Data is from the 2010 U.S. Census LEHD Survey and is displayed at the census block level.
- **Goods-Producing Sector Employment Density:** The map shows the employment density of agriculture, mining, construction, and manufacturing jobs. Data is from the 2010 U.S. Census LEHD Survey and is displayed at the census block level.
- **Professional and Business Service Sector Employment Density:** The map shows the employment density of information, professional, scientific and technical services, management, and administration and support jobs. Data is from the 2010 U.S. Census LEHD Survey and is displayed at the census block level.
- **Government Sector Employment Density:** The map shows the employment density of public administration jobs. Data is from the 2010 U.S. Census LEHD Survey and is displayed at the census block level.
- **Education and Health Services Sector Employment Density:** The map shows the employment density of education and health care and social assistance jobs. Data is from the 2010 U.S. Census LEHD Survey and is displayed at the census block level.
- **Leisure and Hospitality Sector Employment Density:** The map shows the employment density of arts, entertainment, recreation, accommodation, and food service jobs. Data is from the 2010 U.S. Census LEHD Survey and is displayed at the census block level.

- **Finance, Insurance, and Real Estate Sector Employment Density:** The map shows the employment density of finance, insurance, and real estate sector jobs. Data is from the 2010 U.S. Census LEHD Survey and is displayed at the census block level.

KEY FINDINGS

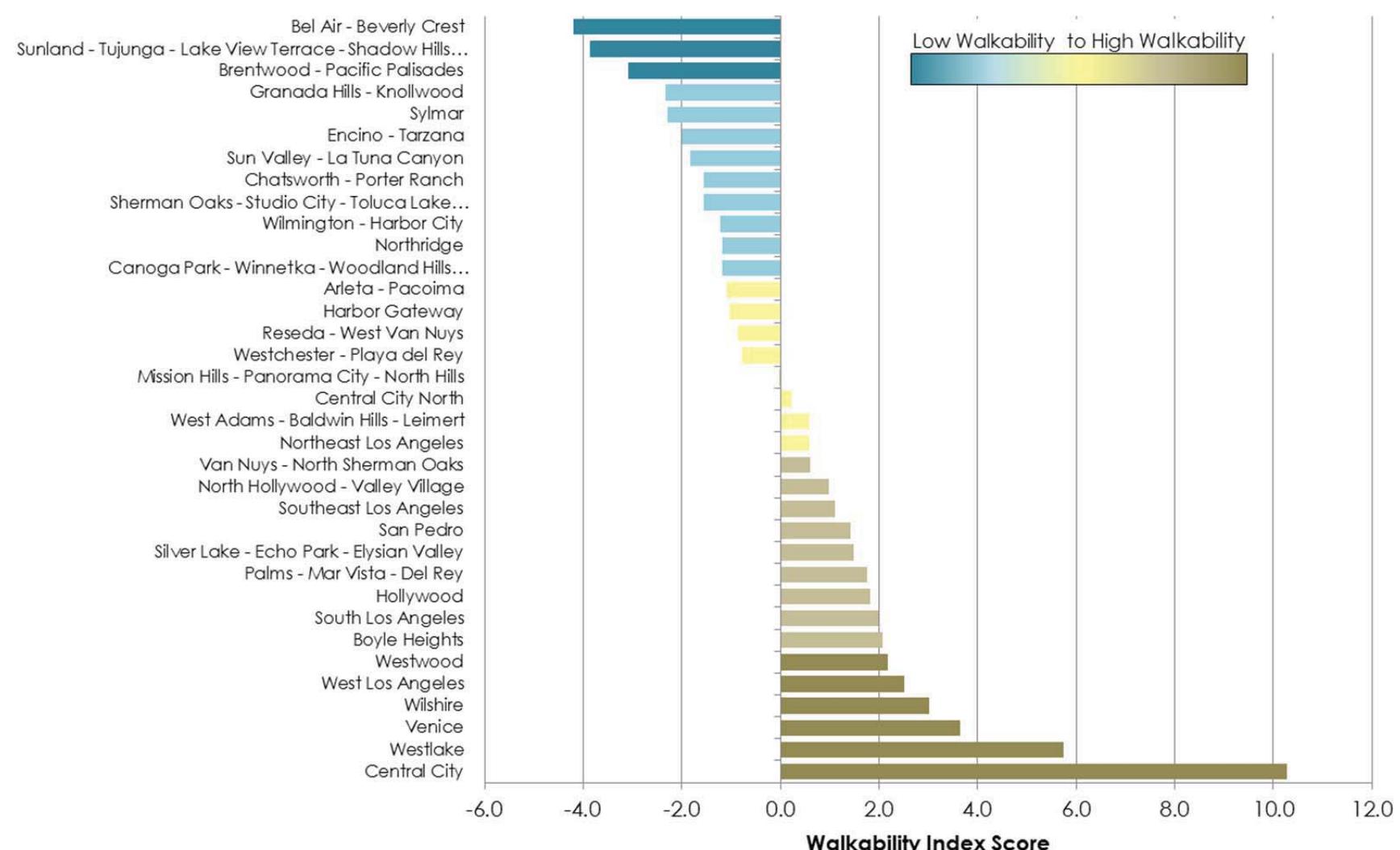
WALKABILITY

Walking is one of the easiest and least costly means of maintaining and/or increasing one's level of physical activity and improving one's health. Walkable areas provide safe, appealing, and comfortable environments for pedestrians that encourage physical activity and reduce pedestrian injuries. Health benefits include reduced illness and death associated with heart disease, diabetes, obesity, and some cancers; reduced incidence of respiratory illnesses; and improved traffic safety.^{109 110 111} Studies have found that more walkable areas facilitate higher levels of physical activity and positive health benefits.¹¹²

The Walkability Index is a quantitative tool used to measure the pedestrian environment within a geographic area. The Walkability Index is based on a model developed for King County, Washington and Baltimore, Maryland.¹¹³ It includes four components: land use mix, residential density, retail density, and intersection density. Higher scores represent more walkable areas. Map 53 shows the Walkability Index score for each census tract in Los Angeles. Tracts in the Central City, Westlake, Hollywood, and Venice CPAs have the highest relative Index scores.

Figure 28 shows the Walkability Index Score for each CPA. Central City had the highest composite Walkability score (10.3), followed by Westlake, Venice, Wilshire, and West Los Angeles. Bel Air-Beverly Crest (-4.2) and Sunland-Tujunga-Shadow Hills-Lake View Terrace-East La Tuna Canyon (-3.9) had the lowest scores.

Figure 28: Walkability Index Score by Community Plan Area in 2012



Source: Raimi + Associates. (2012). *Walkability Analysis for the City of Los Angeles*.

LAND USE MIX

Research shows that a good mix of land uses can increase walking and other physical activity. Areas with a greater diversity of land uses offer more destinations for non-automobile trips, promoting physical activity and lower risks of chronic diseases for residents and employees.^{114 115}

To evaluate the land use mix, a land use dissimilarity index was created for each census tract and each CPA. The Land Use Mix Index quantifies the area of six different uses including single family residential, multifamily residential, retail, entertainment, office, and

¹⁰⁹ Edwards, R. D. (2008). Public Transit, Obesity, and Medical Costs: Assessing the Magnitudes. *Preventive Medicine*. 46(1), pp. 14-21.

¹¹⁰ Ewing, R., Schieber, R., and Zegeer C. V. (2003). Urban Sprawl as a Risk Factor in Motor Vehicle Occupant and Pedestrian Fatalities. *American Journal of Public Health*. 93(9), pp. 1541-1545.

¹¹¹ Frank, L. D., et. al. (2010). Carbonless Footprints: Promoting Health and Climate Stabilization through Active Transportation. *Preventive Medicine*. 50, Supplement. pp. S99-S105.

¹¹² Handy, S. (2004). Critical Assessment of the Literature on the Relationships among Transportation, Land Use, and Physical Activity. Prepared for the Committee on Physical Activity, Health, Transportation, and Land Use. Transportation Research Board Special Report 282. Retrieved from <http://onlinepubs.trb.org/onlinepubs/archive/downloads/sr282papers/sr282Handy.pdf>

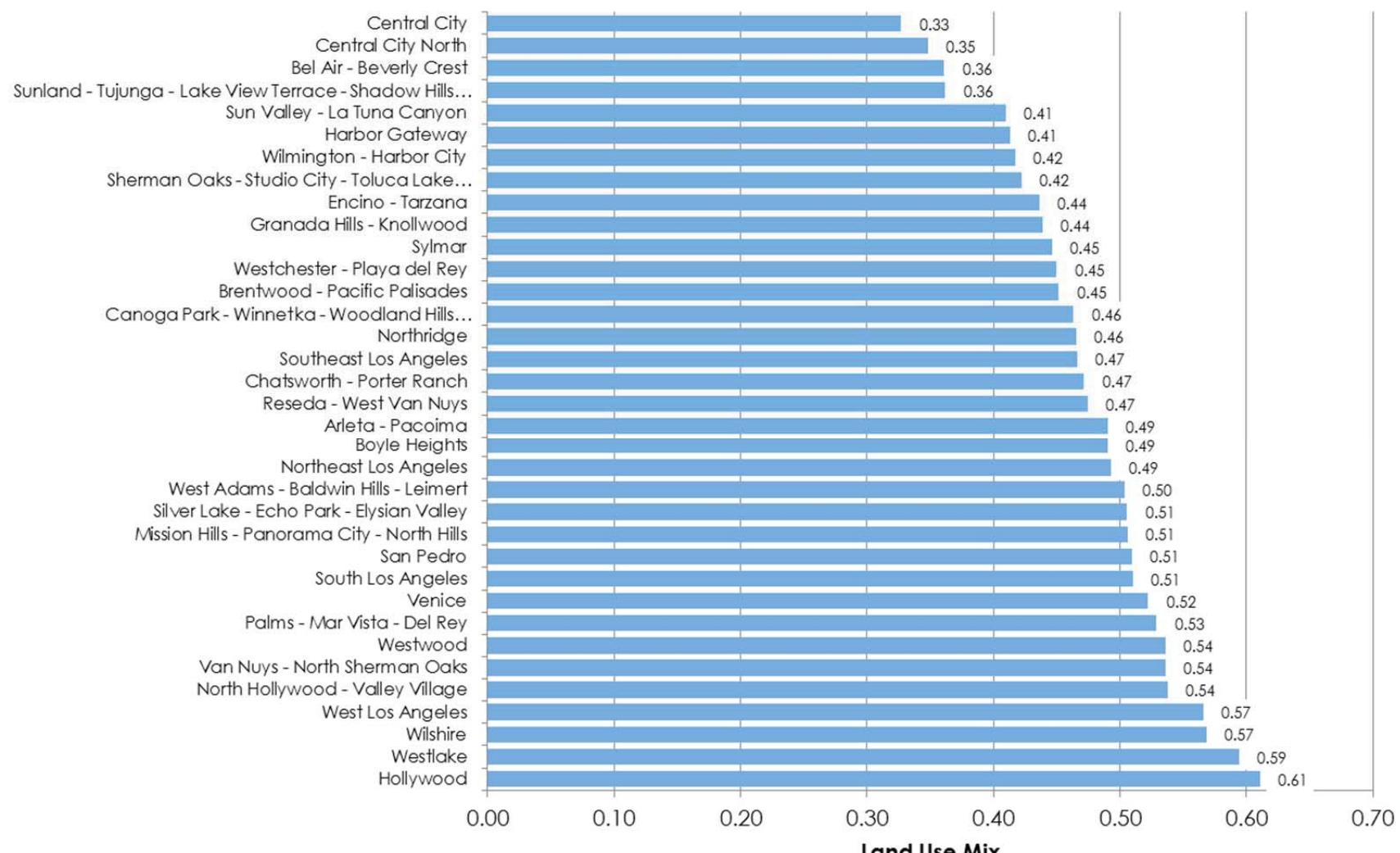
¹¹³ Frank, L., et. al. (2009). The Development of a Walkability Index: Application to the Neighborhood Quality of Life Study. *British Journal of Sports Medicine*. 44(13), p. 924.

¹¹⁴ Frank L.D., Kerr J., Sallis J.F., Miles R., and Chapman J. (2008). A hierarchy of sociodemographic and environmental correlates of walking and obesity. *Preventive Medicine*. (47):172-178.

¹¹⁵ Cerin E., Leslie E., Toit L., Owen N., and Frank L.D. (2007). Destinations that matter: associations with walking for transport. *Health Place*. (13) 713-724.

institutional or community-serving, assessing how similar the land uses are within a given geography. Values were normalized on a scale of 0 to 1, with 1 representing an even distribution of the six uses within an area. Figure 29 shows the land use mix for each CPA. The average land use mix score for the CPAs was 0.48, marginally higher than the median value (0.47). The Hollywood (0.61), Westlake (0.59), Wilshire (0.57) and West Los Angeles (0.57) CPAs had the highest land use mix scores (meaning these areas offered more opportunities for non-motorized trips), whereas Central City, Central City North, Bel Air-Beverly Crest, and Sunland-Tujunga-Shadow Hills-Lake View Terrace-East La Tuna Canyon had scores less than 0.4. Map 57 shows the Land Use Index scores for each census tract.

Figure 29: Land Use Mix by Community Plan Area in 2012

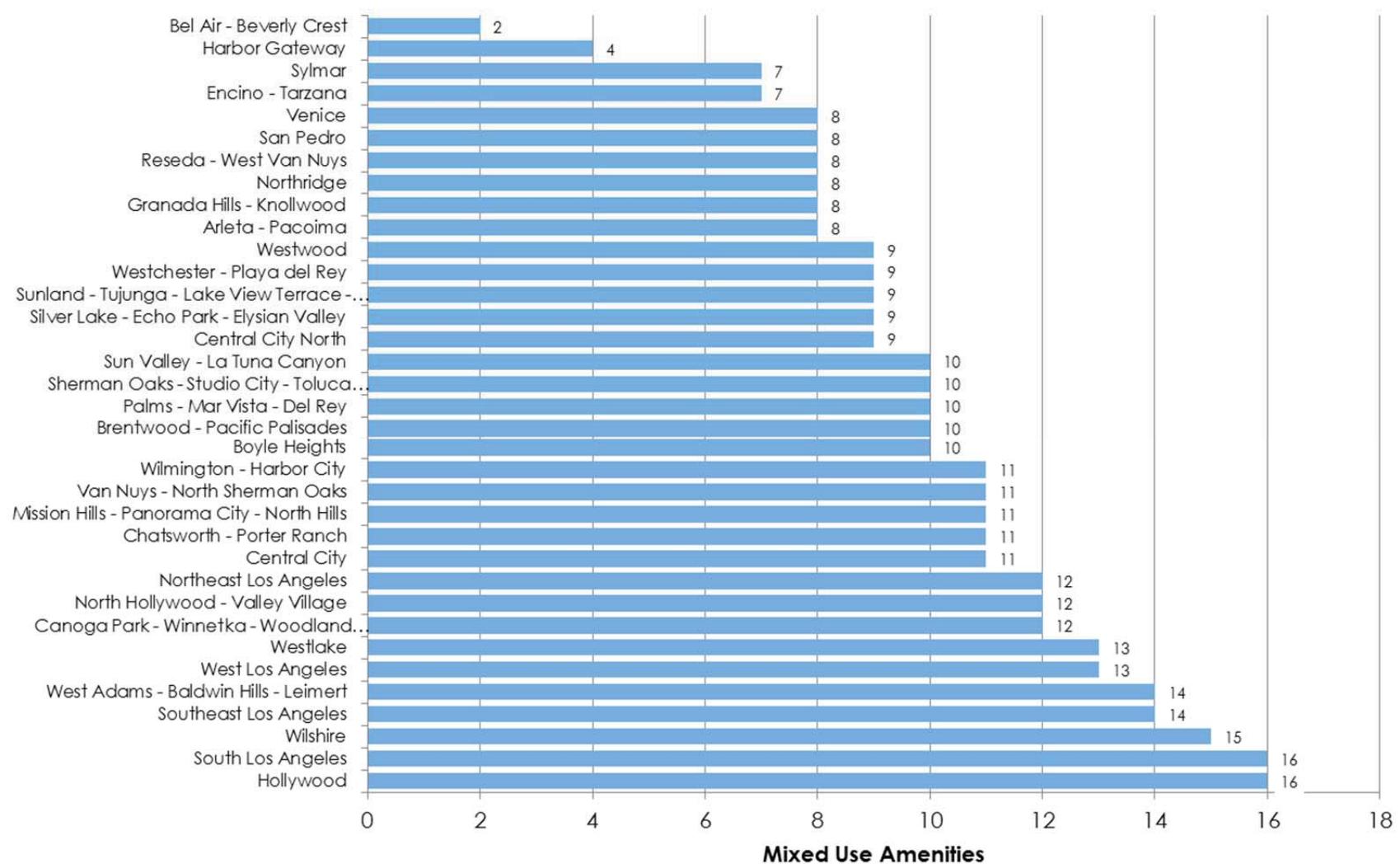


Source: Raimi + Associates. (2012). *Land Use Mix Analysis for the City of Los Angeles*.

Along with the mix of land uses, the total number of diverse uses was calculated for each census tract and CPA. The list of diverse uses was derived from the LEED for Neighborhood Development Checklist. The list includes 19 types of uses or amenities, including supermarkets, convenience stores, banks, gyms, department stores, farmer's markets, libraries, and parks. These uses are separated into four categories: food retail, community-serving retail, services, civic and community facility.

Figure 30 shows the land use diversity or number of amenities for each CPA. The Southeast Los Angeles, West Adams-Baldwin Hills-Leimert, Wilshire, Hollywood, and South Los Angeles CPAs had the greatest number of amenities (greater than 14). With the exception of Southeast Los Angeles, these CPAs had land use mix scores above the City average. The Bel Air-Beverly Crest and Harbor Gateway CPAs had 4 or less amenities. Both CPAs had land use mix scores well below the City average. Map 58 shows the Land Use Diversity score for each census tract.

Figure 30: Land Use Diversity by Community Plan Area in 2012 (Number of Amenities)



Source: Raimi + Associates. (2012). *Land Use Diversity Analysis for the City of Los Angeles*.

PARKS AND PARK ACCESS

Proximity to and quantity of parks is associated with increased park usage, physical activity, and better overall health. Improving access to parks can increase the amount of time children exercise, decrease their risk of chronic diseases, and even reduce juvenile delinquency.^{116 117} Adults who live closer to parks and green spaces report lower stress and fatigue,¹¹⁸ improved mental health, and better self-rated health.¹¹⁹

Park level of service is defined here as the acres of parkland per 1,000 residents. This level of service indicator includes State, County, regional, and municipal parks, but excludes restricted open spaces, such as golf courses. The Quimby Act, a State of California law, allows jurisdictions to charge a development impact fee, equivalent to providing a minimum of 3 acres of parkland per 1,000 residents for new development. As a result, this standard is often used to determine park level of service.

Figure 31 and Map 62 shows the park level of service for each CPA in Los Angeles. Seventeen CPAs exceeded the target of 3 acres per 1,000 residents. The Brentwood-Pacific Palisades (199), Sunland-Tujunga (86), Encino-Tarzana (29.6), Bel Air-Beverly Crest (25.7), and Chatsworth-Porter Ranch (21.1) CPAs had the highest park levels of service. Each of these CPAs benefited from its adjacency to large federal, state, and regional open space. Twelve CPAs had 1 acre or less of open space and five CPAs had less than half an acre of open space, including Southeast Los Angeles (0.4), Wilshire (0.4), Westlake (0.4), Central City (0.4), and Palms-Mar Vista-Del Rey (0.3).

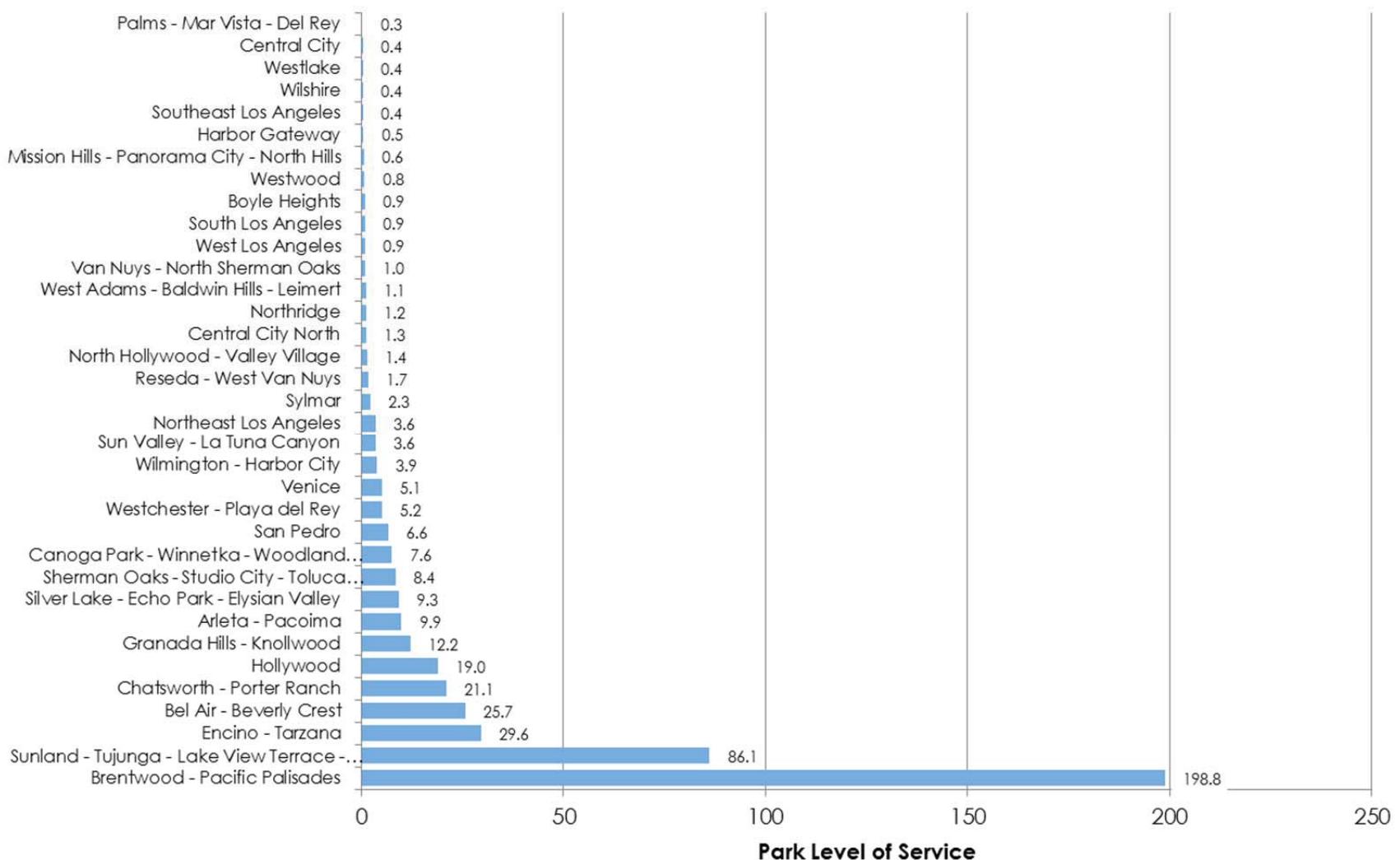
¹¹⁶ Cohen, D.A., et.al. (2006). Public parks and physical activity among adolescent girls. *Pediatrics*, 118(5), p. e1381-1389.

¹¹⁷ Kahn, E.B. (2002). The effectiveness of interventions to increase physical activity. *American Journal of Preventative Medicine*, 22, p.87-88.

¹¹⁸ Maller, C., Townsend, M., Pryor, A., Brown, P., and St. Leger, L. (2005). Healthy nature healthy people: 'contact with nature' as an upstream health promotion intervention for populations. *Health Promotion International*, 21(1), p. 45-53

¹¹⁹ Vries, S., de Verheij, R.A., Groenewegen, P.P., and Spreeuwenberg, P. (2003). Natural environments - healthy environments? An exploratory analysis of the relationship between green space and health. *Environment and Planning*, 35, p. 1717-1731.

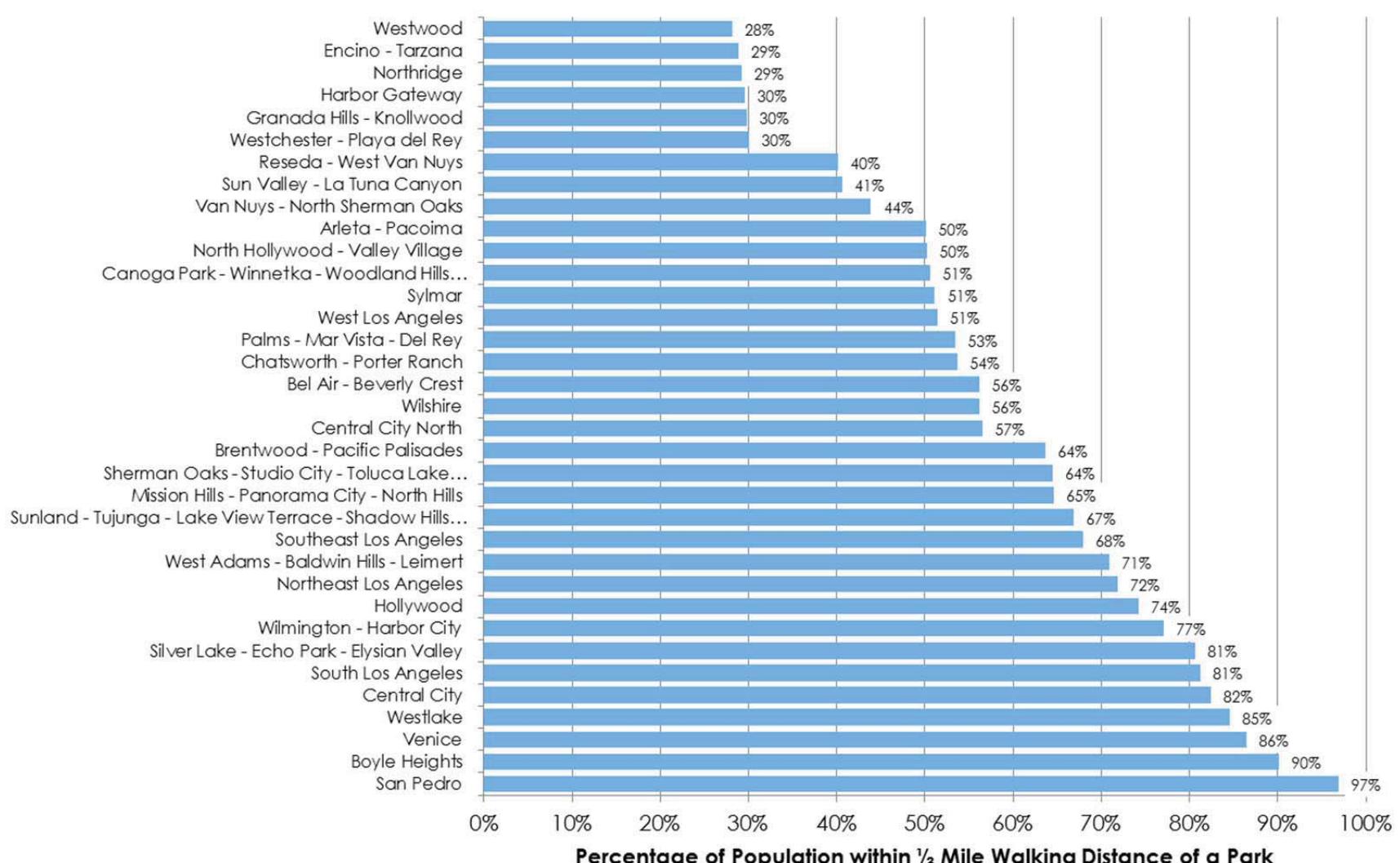
Figure 31: Park Level of Service by Community Plan Area in 2012



Source: Raimi + Associates. (2012). Park Level of Service Analysis for the City of Los Angeles.

Along with the quantity of parks, it is essential to understand the proximity of people to parks and open space. Using a straight-line distance along the street network, the percentage of population within a half-mile walk to a park was calculated and shown in Figure 32. San Pedro had the best park access, with 97% of residents living within a half-mile walk to a park, followed by Boyle Heights (90%), while Encino-Tarzana (29%) and Westwood (28%) had relatively low levels of park access. Map 63 shows the population within one-half mile of a park.

Figure 32: Percentage of the Population within One-Half Mile Walking Distance of a Park by Community Plan Area in 2010



Source: Raimi + Associates. (2012). Park Proximity Analysis for the City of Los Angeles.

Overall, there are areas of the City of Los Angeles with a high park level of service with limited access to parks (and vice versa). The two indicators should be reviewed in tandem, since both relate to positive health outcomes. The Central City (82%) and Westlake (85%) CPAs had high levels of park access but low park levels of service (0.4), meaning most people lived within walking distance to parks but there were not enough acres of parkland for the number of residents. Conversely, the

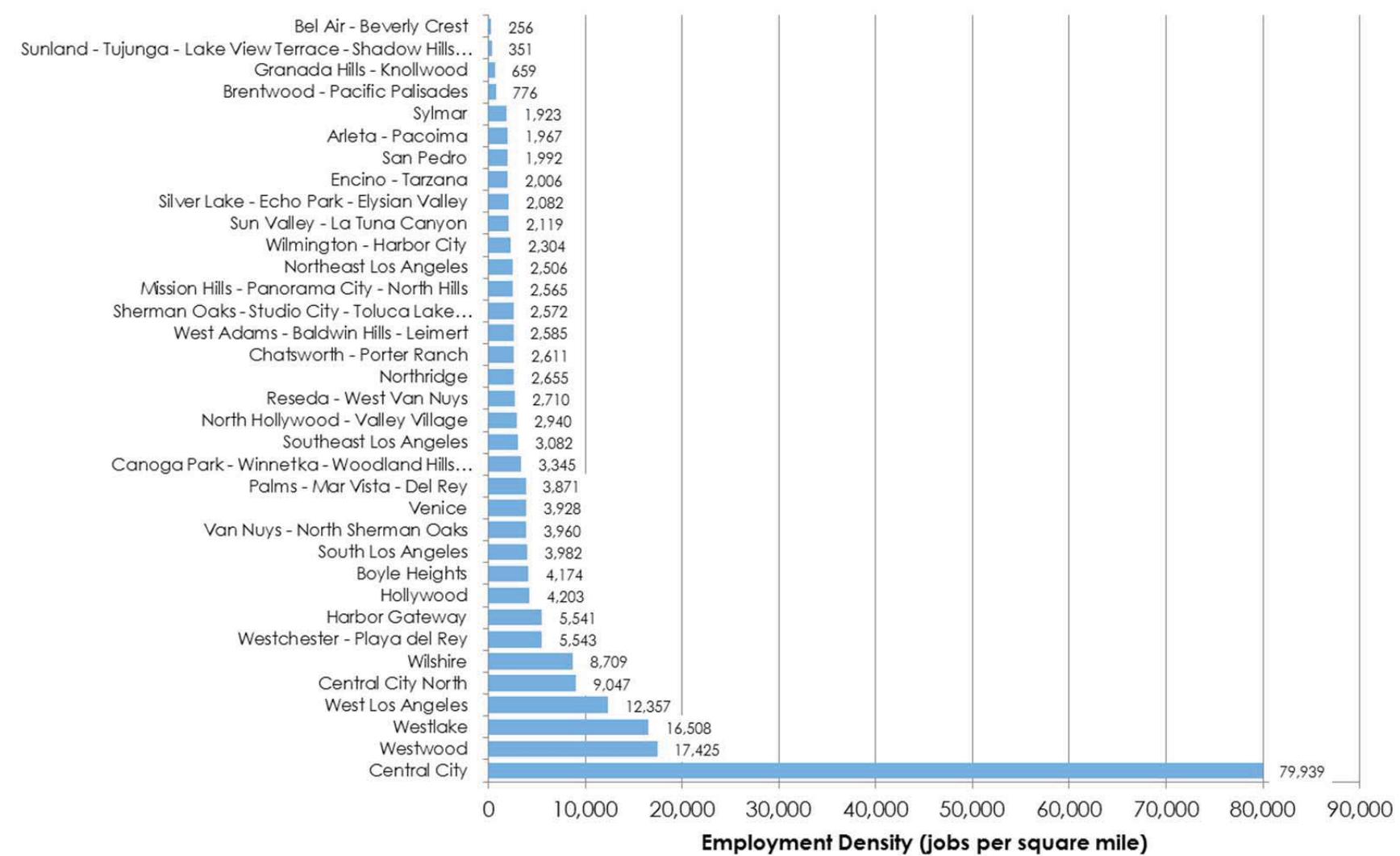
Encino-Tarzana (29.6) and Granada Hills-Knollwood (12.2) CPAs had high park levels of service but low park access (29% and 30%, respectively).

EMPLOYMENT

Higher levels of employment density, particularly retail job densities, are associated with more walking trips.¹²⁰ Higher density employment areas allow for more frequent and comprehensive transit service. Denser employment districts which are rich in transit service typically result in more walking and transit use, which has positive health benefits (such as lower rates of diabetes and increased physical activity) and makes jobs more accessible to all residents.^{121 122}

Figure 33 shows the employment density for each CPA. Employment density was highest in Central City at 80,000 jobs per square mile, over four times the employment density than the other relatively high-employment density CPAs: Westwood (17,425) and Westlake (16,508). Other high density employment clusters included West Los Angeles (12,357), Central City North (9,047), Wilshire (8,709), Westchester-Playa Del Rey (5,541), and Harbor Gateway (5,541). At the other end of the spectrum, the Bel Air-Beverly Crest (256) and Sunland-Tujunga-Shadow Hills-Lake View Terrace-East La Tuna Canyon (351) CPAs had low employment densities, averaging less than one job per acre. Map 64 shows the employment density for census blocks in Los Angeles.

Figure 33: Employment Density by Community Plan Area in 2010



Source: Census LEHD Survey for 2010.

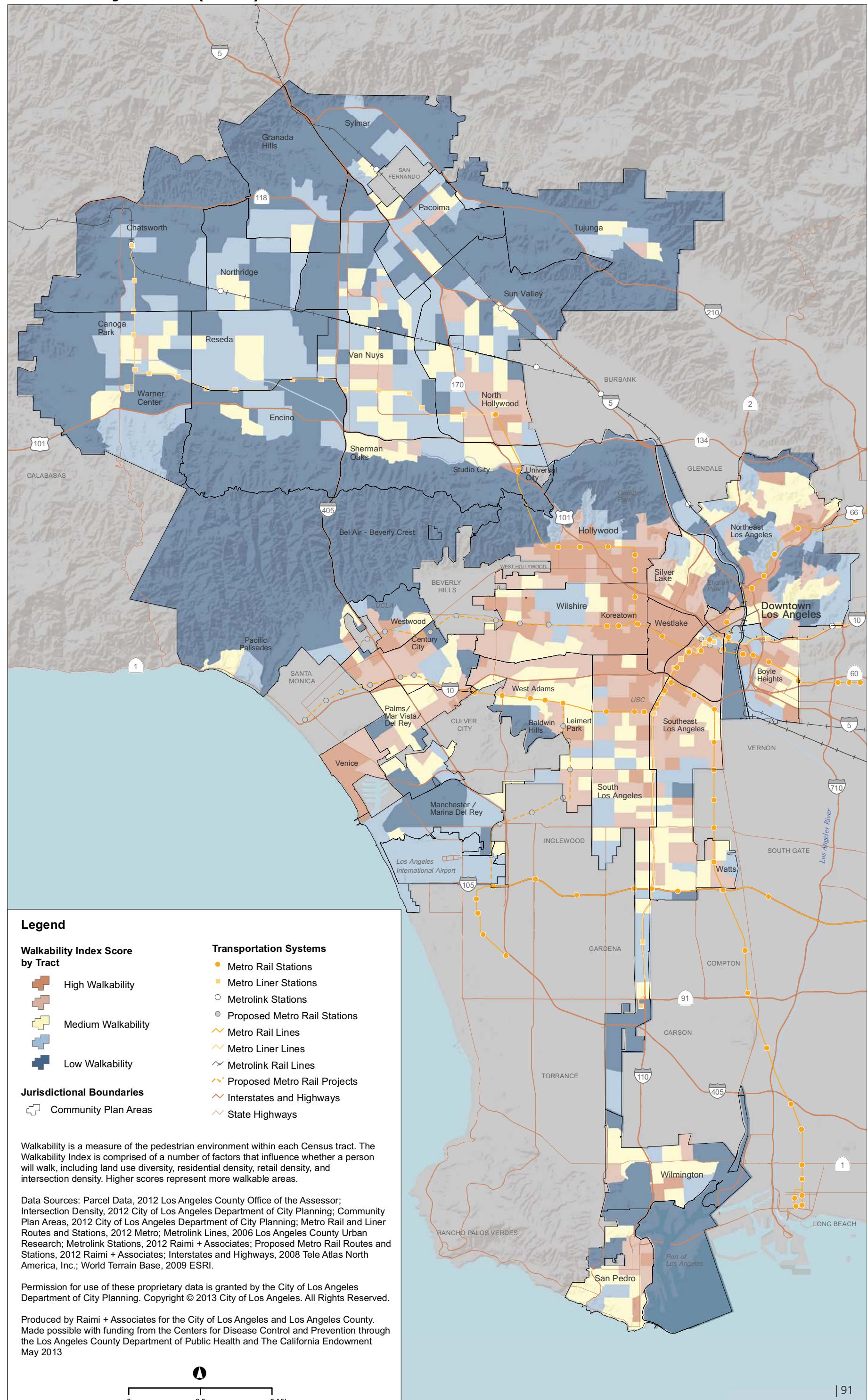
¹²⁰ Ewing, R. and Cervero, R. (2010). Travel and the Built Environment. *Journal of the American Planning Association*, 76: 3, pp. 265-294.

¹²¹ Cervero, R. and Guerra, E. (2011). Urban Densities and Transit: A Multi-dimensional Perspective (Working paper). Institute of Transportation Studies at the University of California at Berkeley. Retrieved from <http://www.its.berkeley.edu/publications/UCB/2011/VWP/UCB-ITS-VWP-2011-6.pdf>.

¹²² Frank, Lawrence, Obesity Relationships with Community Design, Physical Activity and Time Spent in Cars, Vol. 27, No. 2, *American Journal of Preventive Medicine* (2004). Page 90.

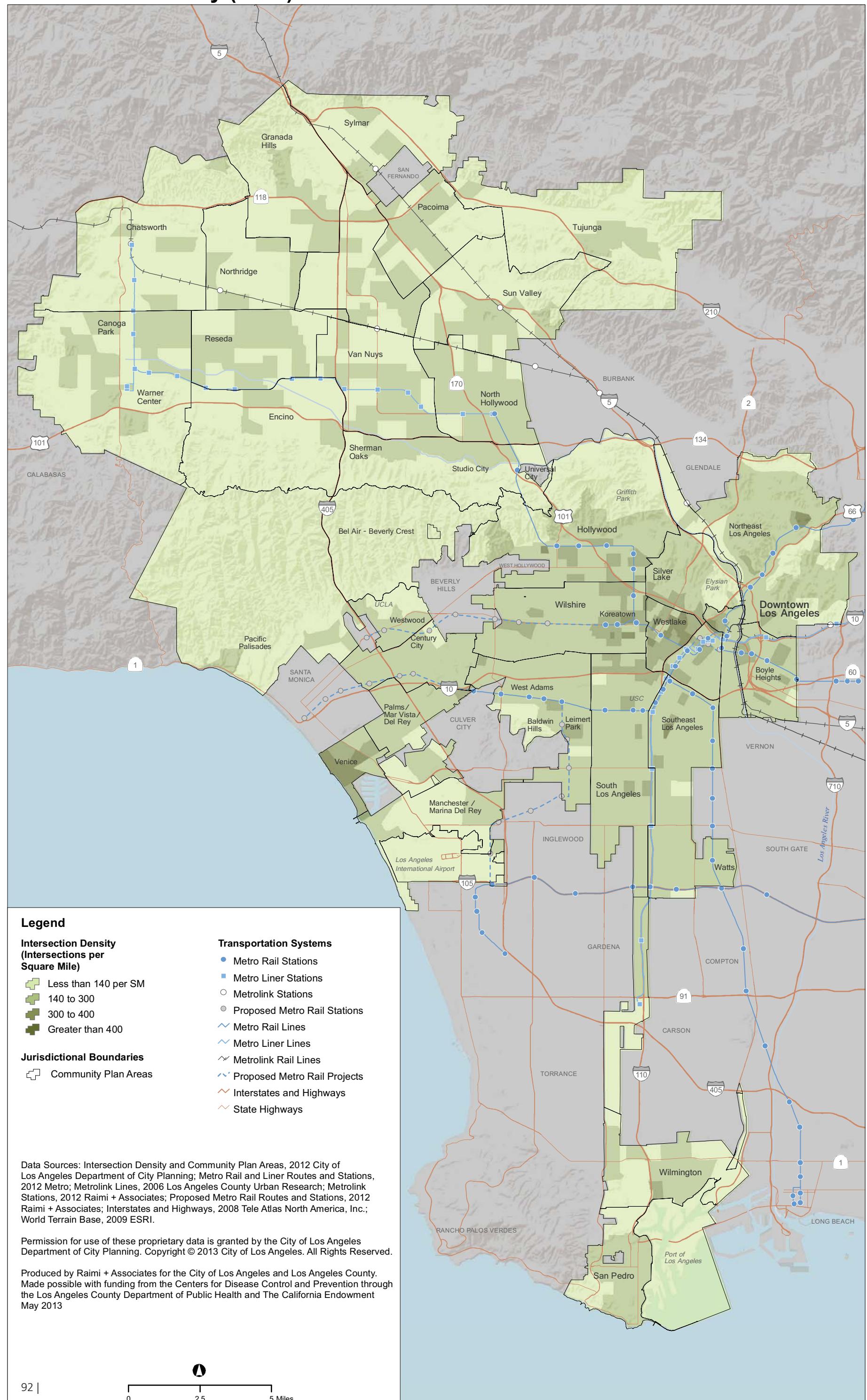
Map 53

Walkability Index (2012)



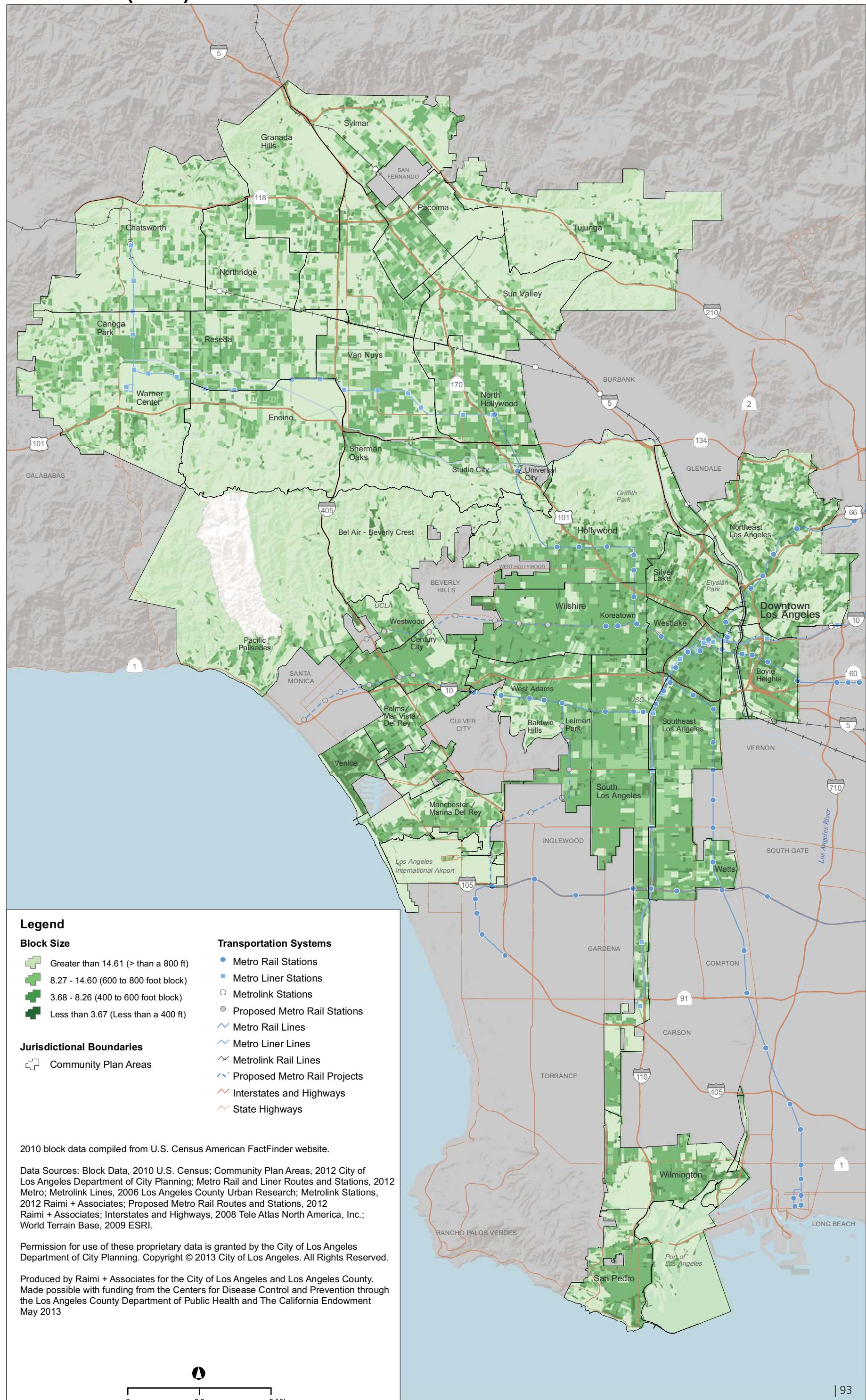
Map 54

Intersection Density (2012)



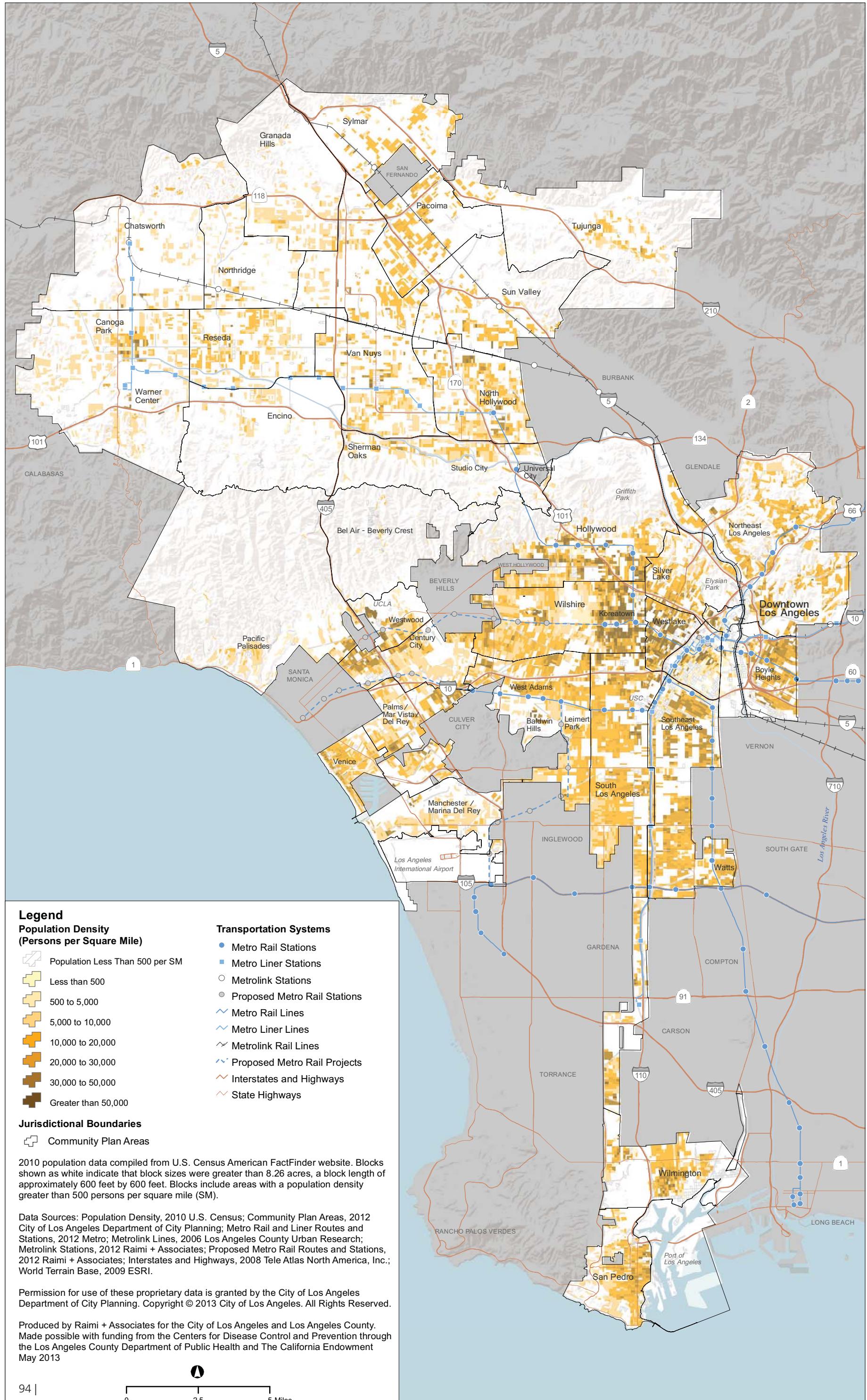
Map 55

Block Size (2010)

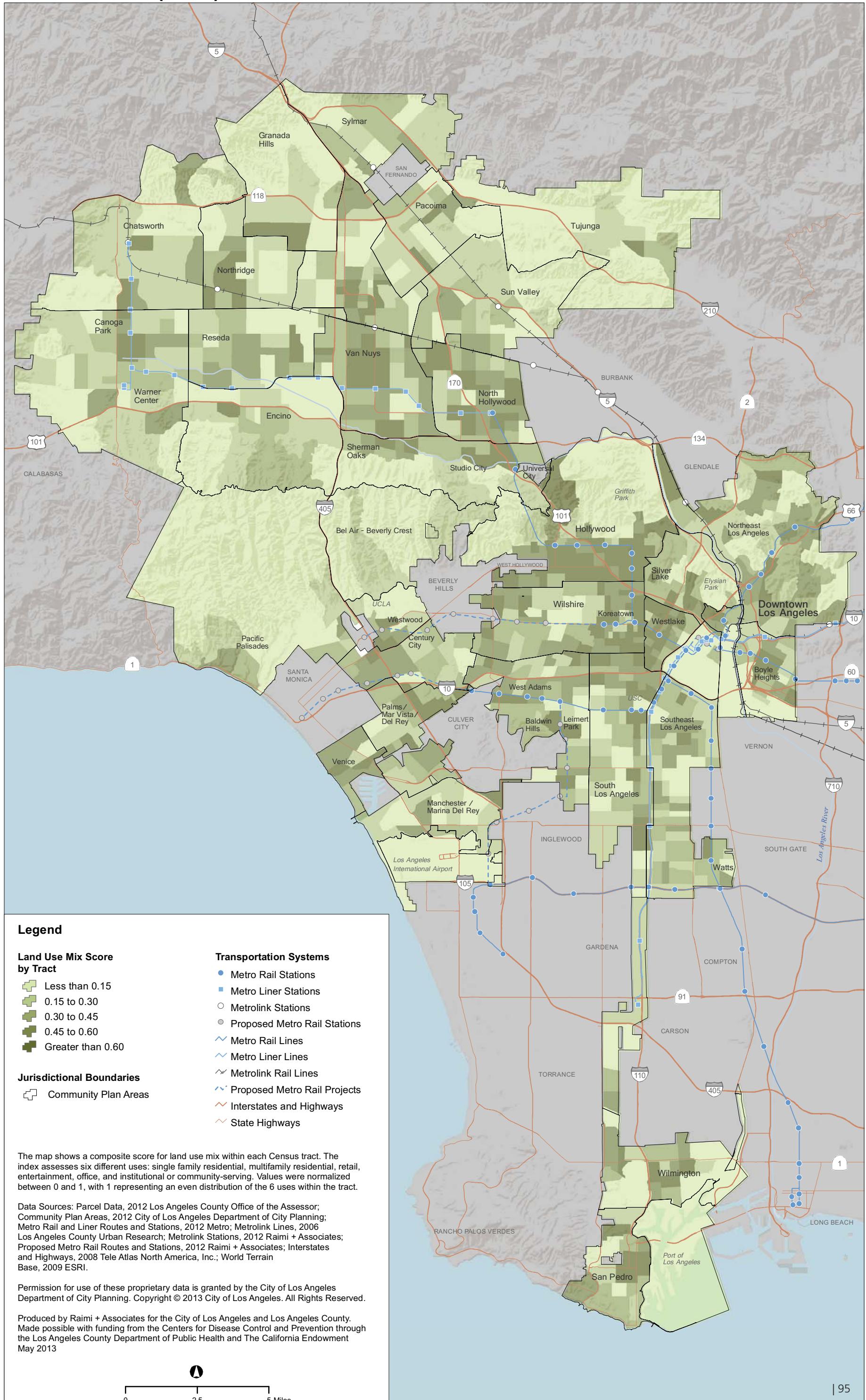


Map 56

Population Density on Blocks Smaller Than 8.26 Acres, 600-Foot Block Lengths (2010)

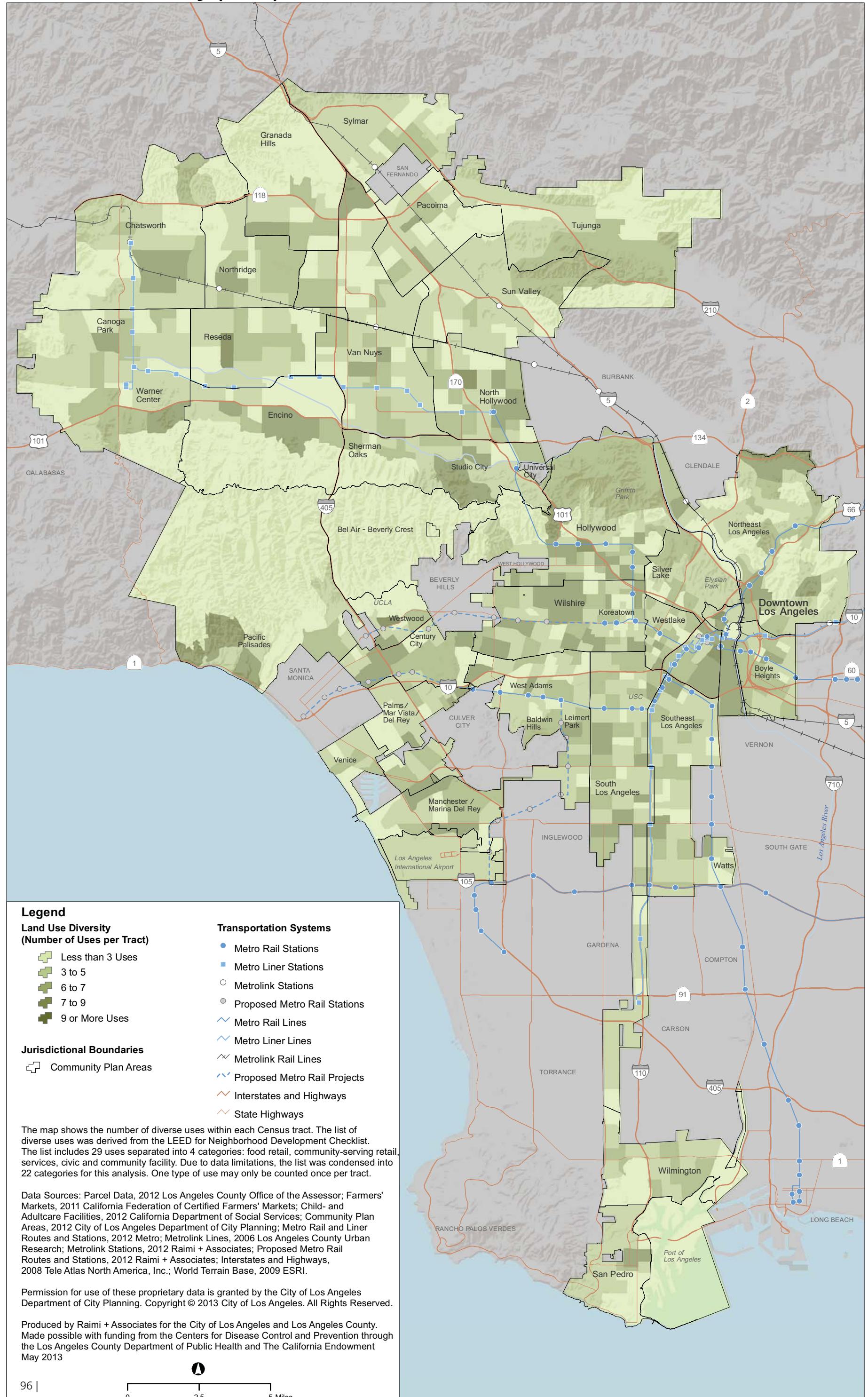


Map 57 Land Use Mix (2012)



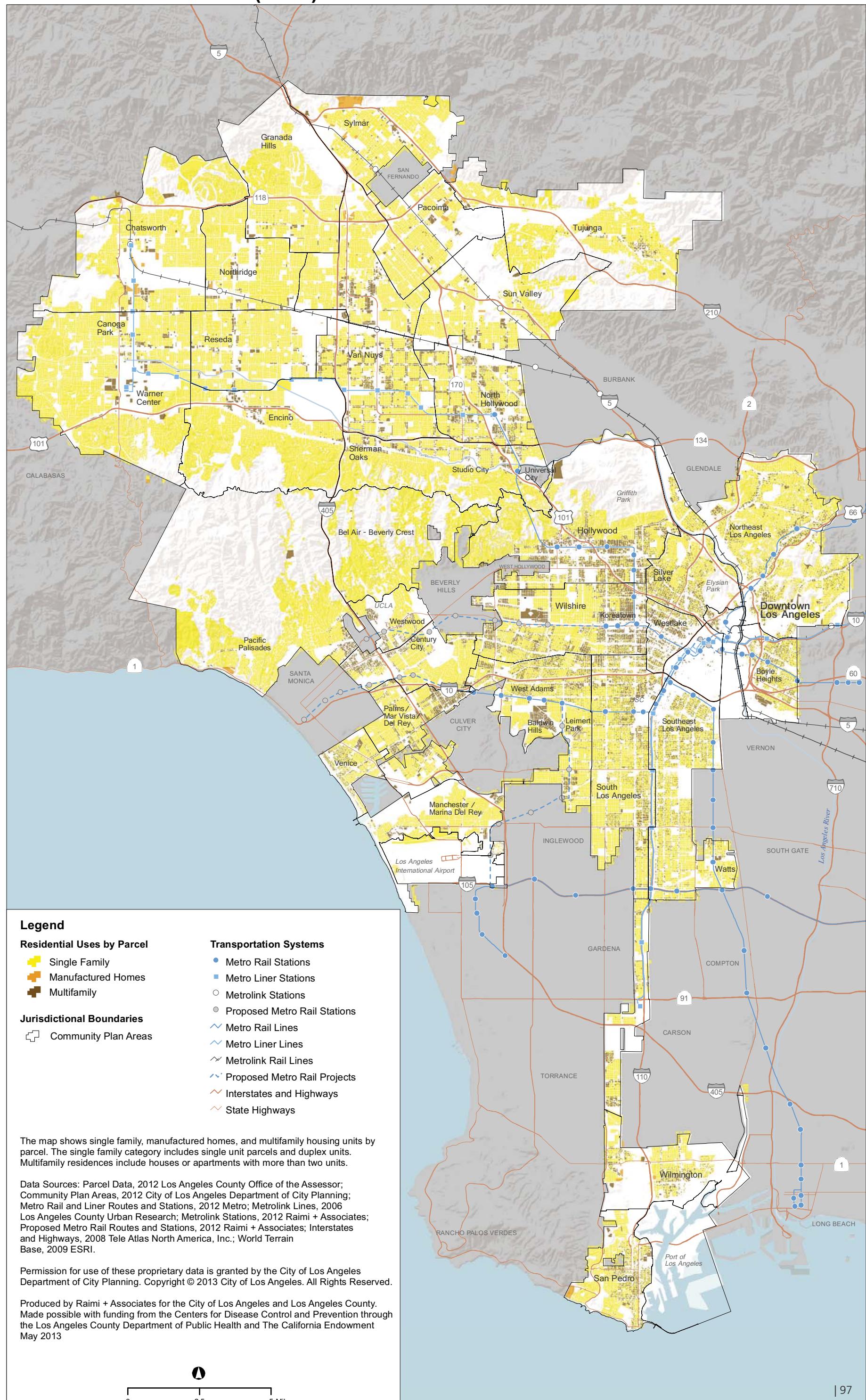
Map 58

Land Use Diversity (2012)



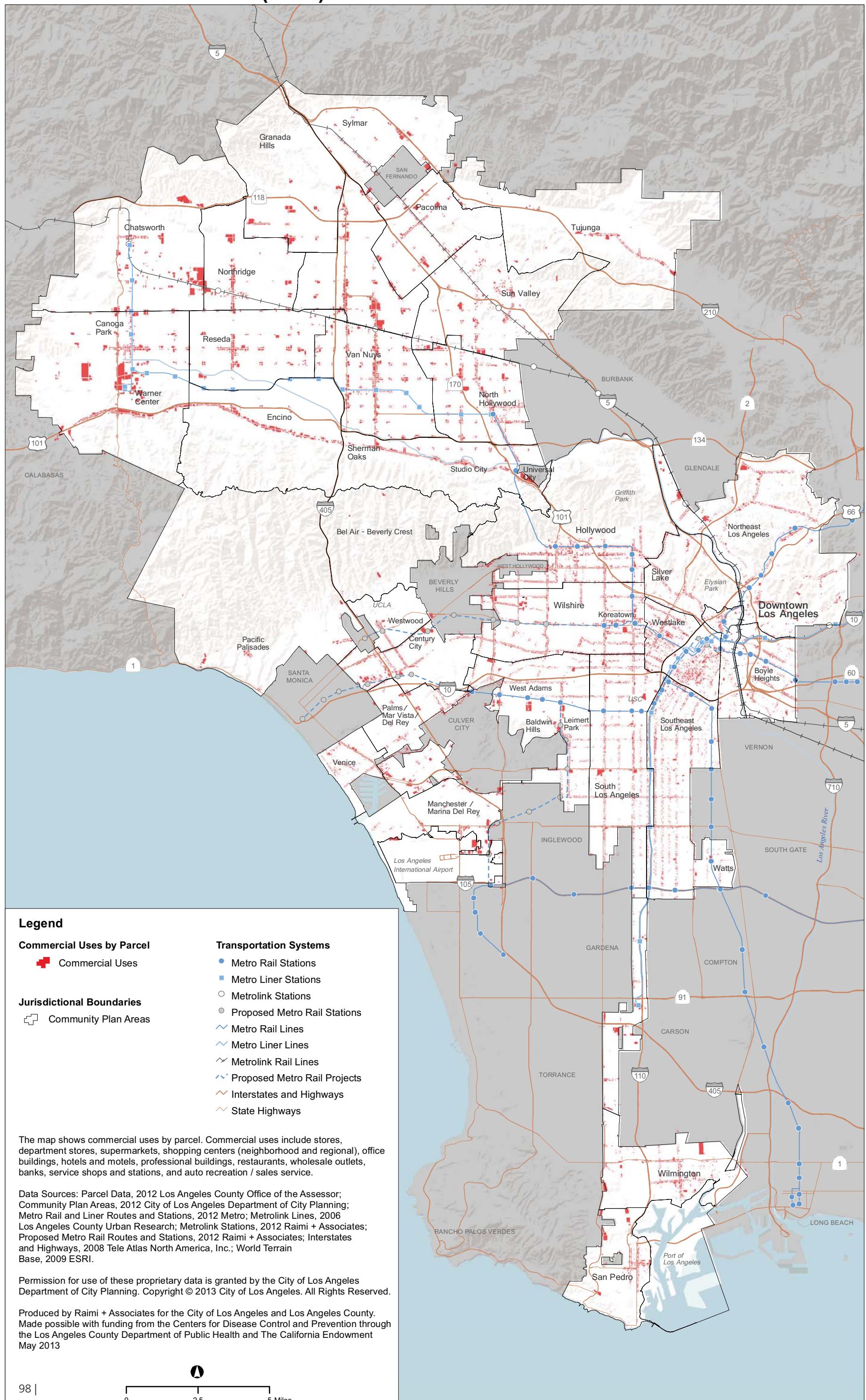
Map 59

Residential Land Uses (2012)



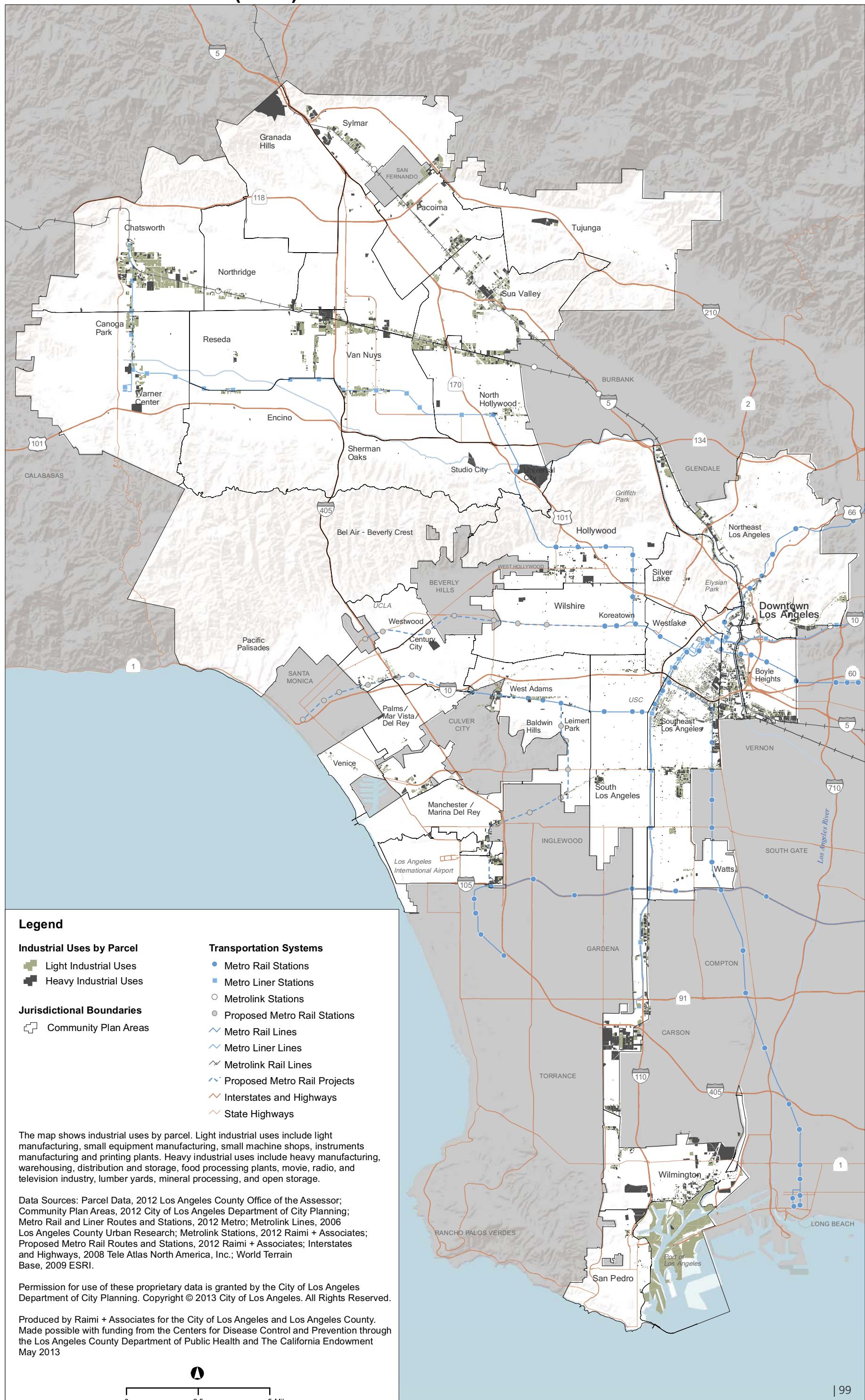
Map 60

Commercial Land Uses (2012)



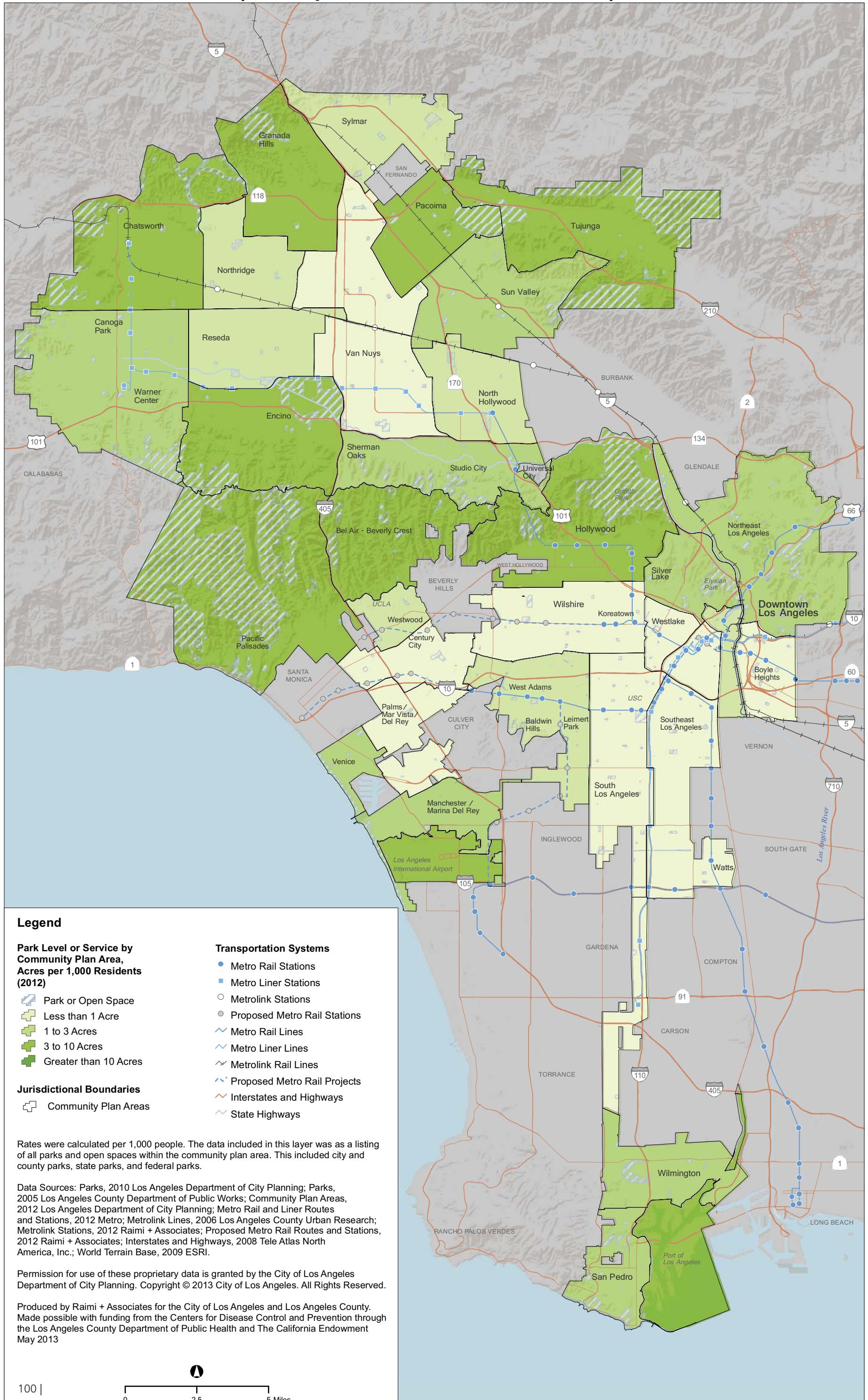
Map 61

Industrial Land Uses (2012)



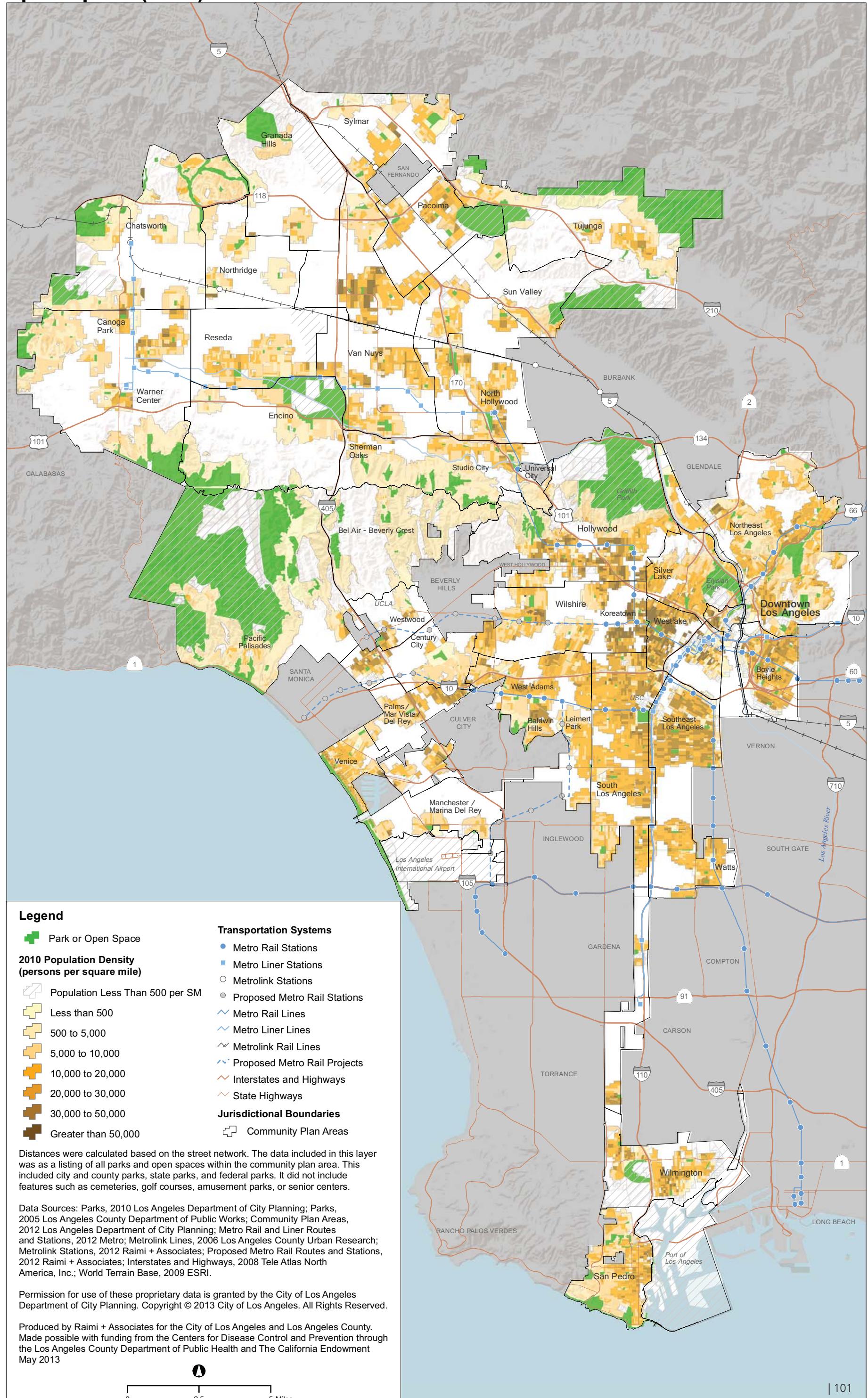
Map 62

Park Level of Service (Acres per 1,000 Residents in 2010)



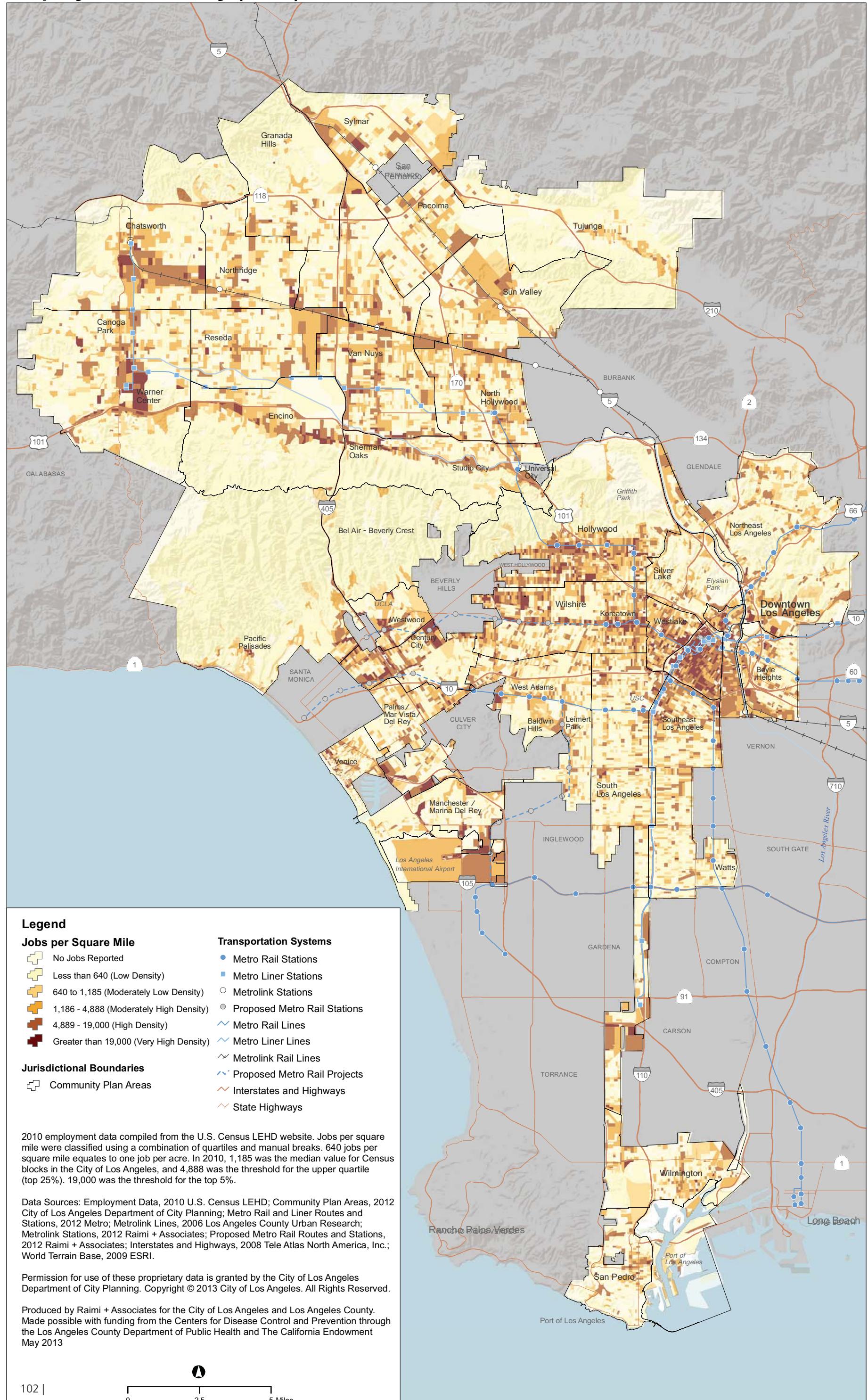
Map 63

Park Access: Population Density of Census Blocks within 1/2 Mile of a Park or Open Space (2010)



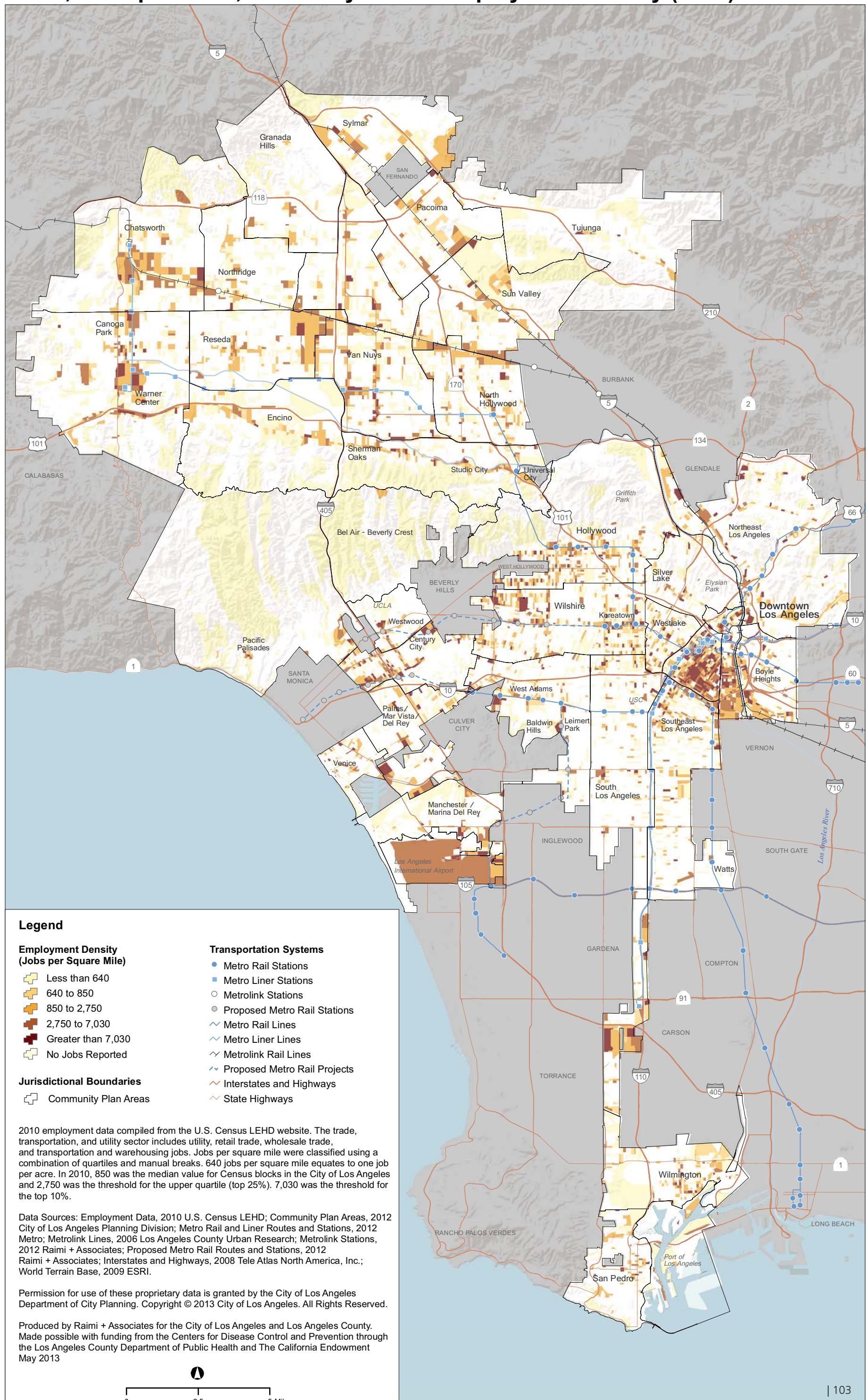
Map 64

Employment Density (2010)



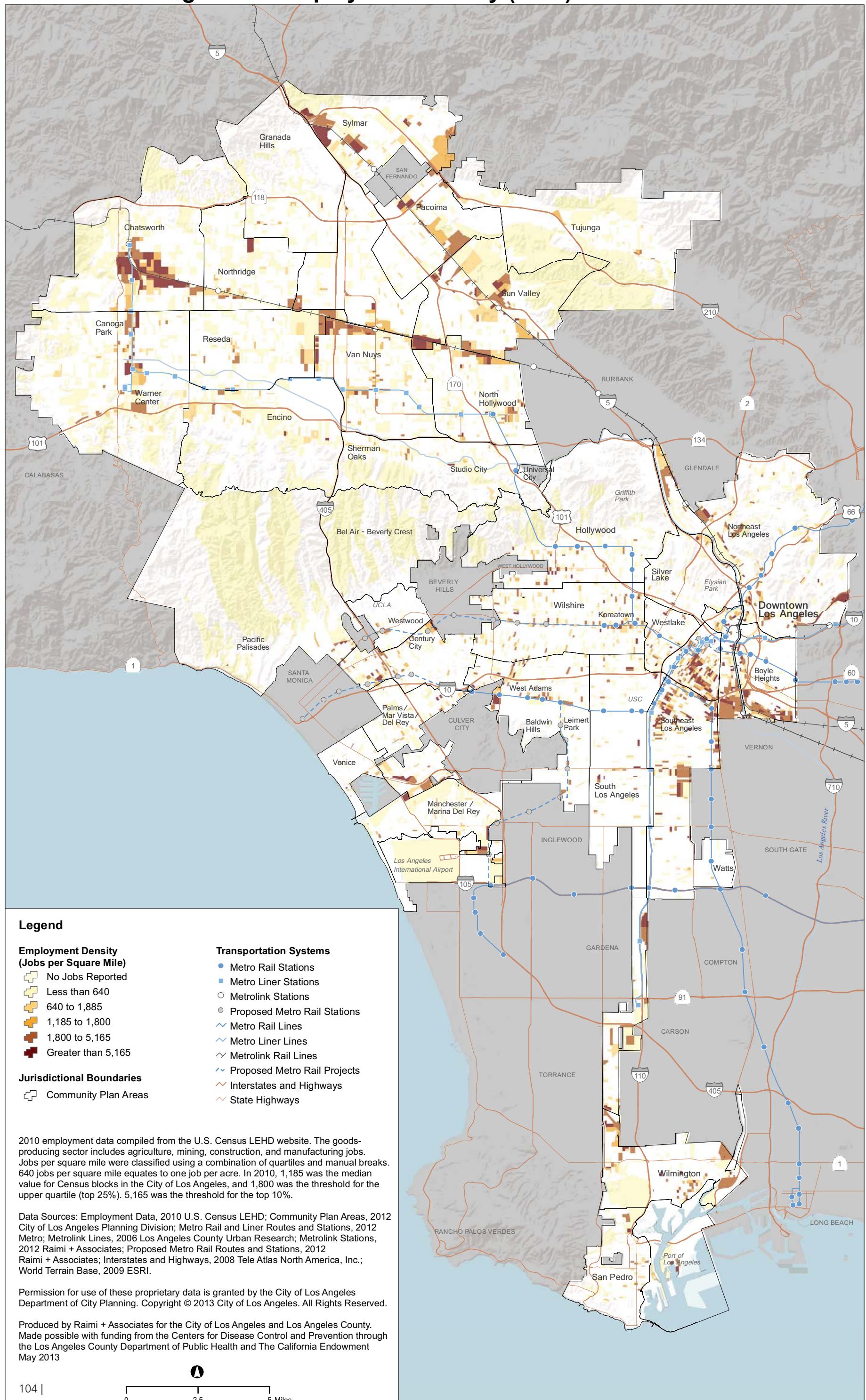
Map 65

Trade, Transportation, and Utility Sector Employment Density (2010)



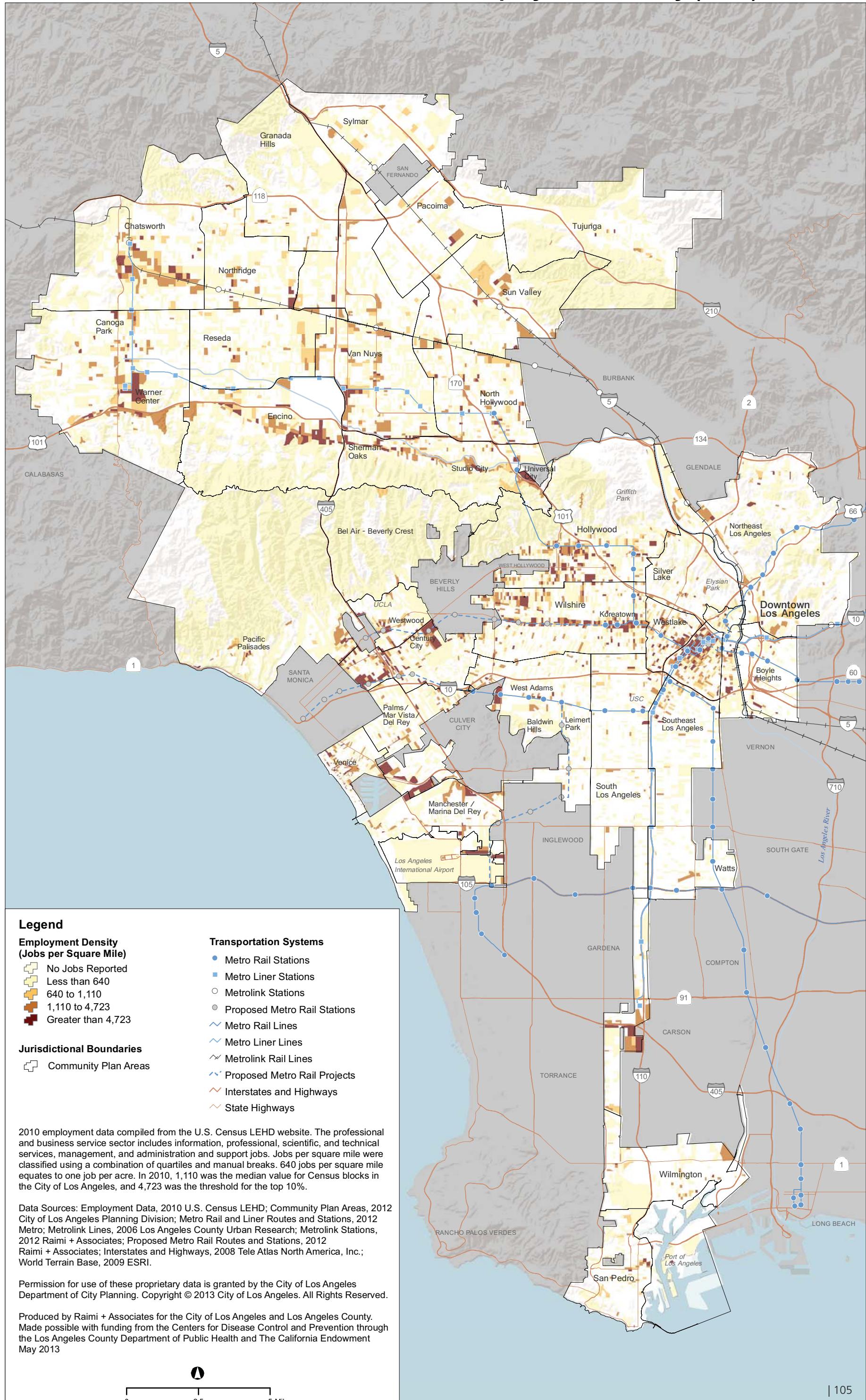
Map 66

Goods-Producing Sector Employment Density (2010)



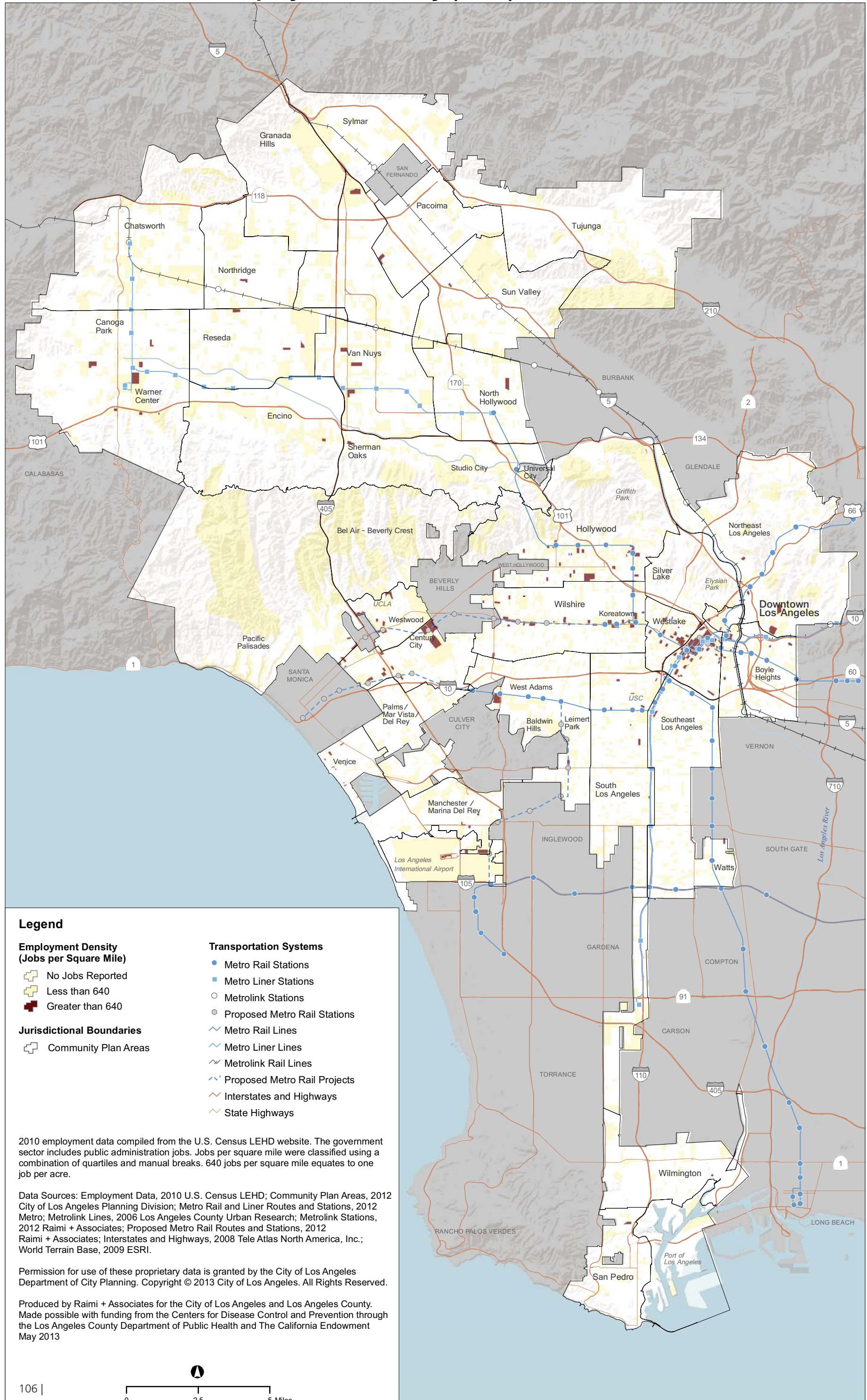
Map 67

Professional and Business Service Sector Employment Density (2010)



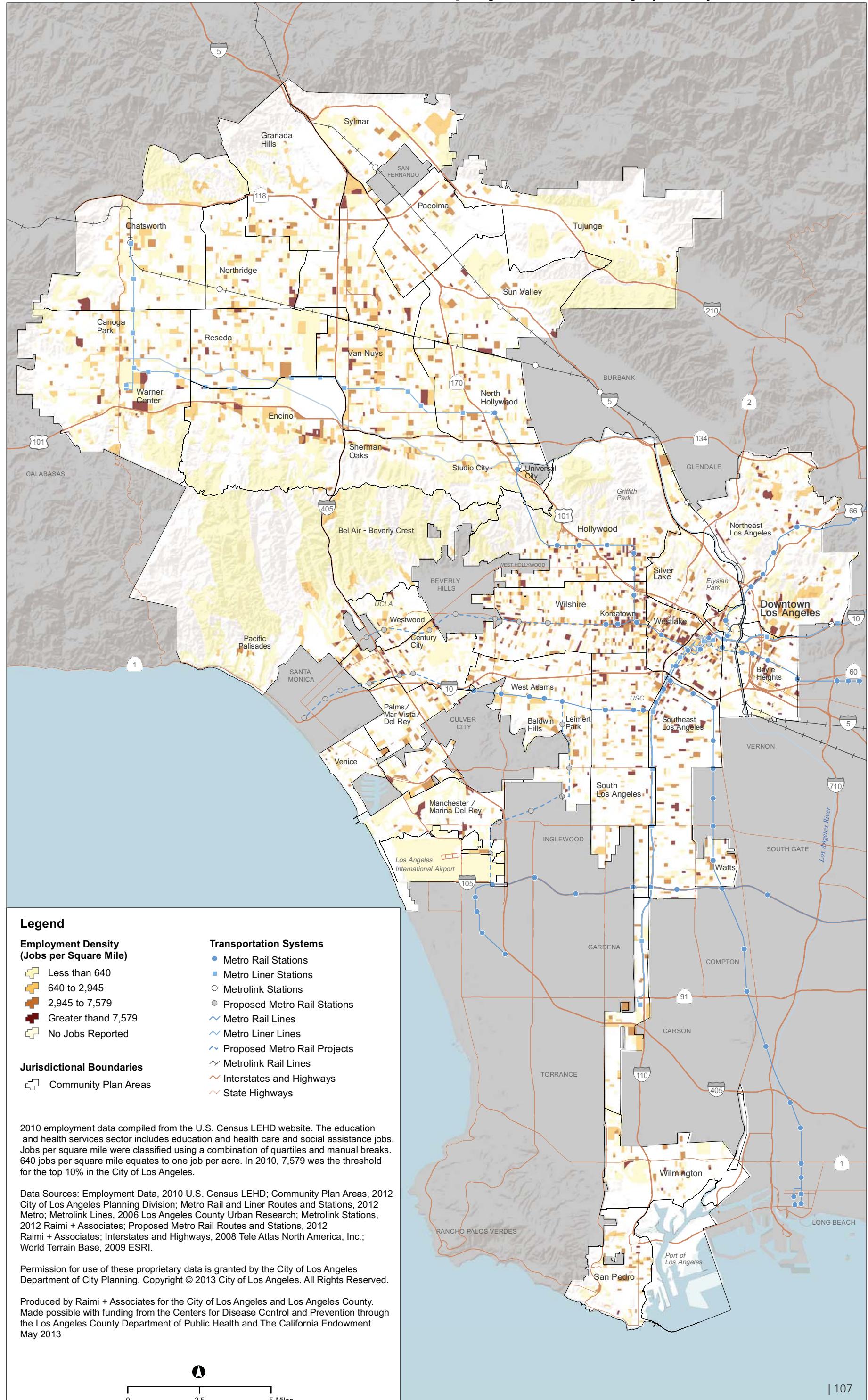
Map 68

Government Sector Employment Density (2010)



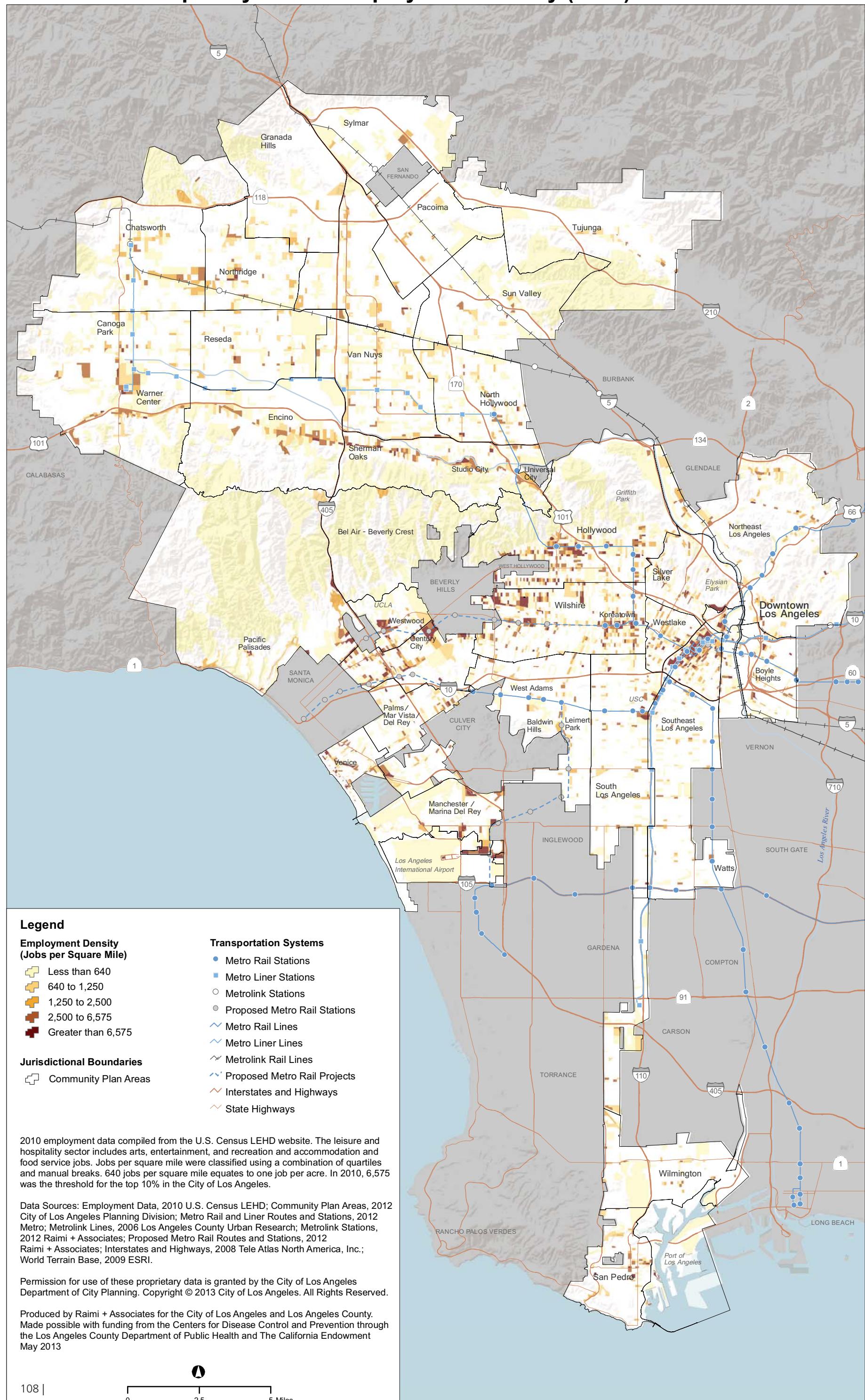
Map 69

Education and Health Services Sector Employment Density (2010)



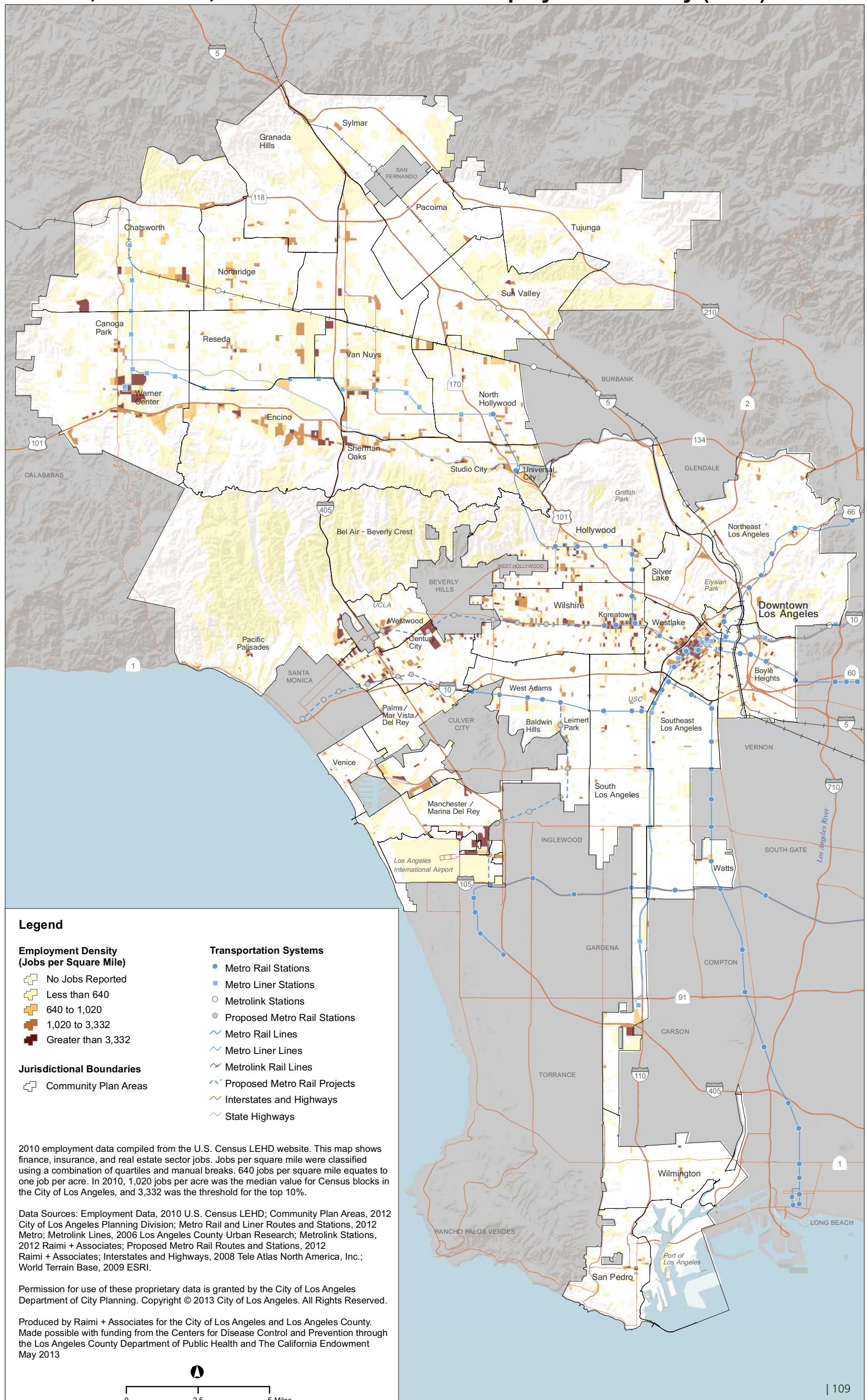
Map 70

Leisure and Hospitality Sector Employment Density (2010)



Map 71

Finance, Insurance, and Real Estate Sector Employment Density (2010)



This page is intentionally left blank.

8 | Transportation

Transportation patterns, habits, and decisions play an important role in the health of individuals and communities. Every day, Angelenos use highways, roads, sidewalks, bikeways, trails, and transit to commute to work, go to school, shop, run errands, and complete numerous other daily activities. The automobile-centric nature of many communities, however, limits the opportunities for active transportation options, such as walking and biking.¹²³

A person's travel behavior has both positive and negative effects on health and wellness. An over-reliance on private cars contributes to higher rates of air pollution and respiratory illness.¹²⁴ Streets that are not built for or that do not accommodate pedestrians and cyclists encourage higher vehicle speeds,¹²⁵ which in turn contribute to more severe collisions that cause injuries and fatalities.¹²⁶ Streets that accommodate all modes of travel tend to be safer streets, while also encouraging physical activity and reducing air pollution and greenhouse gas emissions.¹²⁷

MAPS AND INDICATORS

The Transportation Chapter of this *Health Atlas* examines information on transportation demand, infrastructure, and safety. The following list describes the maps and associated indicators included in this section.

- **Percent of Population Driving to Work Alone:** The map shows the percentage of workers age 16 and over who drive alone to work. Data is from the 2010 U.S. Census ACS 5-year Estimates.
- **Percent of Population Carpooling to Work:** The map shows the percentage of workers age 16 and over who carpool to work. Data is from the 2010 U.S. Census ACS 5-year Estimates.
- **Public Transportation Commuters:** The map shows the percentage of workers age 16 and over who take public transportation to work. Data is from the 2010 U.S. Census ACS 5-year Estimates.
- **Bicycle Commuters:** The map shows the percentage of workers age 16 and over who cycle to work. Data is from the 2010 U.S. Census ACS 5-year Estimates.
- **Pedestrian Commuters:** The map shows the percentage of workers age 16 and over who walk to work. Data is from the 2010 U.S. Census ACS 5-year Estimates.
- **Zero Vehicle Households:** The map shows the percentage of households with no vehicle available. Data is from the 2010 U.S. Census ACS 5-year Estimates.
- **Access to High-Frequency Metro Transit Service:** The map shows the population density of census blocks within a half-mile of Metro transit stops where the service frequency is 15 minutes or less during peak hours. Data is from the 2010 U.S. Census, Los Angeles Metro for 2012, and the City of Los Angeles for 2012.
- **Motor Vehicle Crashes with Pedestrians and Bicyclists:** The heat map shows a gradient of motor vehicle collisions with pedestrian and bicyclists ranging from low to high between 2001 and 2010. Collision data is from the Statewide Integrated Traffic Records System (SWITRS), which is collected and maintained by the California Highway Patrol and is distributed through the Transportation Injury Mapping System (TIMS) at U.C. Berkeley.
- **Average Annual Rate of Motor Vehicle Crashes with Pedestrians per 10,000 Residents:** The map shows the average annual rate of motor vehicle crashes with pedestrians per 10,000 residents in a CPA between 2001 and 2010. Collision data is from the SWITRS, which is collected and maintained by the California Highway Patrol and is distributed through the TIMS at U.C. Berkeley.
- **Average Annual Rate of Motor Vehicle Crashes with Bicyclists per 10,000 Residents:** The map shows the average annual rate of motor vehicle crashes involving cyclists per 10,000 residents in a CPA between 2001 and 2010. Collision data is from the SWITRS, which is collected and maintained by the California Highway Patrol and is distributed through the TIMS at U.C. Berkeley.
- **Average Annual Rate of Motor Vehicle Crashes with Pedestrians and Bicyclists Under Age 18 within a Half-Mile of a School per 10,000 Residents Under Age 18:** The map shows the average annual rate of motor vehicle crashes with pedestrians and cyclists under age 18 per 10,000 residents in a CPA between 2001 and 2010. Collision data is from the SWITRS, which is collected and maintained by the California Highway Patrol and is distributed through the TIMS at U.C. Berkeley.
- **Average Annual Motor Vehicle Traffic Death Rate per 100,000 Residents:** The map shows the rate of annual motor vehicle traffic deaths per 100,000 residents at the zip code scale between 2000 and 2009. Data is from the Death Statistical Master File, California Department of Health Services, and the Center for Health Statistics.
- **Transportation Index:** The Index standardizes transportation demand, transportation infrastructure, and injury variables, and then averages them together, yielding a score on a scale of 0-100. Higher values indicate worse transportation conditions. Variables include: percent walk and bike to work (2010), transit riders (2010), transit service frequency (2012), bicycle infrastructure (2012), intersection density (2012), and bike and pedestrian injuries per 10,000 residents (average between 2001-2010).

KEY FINDINGS

COMMUTES

Due to the connections between transit use, active transportation, and general health and wellness, mode share is an important indicator of a community's health. Commute modes, whether driving alone or riding a bike, affect the region's air quality, which in

¹²³ Ewing, R. and Cervero, R. (2010). Travel and the Built Environment. *Journal of the American Planning Association*, 76: 3, pp. 265-294.

¹²⁴ Kim, J. J., et. al. (2004). Traffic-related Air Pollution near Busy Road: The East Bay Children's Respiratory Health Study. *American Journal of Respiratory and Critical Care Medicine*: 170(5), pp. 520-526.

¹²⁵ Daisa, J. M. and Peers, J. B. (2010). Narrow Residential Streets: Do They Really Slow Down Speeds? Institute of Transportation Engineers. Retrieved from <http://www.ite.org/traffic/documents/AHA97F46.pdf>.

¹²⁶ Anderson, R. W. G. et. al. (1997). Vehicle Travel Speeds and the Incidence of Fatal Pedestrian Crashes. *Accident Analysis and Prevention*, 29(5), pp. 667-674.

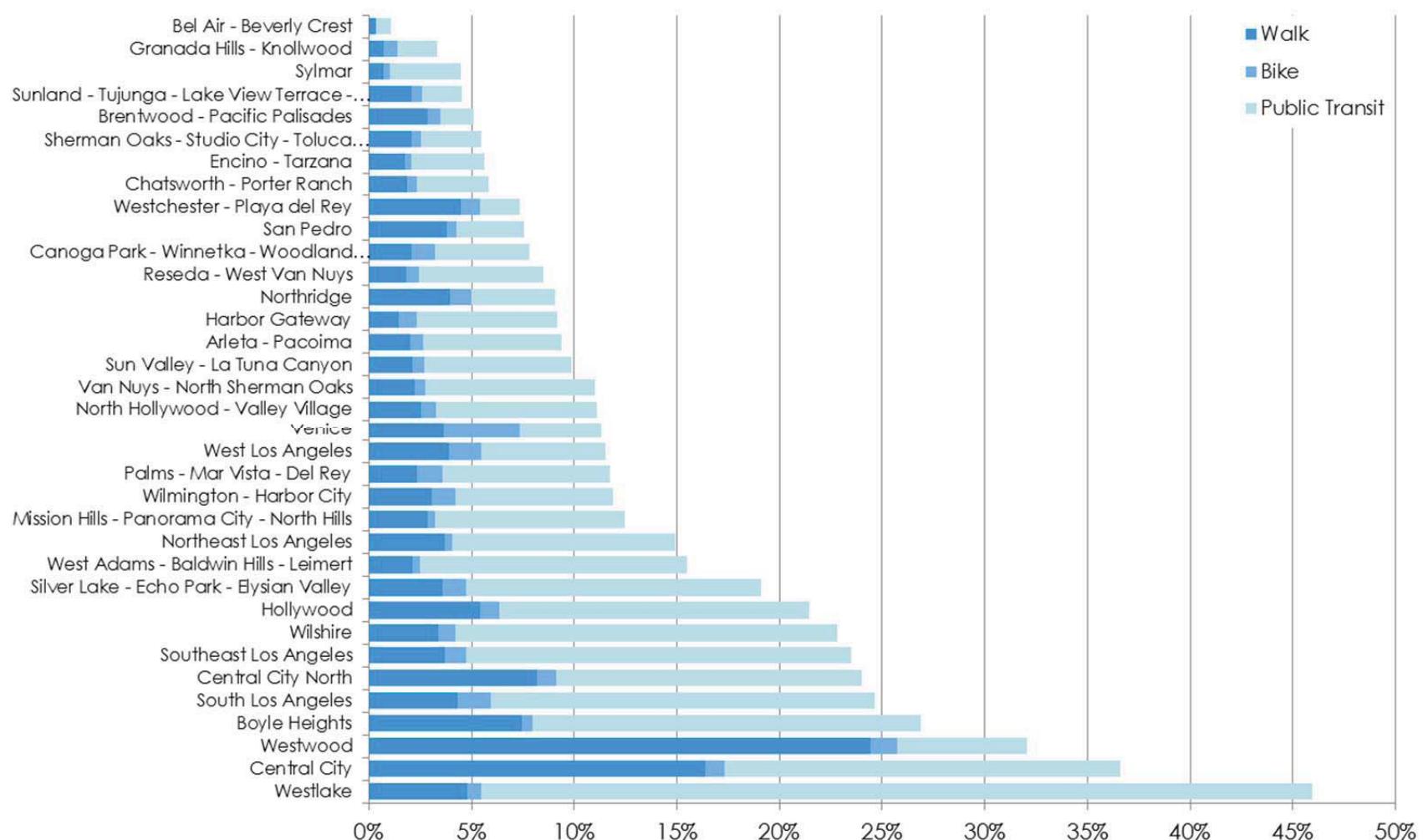
¹²⁷ Litman, T. (2010). Evaluating Public Transportation Health Benefits. Victoria Transport Policy Institute for the American Public Transportation Association. Retrieved from http://www.apta.com/resources/reportsandpublications/Documents/APTA_Health_Benefits_Litman.pdf.

turn has implications for risk factors such as smog and pollution that have been shown to contribute to conditions such as chronic respiratory disease, lung cancer, and heart disease among others.¹²⁸

In 2010, 67% of City of Los Angeles residents drove alone to work (Map 72), 11% carpooled (Map 73), 11% used public transportation (Map 74), 4% walked (Map 75), less than 1% biked (Map 76), 5% worked from home, and 1% traveled by other means. City residents were more likely to use transit, walk, bike, or work from home than the average County resident.

Figure 34 shows the percentage of workers commuting to work by walking, biking, and public transportation for each CPA. The Westlake (46%), Central City (37%), and Westwood (32%) CPAs had the highest proportion of workers commuting by these three active modes. On the other hand, residents in the Bel Air-Beverly Crest, Granada Hills-Knollwood, Sylmar, and Sunland-Tujunga-Shadow Hills-Lake View Terrace-East La Tuna Canyon CPAs used active transportation options at rates below 5%.

Figure 34: Walk, Bicycle, and Public Transportation Commute Mode Share by Community Plan Area in 2010



Source: 2010 Census ACS. Accessed from American FactFinder.

The percentage of the population taking public transportation to work was highest in Westlake (40%), followed by Central City, Boyle Heights, South Los Angeles, Wilshire, and Southeast Los Angeles at 19%. Five other CPAs had transit mode shares above the City average. The CPAs with the highest percentages of workers who walked to work were Westwood (24%) and Central City (16%). By far, the Venice CPA had the highest rate of bicycling to work (4%), which was twice as high as the next highest CPA (South Los Angeles at 2%) and four times the City average. Venice had about 7 linear miles of Class I and Class II bicycle facilities, ranking it among the top three CPAs in linear miles of bike facilities per 10,000 residents. The Bel Air-Beverly Crest CPA had the lowest share of workers commuting to work by walking, biking, and using public transportation (all less than 1%).

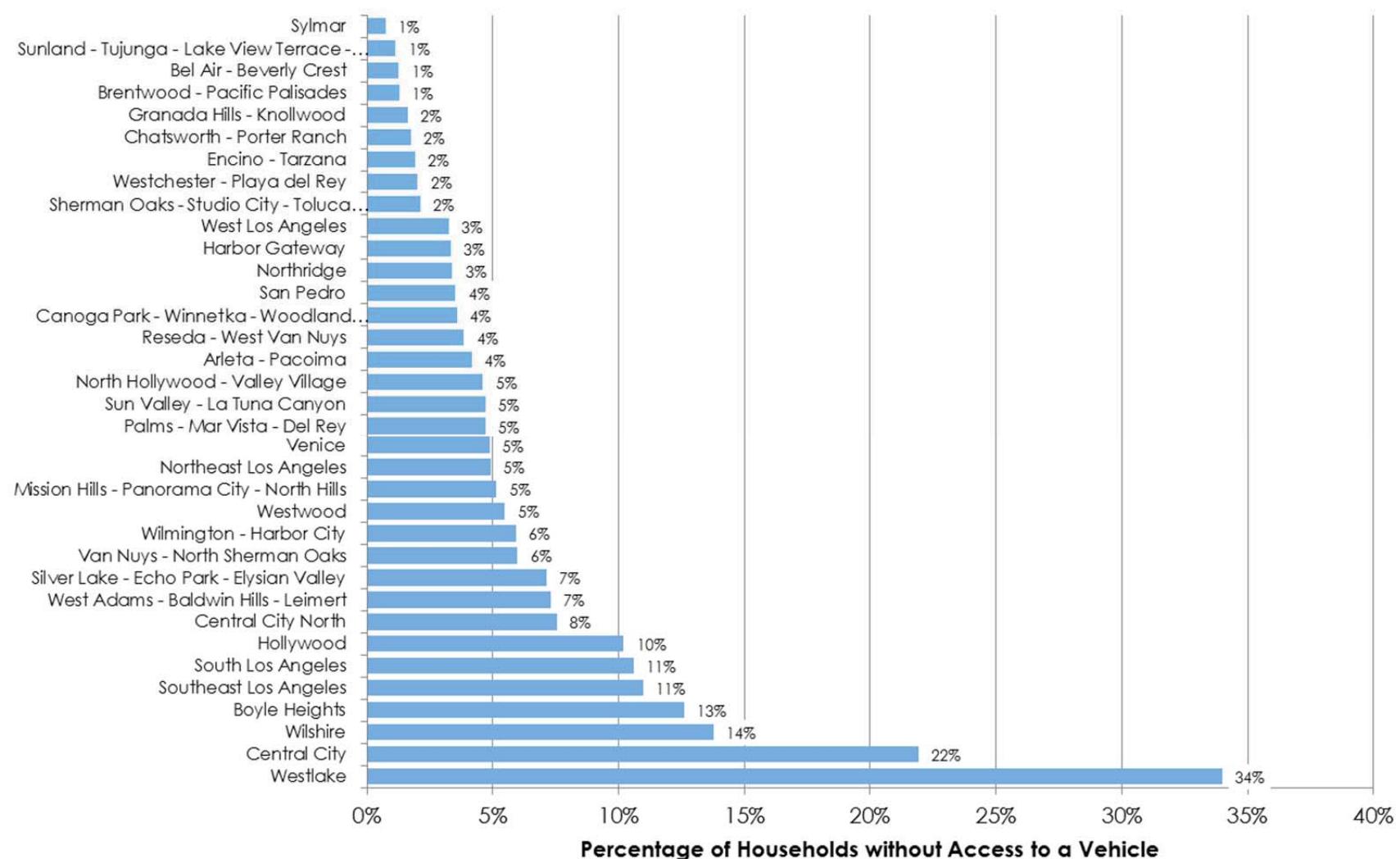
ZERO-VEHICLE HOUSEHOLDS

Zero-vehicle households do not own or have regular access to an automobile. Households without access to a car have more difficulty accessing jobs, schools, shopping areas and medical care. This is particularly true in lower density areas, since households must rely on transit, walking, biking, or carpooling. The proportion of households without access to a vehicle was 7% for the City and 5% for the County in 2010.

Figure 35 shows the percentage of households without access to a vehicle by CPA. The Westlake (34%) and Central City (22%) CPAs contained the highest proportions of zero-vehicle households, followed by Wilshire (14%), Boyle Heights (13%), South Los Angeles (11%), Southeast Los Angeles (11%), and Hollywood (10%). The Wilshire CPA had the largest number of households without access to vehicles (over 20,000). All of these CPAs had relatively high levels of transit service and above average levels of walkability. The CPAs with lowest proportions of zero-vehicle households included Sylmar, Sunland-Tujunga-Shadow Hills-Lake View Terrace-East La Tuna Canyon, Bel Air-Beverly Crest, and Brentwood-Pacific Palisades (1%), and these CPAs all had lower population and employment densities. Map 77 shows the percentage of households without access to a vehicle.

¹²⁸ U.S. Environmental Protection Agency. (January, 29, 2010). Air Pollution Control Orientation Course. "Effects of Air Pollutants - Health Effects". Retrieved from: <http://www.epa.gov/eogapti1/course422/ap7a.html>

Figure 35: Zero Vehicle Households by Community Plan Area in 2010



Source: 2010 Census ACS. Accessed from American FactFinder.

ACCESS TO TRANSIT

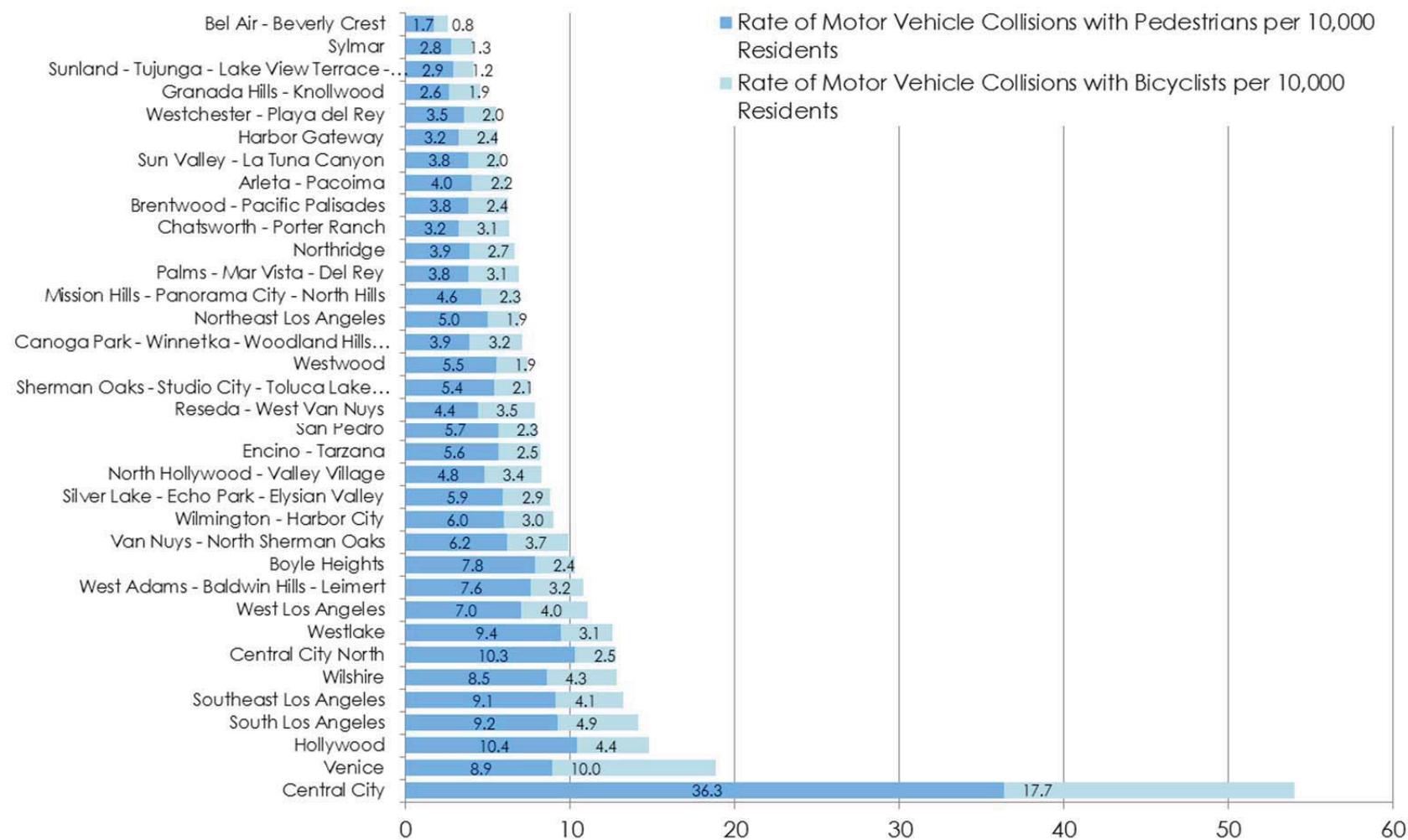
About 75% of the City's residents lived within a half-mile of a transit stop along a high frequency Metro transit line in 2010. High frequency lines have transit service every 15 minutes or less during the peak commute hours. This included nearly 100% of the population in the Central City, Westlake, Wilshire, Westwood, and Boyle Heights CPAs and over 90% of residents of the South Los Angeles, Central City North, West Adams-Baldwin Hills-Leimert, and Southeast Los Angeles CPAs. Less than 5% of residents in Bel Air-Beverly Crest, San Pedro, and Granada Hills-Knollwood lived near high frequency transit lines. Map 78 shows the population density of census blocks with one-half mile of a high frequency transit stop.

INJURIES AND FATALITIES FROM COLLISIONS WITH MOTOR VEHICLES

Transportation safety is an important indicator of public health. Automobile collisions result in significant health, economic, and transportation burdens for families and in societal costs. In 2010, there were over 219 fatal collisions and 24,780 injury collisions recorded in the City of Los Angeles. These collisions included 2,612 incidents with pedestrians (6.89 collisions per 10,000) that resulted in 100 fatalities, and 2,076 incidents with bicyclists (5.47 collisions per 10,000) that resulted in 11 fatalities. Vehicle to vehicle collisions resulted in 108 fatalities in 2010. As shown on Map 79, the zip codes adjacent to the South Los Angeles, Southeast Los Angeles, West Adams-Baldwin Hills-Leimert, Sun Valley-La Tuna Canyon, Sunland-Tujunga-Shadow Hills-Lake View Terrace-East La Tuna Canyon CPAs had some of the highest annual motor vehicle collision-related mortality rates per 100,000 residents (vehicle to vehicle collisions).

Between 2001 and 2010, the highest number of motor vehicle collisions with pedestrians was approximately 2,500 in both the South Los Angeles and Southeast Los Angeles CPAs. As shown in Figure 36 and on Map 80, 11 CPAs had average annual rates of collisions with pedestrians that were higher than the citywide figure. The average annual rate of pedestrian collisions per 10,000 residents was highest in Central City (36.3), followed by Central City North (10.3) and Hollywood (10.4). In general, the CPAs with the highest average annual collision rates also tended to be among the CPAs with the highest share of workers that commute by walking. For example Central City had the second highest percentage of workers commuting by walking, Central City North had the third highest share, and Hollywood had the fifth largest share. The higher incidence of pedestrian injuries and fatalities in these communities is likely a reflection of both the infrastructure conditions and the higher rates of pedestrian activity that increase exposure to collisions.

Figure 36: Average Annual Rate of Motor Vehicle Collisions with Pedestrians and Bicyclists per 10,000 Residents by Community Plan Area between 2001 and 2010



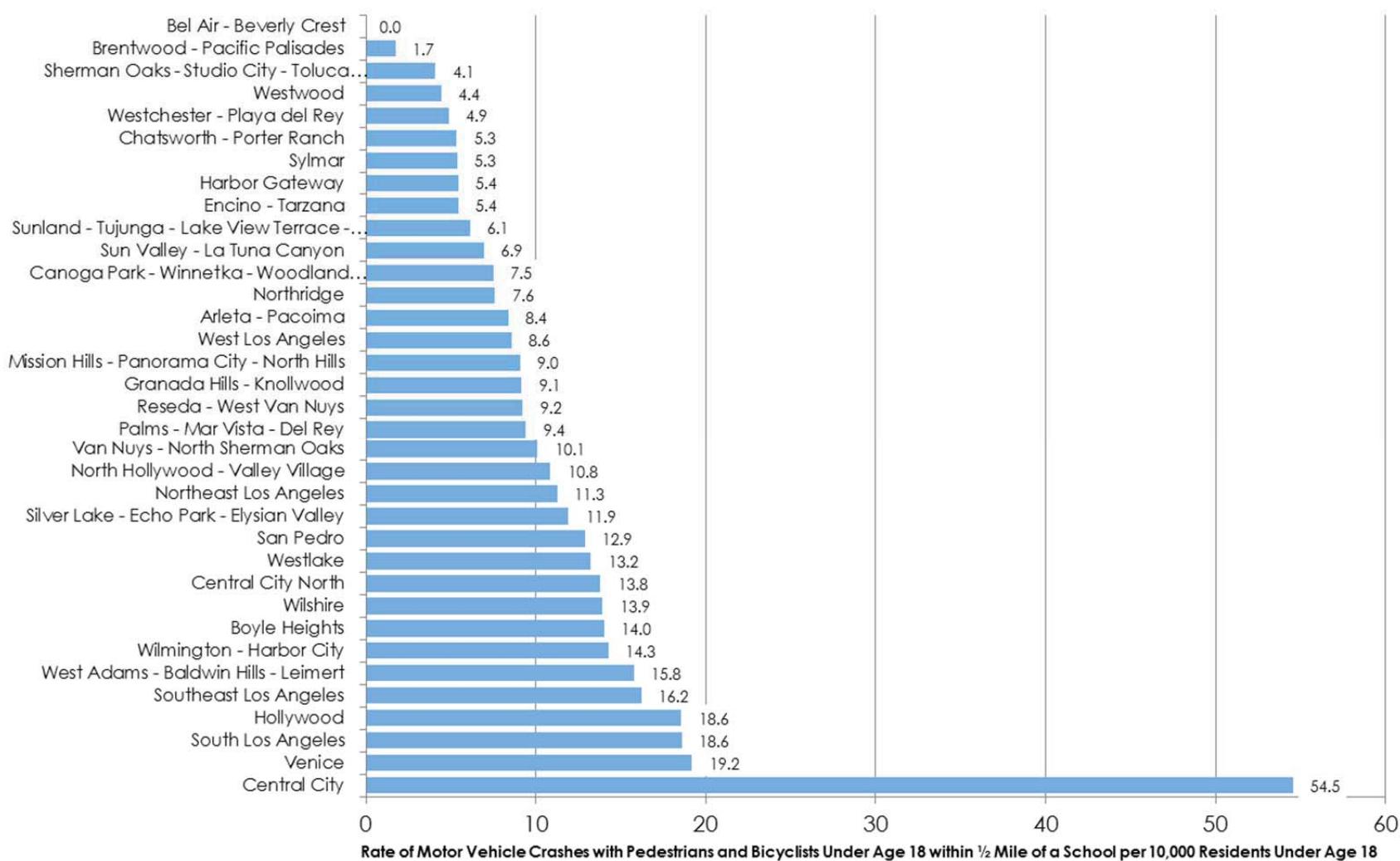
Source: SWITRS collision data was collected from TIMS at U.C. Berkeley (2001-2010), compared to 2010 U.S. Census data, and analyzed by Raimi + Associates in 2012.

Between 2001 and 2010, South Los Angeles, Southeast Los Angeles, and Wilshire CPAs reported more than 1,100 collisions between motor vehicles and bicycles. As shown on Map 81, the average annual rate of collisions with bikes per 10,000 residents was highest in Central City (17.6) and Venice (10). By far, the Venice CPAs has the highest proportion of residents that biked to work (4%).

Map 82 combines motor vehicle collisions with pedestrian and cyclists into a single heat map, showing the density of collisions across the City. The highest concentrations of collisions were in the Wilshire, Westlake, Hollywood, and Central City CPAs.

Children under age 18 accounted for a significant proportion of injury accidents (27%) in 2010. Figure 37 and Map 82 both show the average annual rate of collisions with pedestrians and bicyclists under age 18 within a half-mile of a school for each CPA. The CPAs with the highest rates were Central City, Venice, Hollywood, and South Los Angeles and Southeast Los Angeles (greater than 18 per 10,000 residents under age 18). The Bel Air-Beverly Crest (0) and Brentwood-Pacific Palisades (1.7) CPAs had the lowest rates of collisions with pedestrians and bicyclists under age 18 within a half-mile of a school.

Figure 37: Average Annual Rate of Motor Vehicle Collisions with Pedestrians and Bicyclists under Age 18 within ½ Mile of a School per 10,000 Residents under Age 18 by Community Plan Area between 2001 and 2010



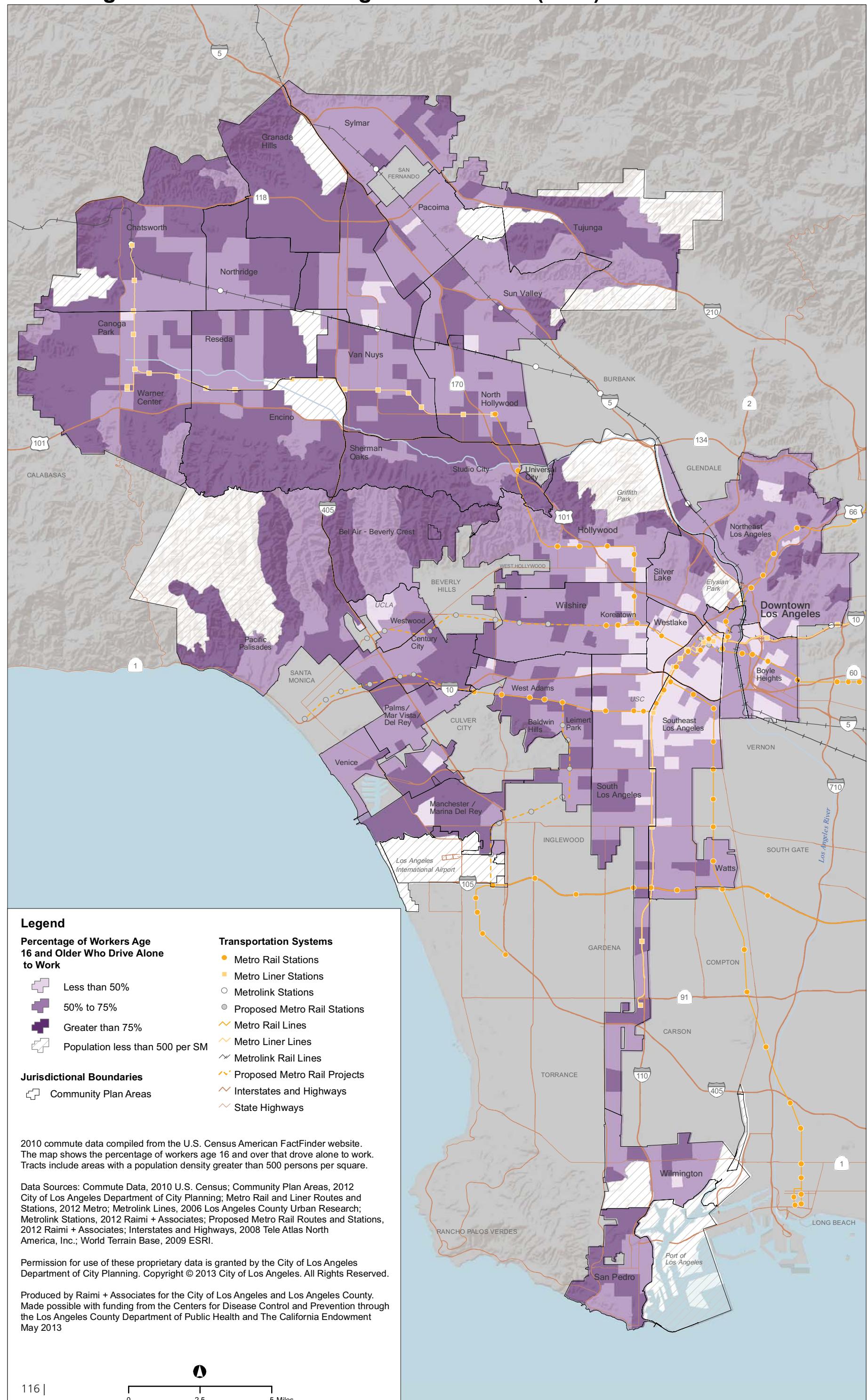
Source: SWITRS collision data was collected from TIMS at U.C. Berkeley (2001-2010), compared to 2010 U.S. Census data, and analyzed by Raimi + Associates in 2012.

TRANSPORTATION INDEX

The Transportation Index standardizes transportation demand, transportation infrastructure, and injury variables, and then averages them together, yielding a score on a scale of 0-100. Higher values indicate worse transportation conditions. Variables include:

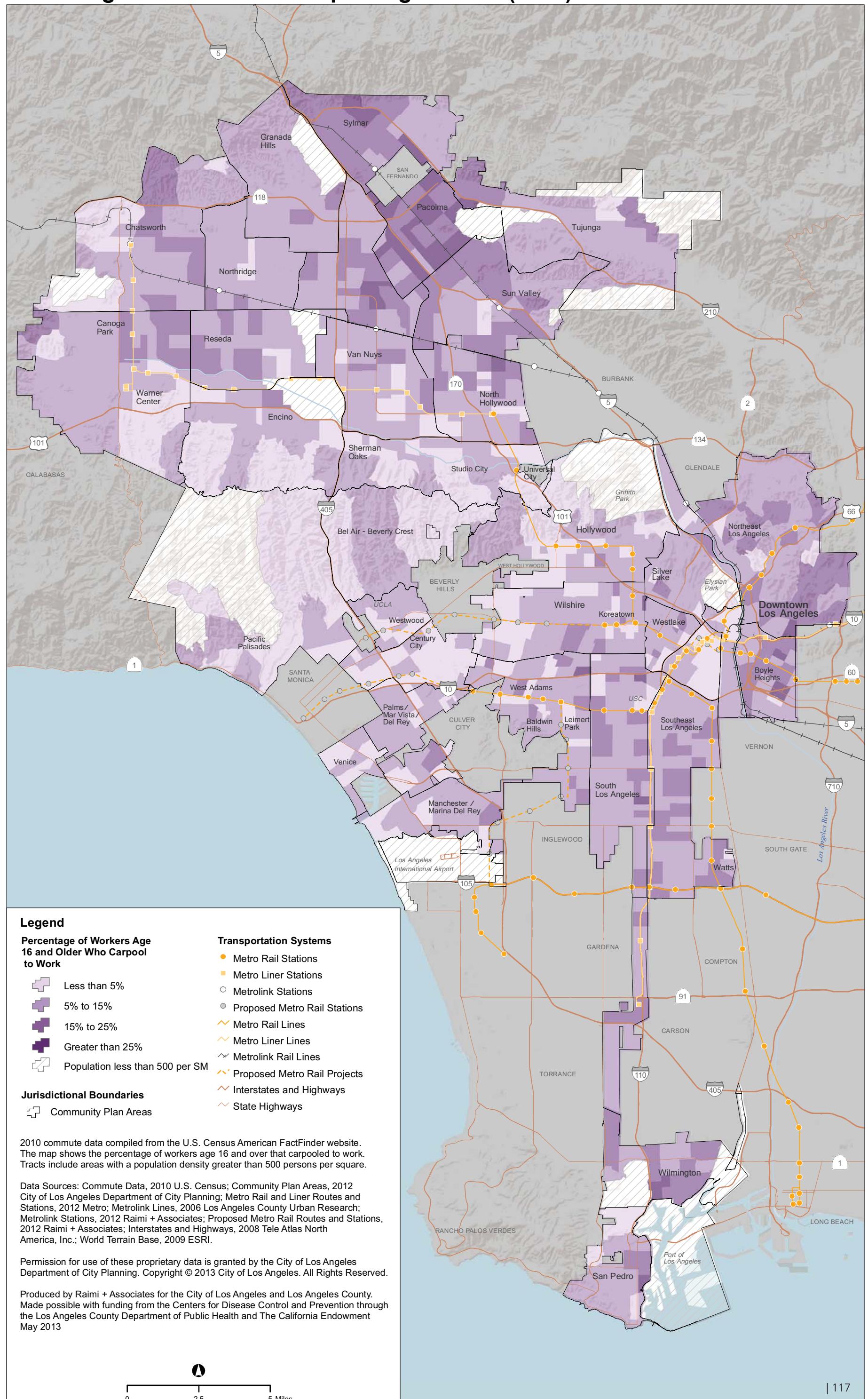
- **Non-Auto Commuting:** Percentage of workers walking and biking to work (Map 75 and Map 76).
- **Transit Ridership:** Total daily boardings at Metro transit stops.
- **Street Connectivity:** Intersections per square mile (Map 54).
- **Bicycle Facilities:** Linear miles of class I and II bicycle facilities.
- **High-Frequency Metro Bus Service:** Bus stops with transit frequencies less than 15 minutes during peak commute periods.
- **Collisions:** Motor vehicle crashes with pedestrians per 10,000 residents and motor vehicle crashes with bicyclists per 10,000 residents (Map 80 and Map 81).
- **Collisions near Schools:** Motor vehicle crashes with pedestrians and bicyclists within one-half mile of schools where the victim was age 18 and under per 10,000 residents (Map 83).

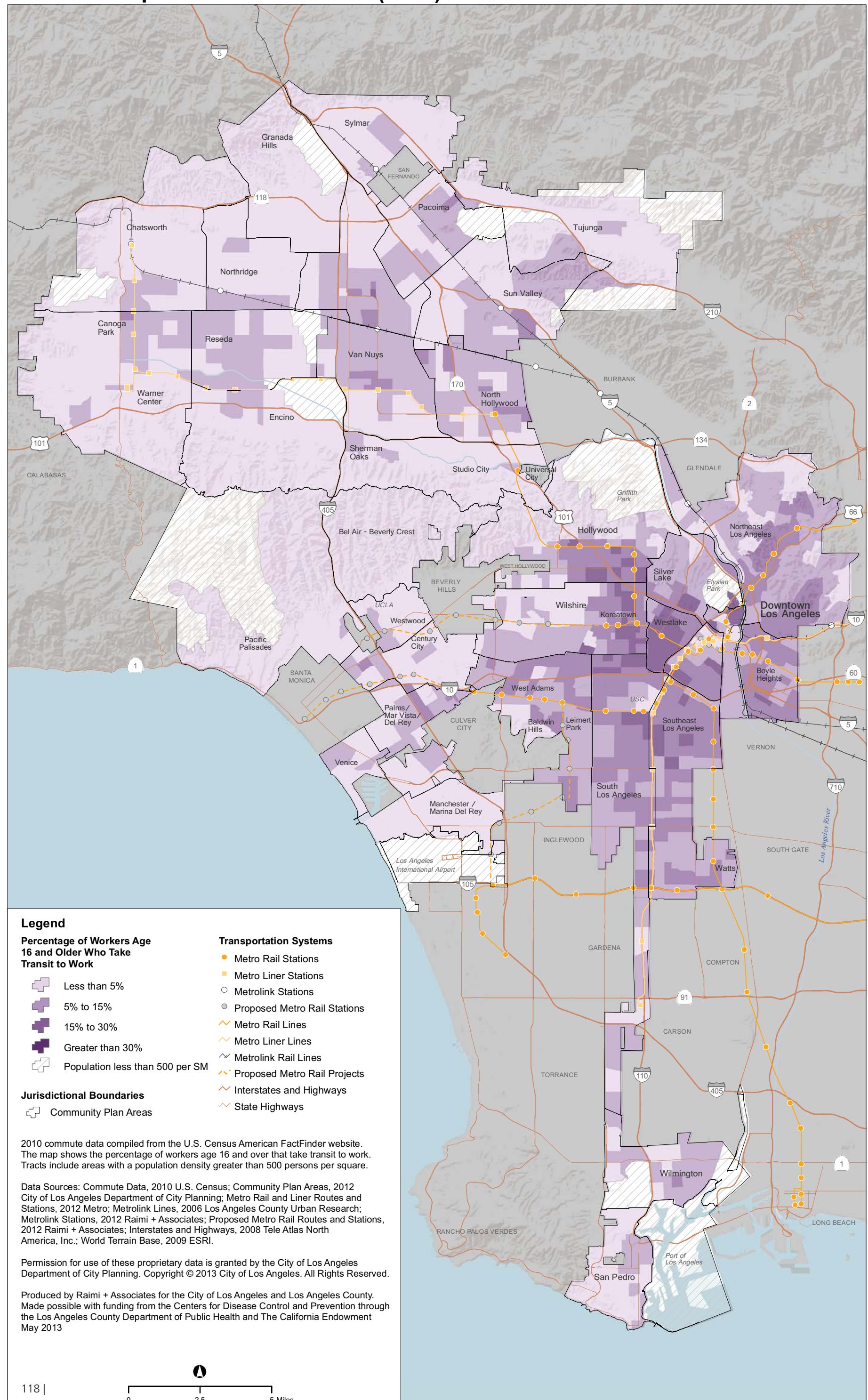
Map 84 shows the Transportation Index score for each census tract. The census tracts with the best scores (closest to zero) are located adjacent to Downtown Los Angeles and along the primary Metro rail corridors, which include tracts in the Westlake, Central City, South Los Angeles, Southeast Los Angeles, Hollywood, Wilshire, Silver Lake-Echo Park-Elysian Valley, North Hollywood-Valley Village, and Van Nuys-North Sherman Oaks CPAs. The census tracts with the lowest Transportation Index scores are dispersed across the City. Areas with lower scores include the Santa Monica Mountains, Granada Hills-Knollwood, Sylmar, Van Nuys-North Sherman Oaks, and Southeast Los Angeles.

Map 72**Percentage of Commuters Driving Alone to Work (2010)**

Map 73

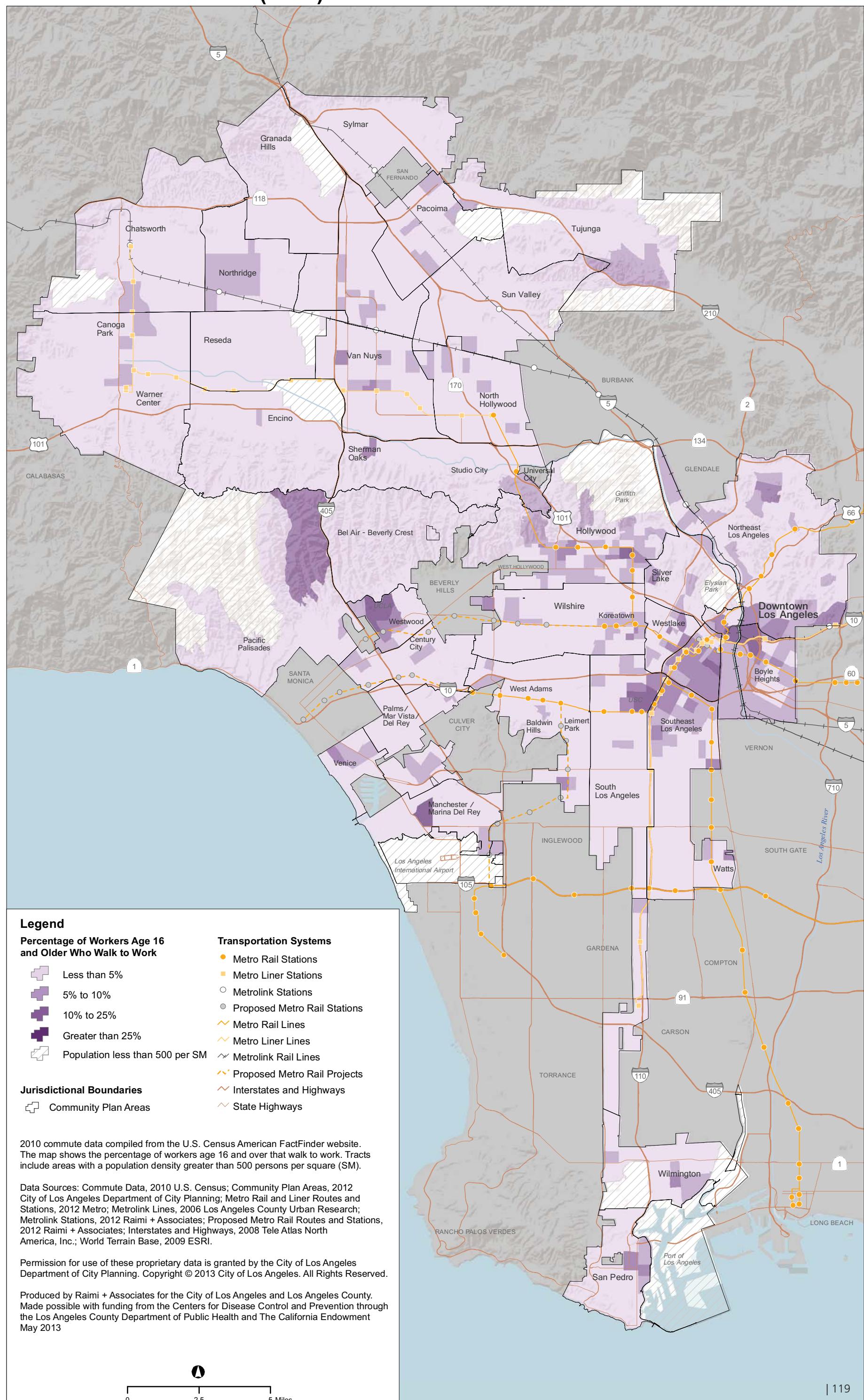
Percentage of Commuters Carpooling to Work (2010)



Map 74**Public Transportation Commuters (2010)**

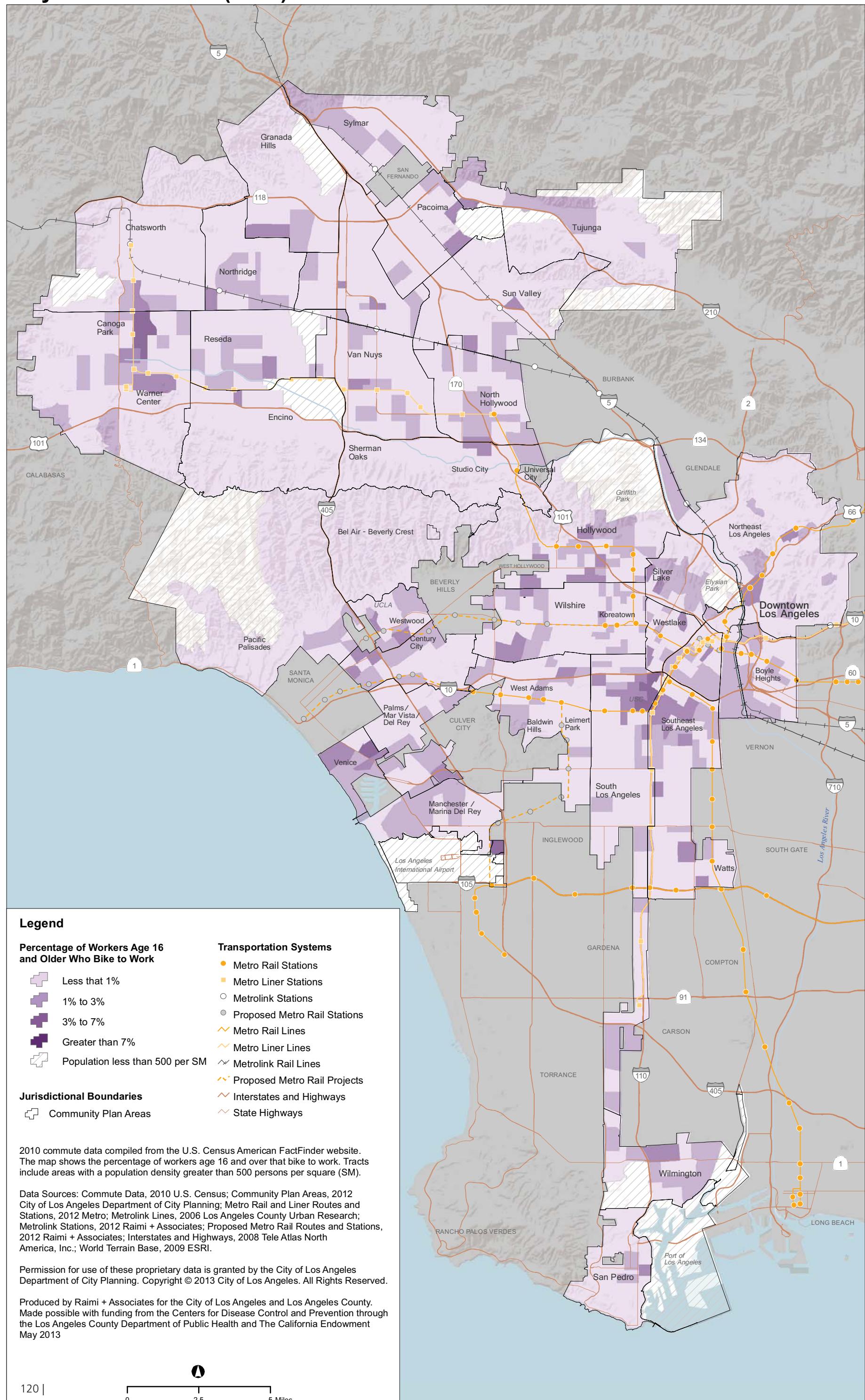
Map 75

Pedestrian Commuters (2010)



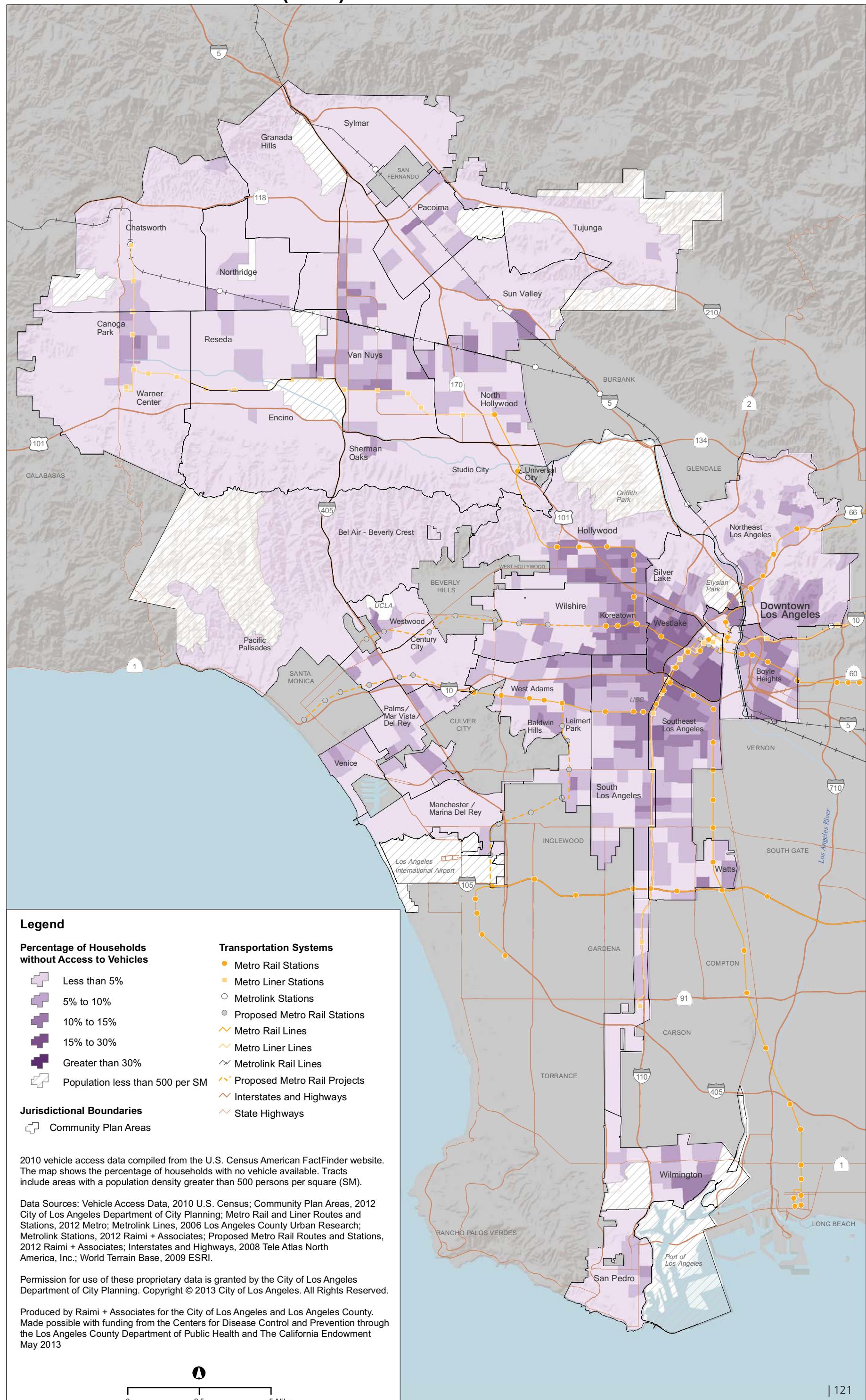
Map 76

Bicycle Commuters (2010)



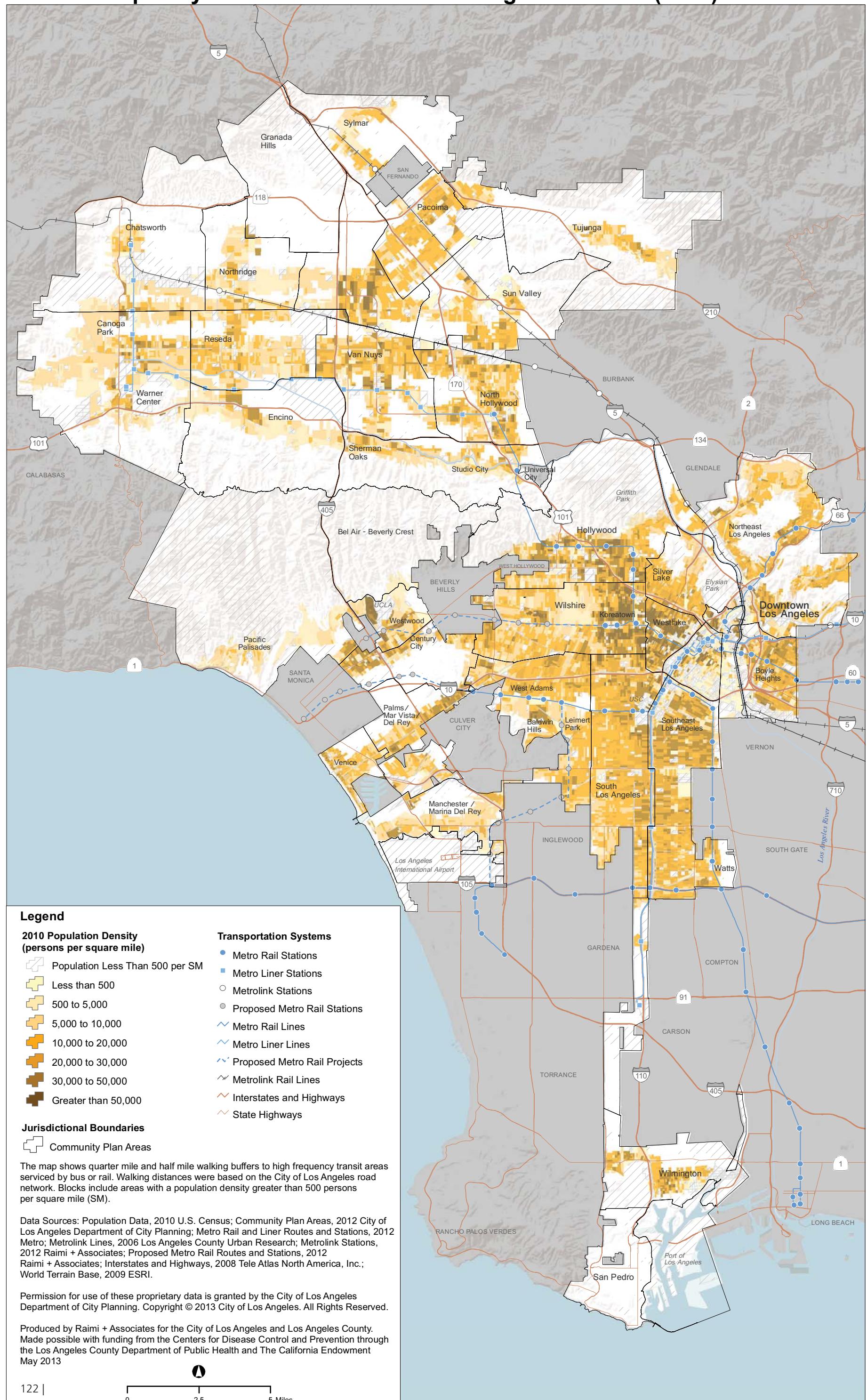
Map 77

Zero Vehicle Households (2010)



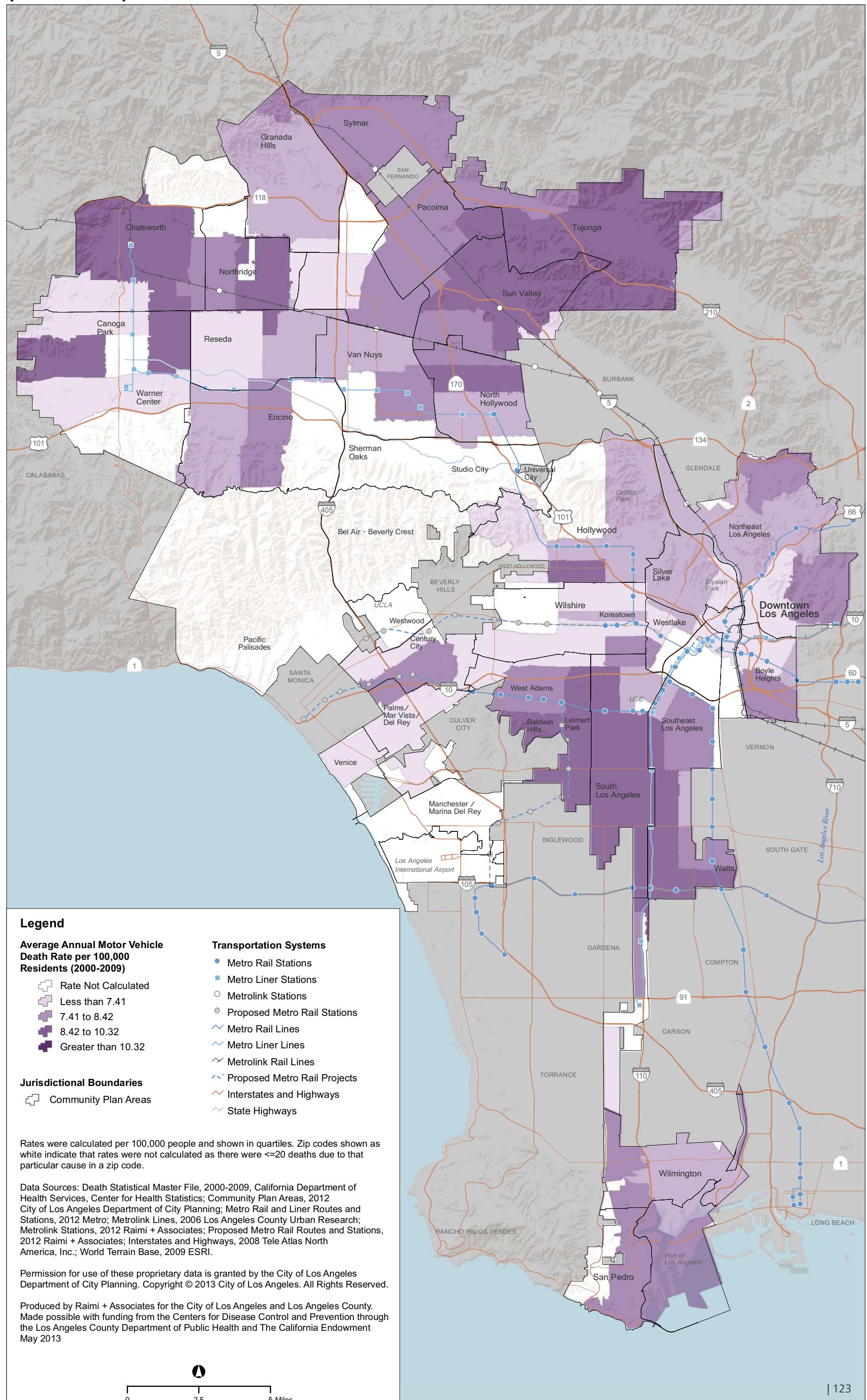
Map 78

Population Density of Census Blocks within 1/2 Mile of Metro Transit Stops Where Service Frequency is 15 Minutes or Less During Peak Hours (2010)



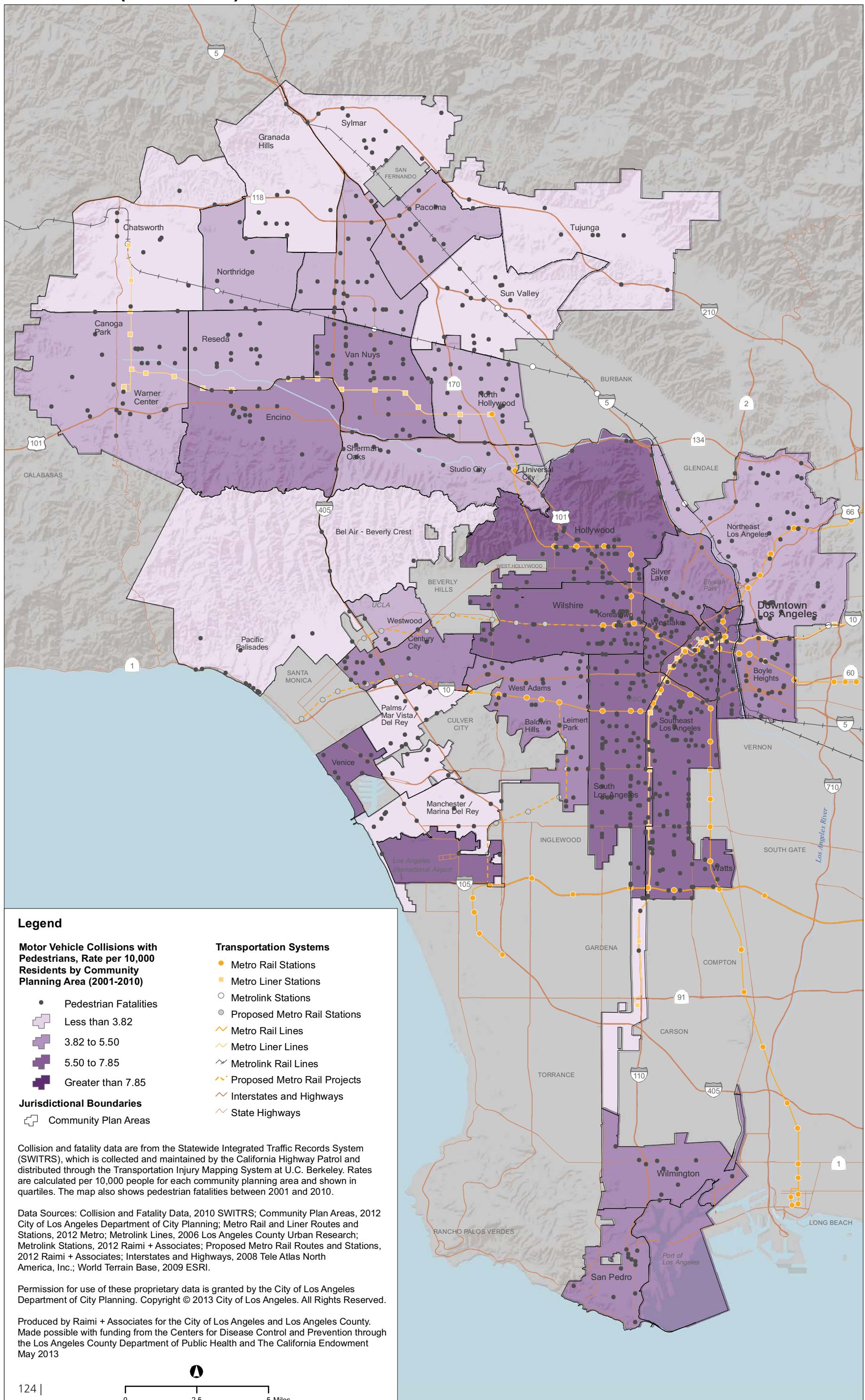
Map 79

Average Annual Motor Vehicle Traffic Mortality Rate per 100,000 Residents (2000-2009)



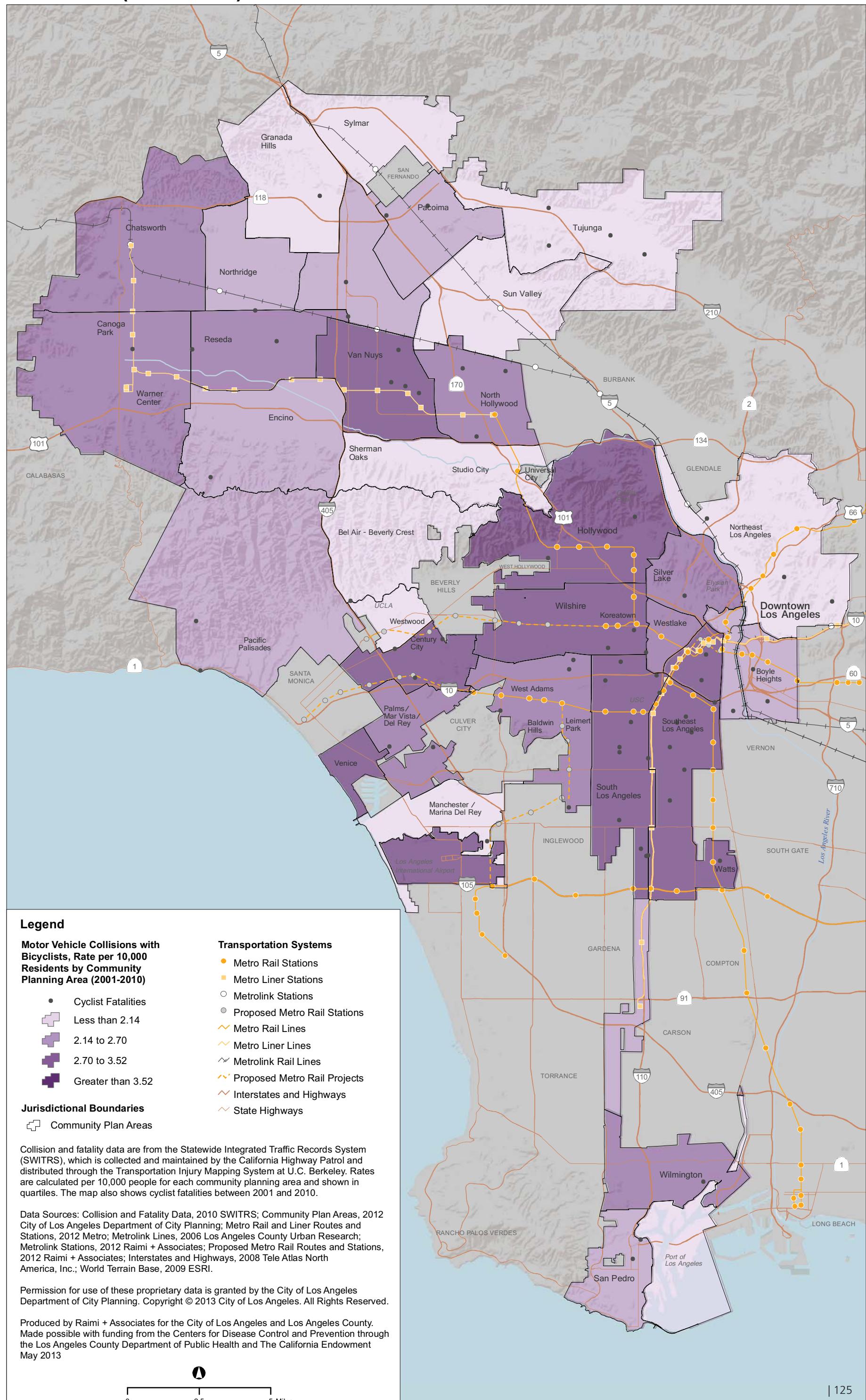
Map 80

Average Annual Rate of Motor Vehicle Collisions with Pedestrians per 10,000 Residents (2001-2010)



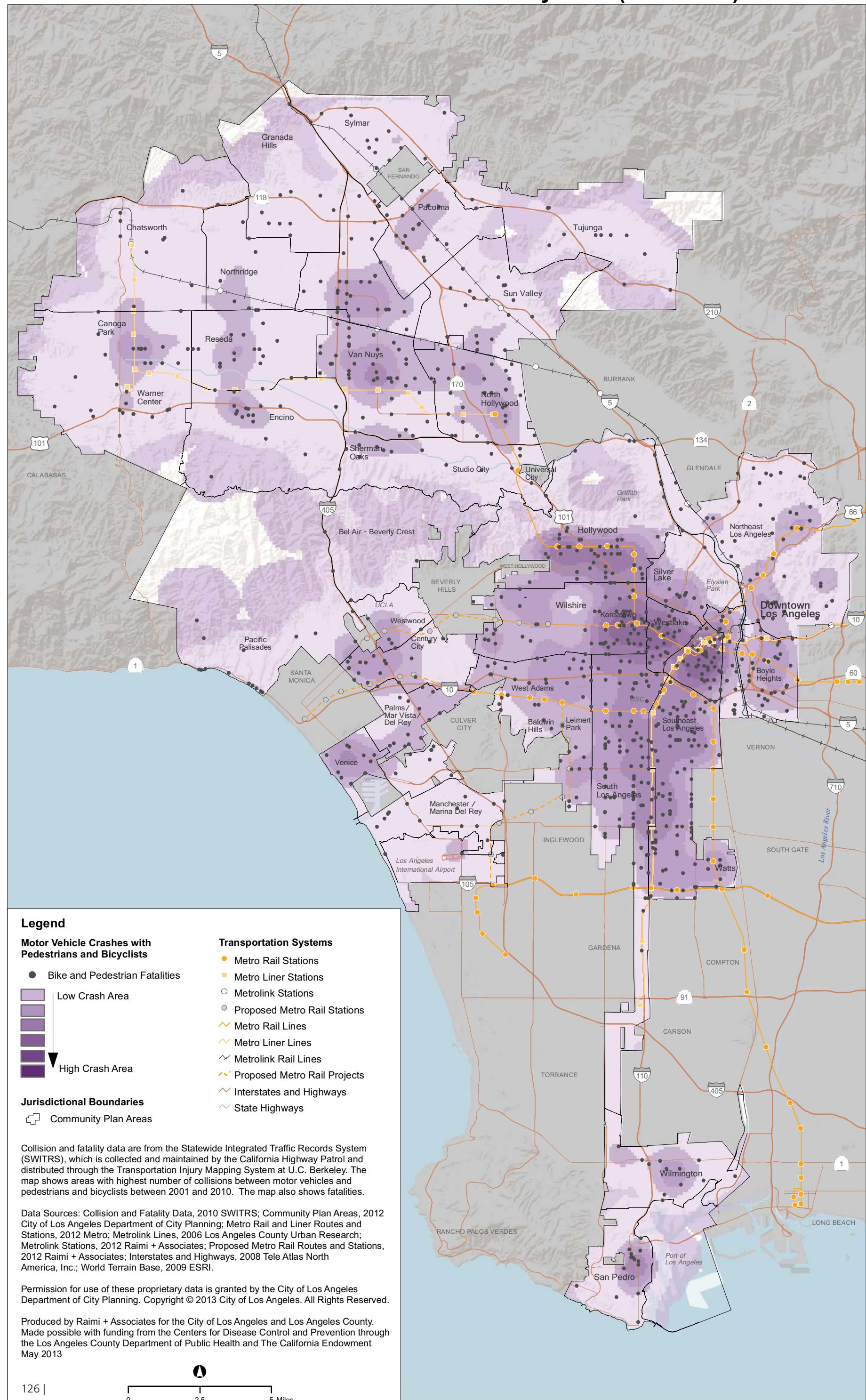
Map 81

Average Annual Rate of Motor Vehicle Collisions with Bicyclists per 10,000 Residents (2001-2010)



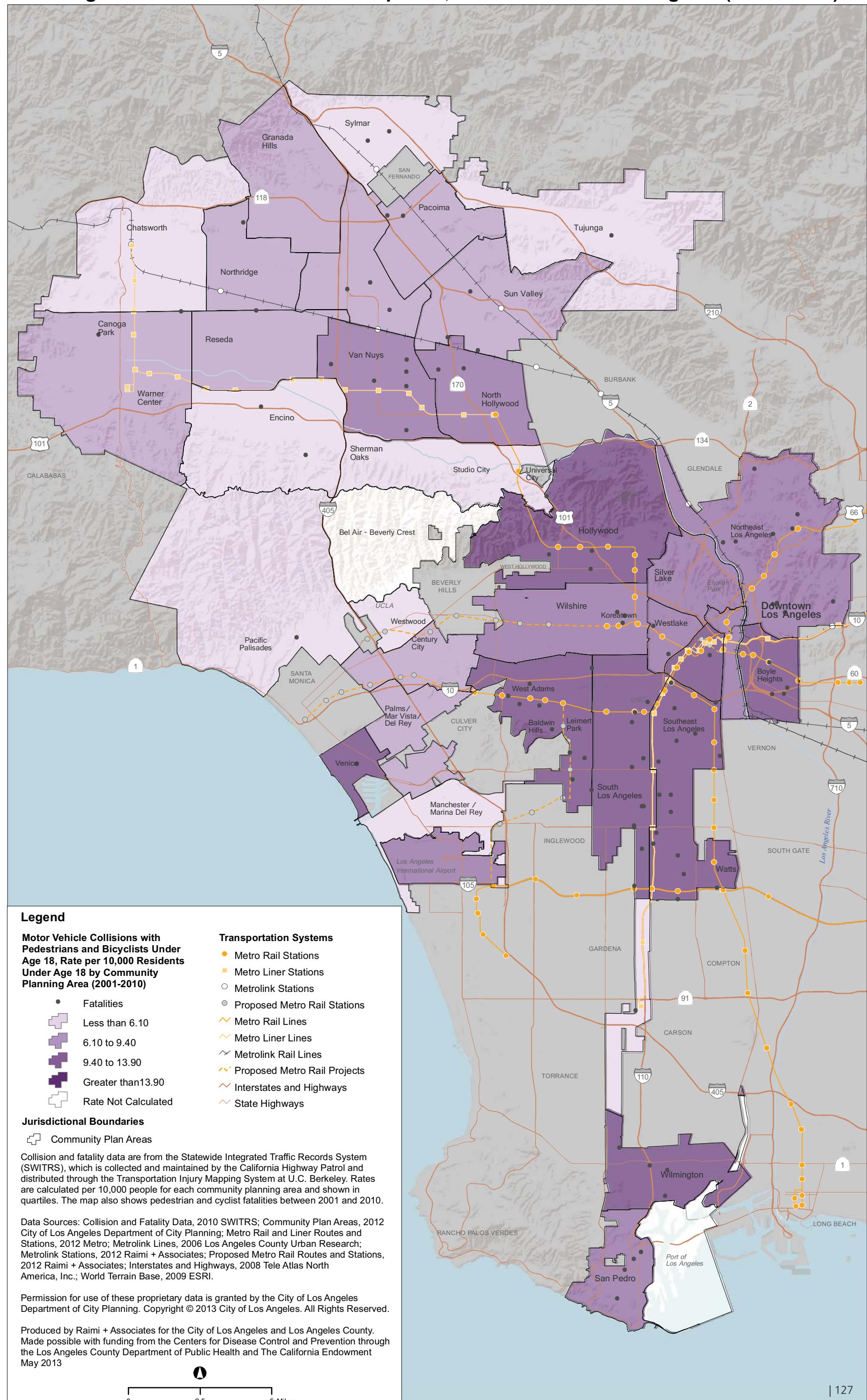
Map 82

Motor Vehicle Collisions with Pedestrians and Bicyclists (2001-2010)



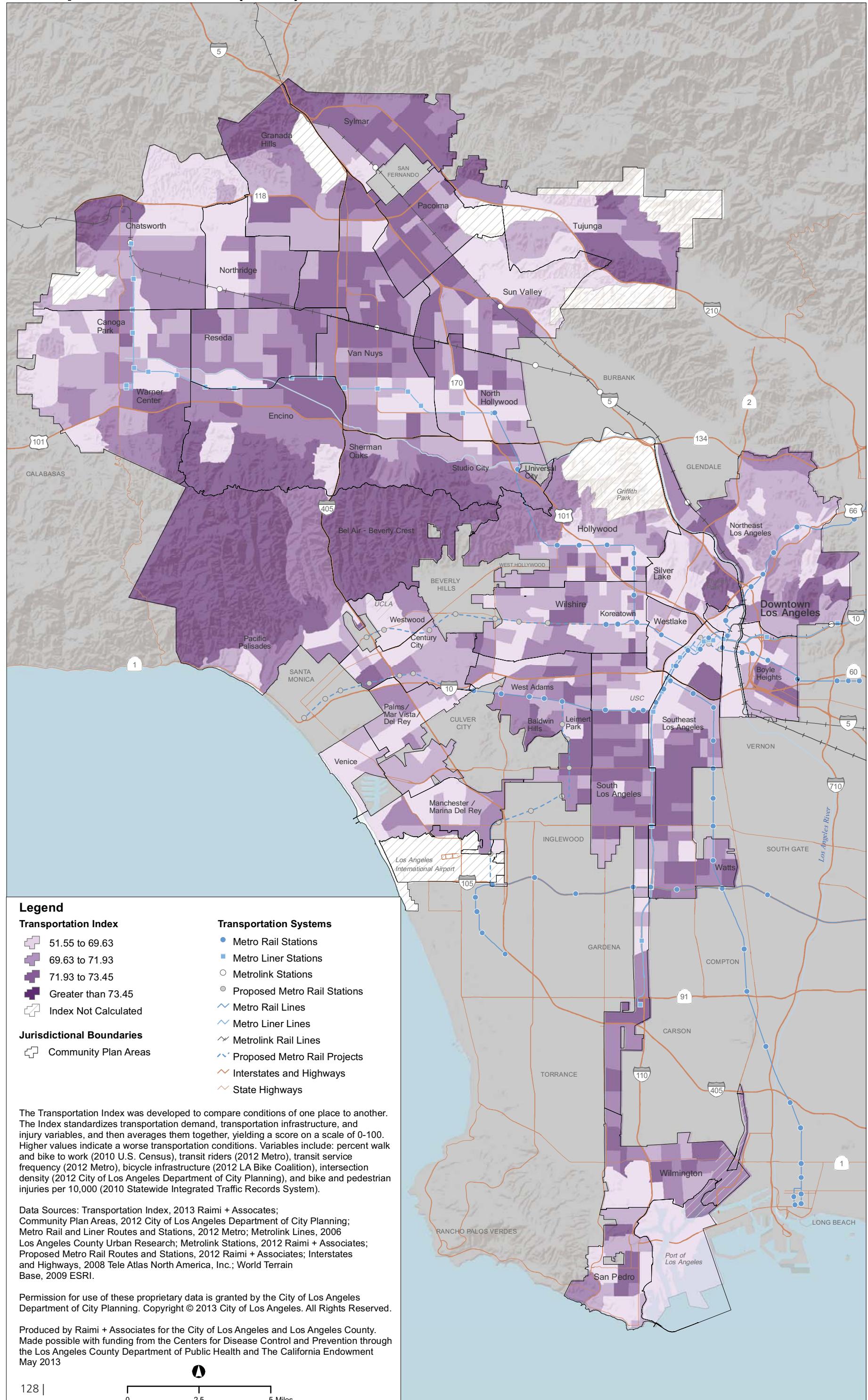
Map 83

Average Annual Rate of Motor Vehicle Collisions with Pedestrians and Bicyclists Under Age 18 within 1/2 Mile of a School per 10,000 Residents Under Age 18 (2001- 2010)



Map 84

Transportation Index (2010)



9 | Food Systems

Unhealthy eating habits are a primary risk factor for many leading causes of death in Los Angeles. They also contribute to the rising number of obese and overweight Americans and increasing rates of chronic diseases. It is important to increase access to nutritious food and raise awareness of the importance of healthy eating habits in order to combat the nation's obesity epidemic. Creating a healthy food system is critical to reducing the rates of food-related health issues, such as diabetes and heart disease.

MAPS AND INDICATORS

The Food Systems Chapter incorporates information about the location of healthy and unhealthy food sources, alcohol outlets, and food security participants and vendors. The following describes each of the maps included within this section and the data associated with each map.

- **Modified Retail Food Environment Index:** The modified Retail Food Environment Index (mRFEI) map measures the number of healthy and unhealthy food retailers in an area and presents the percentage that are healthy. Data is from the CDC for 2011.
- **Grocery Store Rate per 10,000 Residents and Healthy Food Sources:** The map shows the rate of grocery stores per 10,000 residents by community plan area and the location of produce stores, farmer's markets, and community gardens in 2011. Data is from a variety of sources, including Dun & Bradstreet, the California Federation of Certified Farmers' Markets, and USC SSI.
- **Fast Food Restaurant Rate per 10,000 Residents:** The map shows the rate of fast food restaurants, including sandwich and pizza establishments, per 10,000 people in a census tract. Data is from Dun & Bradstreet for 2011.
- **Off-Sale Liquor License Rate per 10,000 Residents:** The map shows a listing of all off-sale liquor licenses through September 2012. Rates are calculated per 10,000 residents. Data is from the California Alcohol Beverage Control.
- **On-Sale Liquor License Rate per 10,000 Residents:** The map shows a listing of all on-sale liquor licenses through September 2012. Rates are calculated per 10,000. Data is from the California Alcohol Beverage Control.
- **Average Annual Rate of Motor Vehicle Crashes Involving Alcohol per 10,000 Residents:** The map shows the rate of motor vehicle crashes involving alcohol per 10,000 residents in a CPA. Collision data is from the SWITRS, which is collected and maintained by the California Highway Patrol and is distributed through the TIMS at U.C. Berkeley.
- **CalFresh Vendors and Participants:** The map shows the percentage of households participating in CalFresh, formerly known as the Food Stamps program, by census tract and the rate of CalFresh vendors per 1,000 households participating in CalFresh by CPA. Data is from the California Department of Public Health and the 2010 U.S. Census ACS 5-year Estimates.
- **Woman, Infant, and Children Vendor Rate per 10,000 Residents:** the map shows the rate of WIC vendors per 10,000 residents in a CPA. Data is from the California Department of Public Health for 2010.

KEY FINDINGS

RETAIL FOOD LOCATIONS

Residents of communities with access to a full service grocery store or supermarket tend to eat more fruits and vegetables, have lower body weights, and lower rates of chronic diseases.^{129 130 131 132} Conversely, those in communities without access to supermarkets generally have higher body weights (on average) and suffer from higher rates of premature death and chronic disease.^{133 134} In addition, areas with more fast food restaurants and convenience stores than grocery stores experience higher rates of obesity and chronic disease across all income groups.¹³⁵

Developed by the CDC, the modified Retail Food Environment Index (mRFEI) assesses the number of healthy and less healthy food retailers within a given geographic area. Healthy food retailers are defined as supermarkets, larger grocery stores, supercenters, and produce stores within census tracts or one-half mile from the tract boundary. North American Industry Classification Codes (NAICS) were used to define healthy retail food, and included: supermarkets and larger grocery stores (NAICS 445110; supermarkets further defined as stores with ≥ 50 annual payroll employees and larger grocery stores defined as stores with 10–49 employees); fruit and vegetable markets (NAICS 445230); warehouse clubs (NAICS 452910). Produce markets are defined as establishments that sell fruits and vegetables. Fast food restaurants, small grocery stores, and convenience stores were classified as unhealthy retail food. Fast food stores were defined according to NAICS code 722211(fast food restaurants). Convenience stores were defined according to NAICS code 445120 (convenience stores) or NAICS code 445110 (small groceries) where the number of employees was three or fewer.

The mRFEI is calculated for a census tract, and it is calculated as: (healthy retailers) \div (healthy retailers + unhealthy retailers). The result is expressed as a percentage. Areas with a score of less than 5 are considered to have "poor access" to healthy retail food, scores of 5 to 10 to have "fair access," scores above 10 to 25 to have "good access," and scores above 25 have "high access." Map 85 shows the mRFEI score for each census tract.

¹²⁹ Morland, K., Wing, S., and Diez, R. A. (2002). The Contextual Effect of the Local Food Environment on Residents' Diets: The Atherosclerosis Risk in Communities Study. *American Journal of Public Health*, 92(11), pp. 1761-1767.

¹³⁰ Zenk, S.N., et. al. (2009). Neighborhood Retail Food Environment and Fruit and Vegetable Intake in a Multiethnic Urban Population. *American Journal of Health Promotion*, 23 (4), pp. 255-264.

¹³¹ Moore, L.V., et. al. (2008). Associations of the Local Food Environment with Diet Quality – A Comparison of Assessments Based on Surveys and Geographic Information Systems: The Multi-Ethnic Study of Atherosclerosis. *American Journal of Epidemiology*, 167(8), pp. 917-924.

¹³² Rose, D., and Richards, R. (2004). Food Store Access and Household Fruit and Vegetable Use among Participants in the US Food Stamp Program. *Public Health Nutrition*, 7(8), p. 1081.

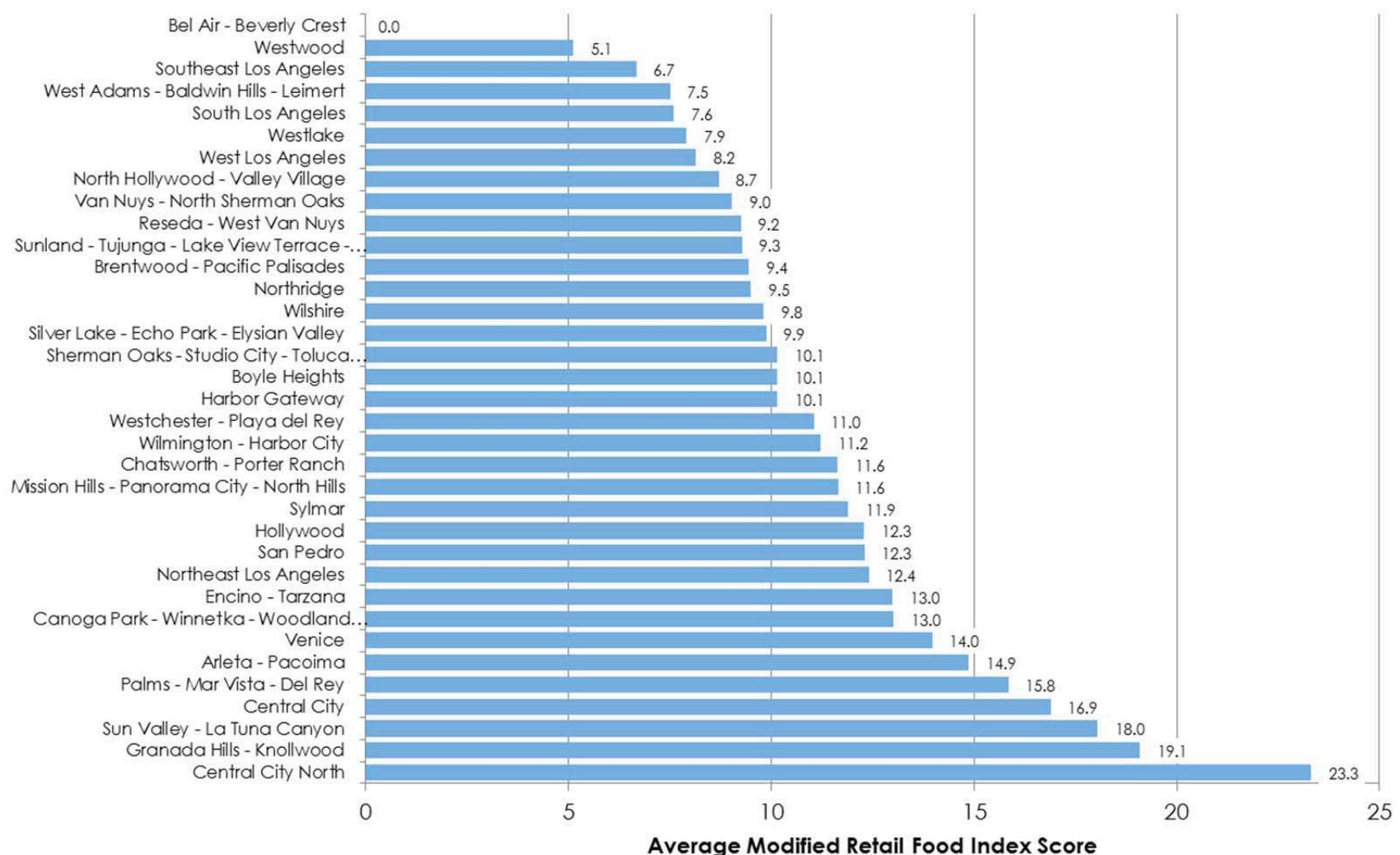
¹³³ Ahern, M., Brown, C., and Dukas, S. A. (2011). National Study of the Association between Food Environments and County-Level Health Outcomes. *The Journal of Rural Health*, p. 367.

¹³⁴ University of California Los Angeles, Center for Health Policy. (2008). Designed for Disease: The Link Between Local Food Environments and Obesity and Diabetes. Retrieved from <http://www.healthpolicy.ucla.edu/pubs/Publication.aspx?pubID=250>.

¹³⁵ California Center for Public Health Advocacy. (2007). Searching for Healthy Food: The Food Landscape in California Cities and Counties. Retrieved from <http://www.publichealthadvocacy.org/searchingforhealthyfood.html>.

These census tract scores were averaged together for each CPA as shown in Figure 38. Twenty CPAs had an average score that falls within the “good access” category. mRFEI scores were highest in Central City North (23) and Granada Hills (19). Sixteen CPAs had an average score that falls within the “fair access” category. The South Los Angeles, Southeast Los Angeles, and West Adams-Baldwin Hills-Leimert CPAs all had mRFEI scores at 7.5 or below, while the Bel Air-Beverly Crest CPA had no healthy retail food access according to the mRFEI.

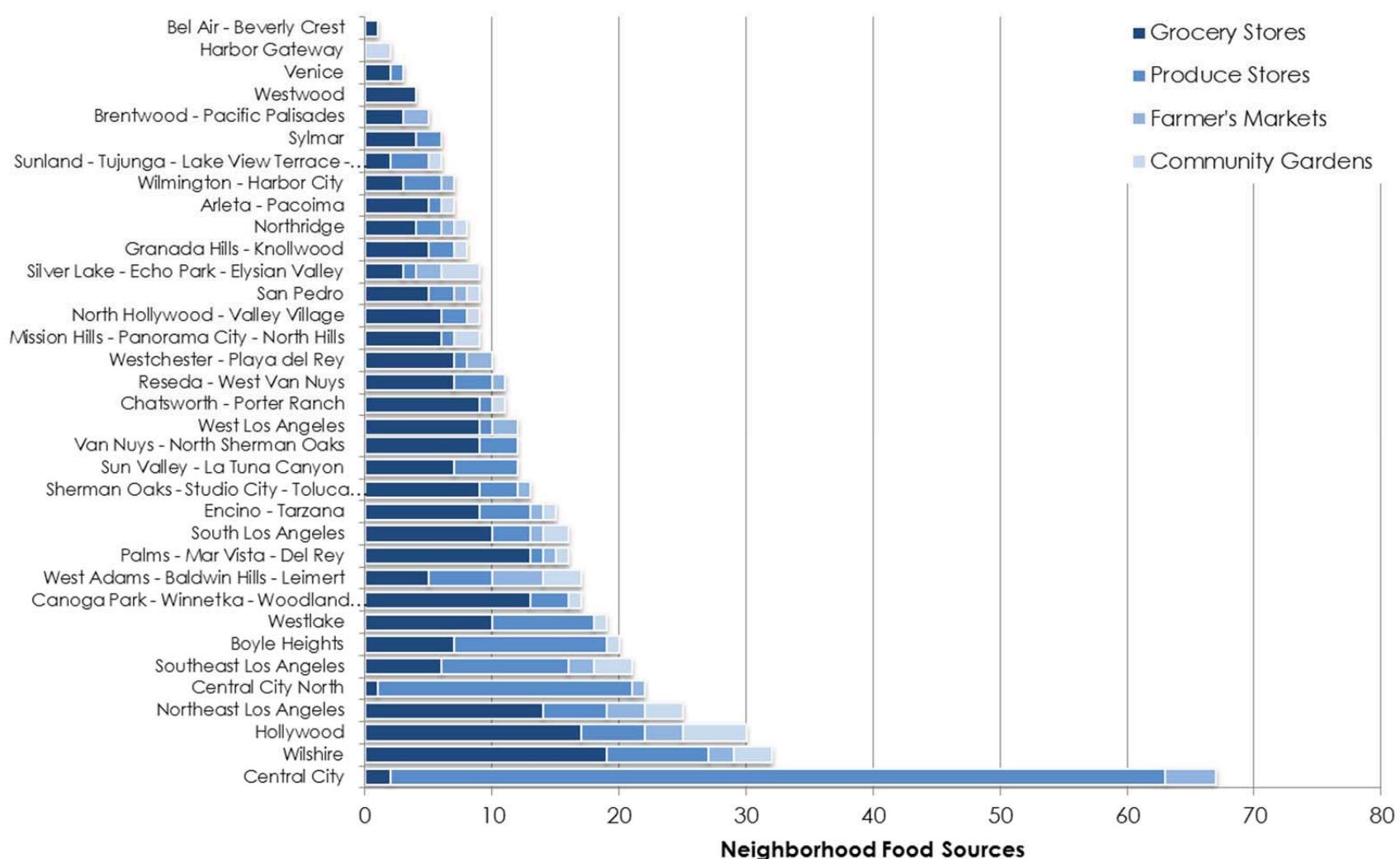
Figure 38: Average Modified Retail Food Index Score by Community Plan Area in 2011



Source: Centers for Disease Control and Prevention. (2011). Modified Retail Food Environment Index.

Along with the mRFEI, healthy retail establishments were compiled and mapped, and these establishments include grocery stores, produce stores, farmers markets, and community gardens. Map 86 shows the rate of grocery stores per 10,000 residents within each CPA and the number of healthy food sources. The Westchester-Playa Del Rey, Encino-Tarzana, and West Los Angeles CPAs had the highest rates of grocery stores per 10,000 residents (greater than 1.2), while the West Adams-Baldwin Hills-Leimert, and Southeast Los Angeles CPAs had the lowest rates of grocery stores per 10,000 residents (less than 0.3). In many communities, smaller produce stores, farmers' markets, and community gardens help fill the need for healthy food sources. For example, Figure 39 shows that Southeast Los Angeles had 10 produce stores, two farmers markets, and three community gardens, increasing the number of healthy food sources in the CPA. This data also shows that CPAs like Bel Air-Beverly Crest do have some healthy retail food sources, albeit few.

Figure 39: Neighborhood Food Sources by Community Plan Area in 2011

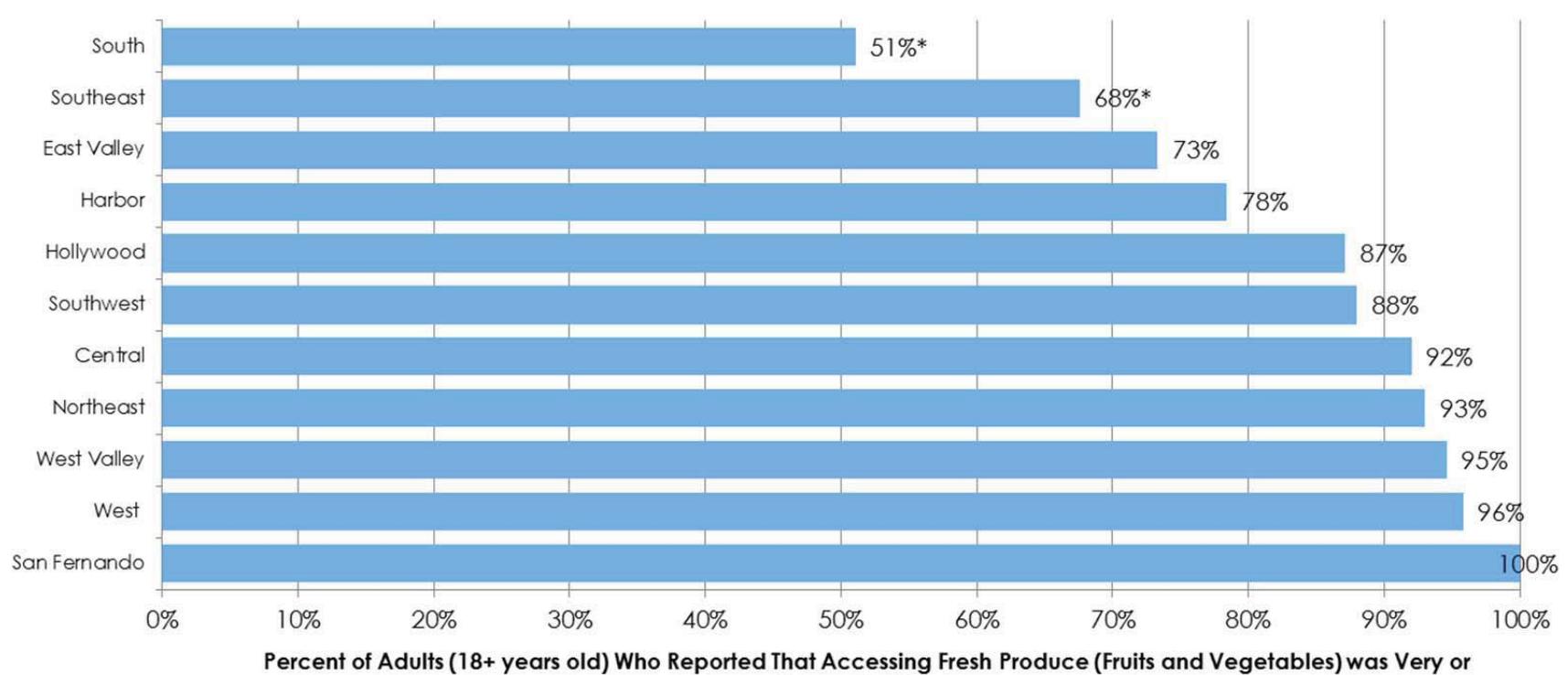


Source: Dun & Bradstreet, the California Federation of Certified Farmers' Markets, and USC SSI. (2011).

Food deserts are neighborhoods without easy access to fresh, healthy, and affordable food. The U.S. Department of Agriculture classifies a census tract as a food desert if it qualifies as low income (20% or more of the population in poverty or median family income below 80% of the area income) and low access, where a third of the tract's population lives more than a mile from a grocery store. Using this definition, the USDA classified 10 tracts as food deserts in Los Angeles. As shown on Map 85, these tracts were located in the Chatsworth-Porter Ranch, Northridge, Sunland-Tujunga-Shadow Hills-Lake View Terrace-East La Tuna Canyon, Westchester-Playa Del Rey, West Adams-Baldwin Hills-Leimert, and Wilmington-Harbor City CPAs. The mRFEI also identified two census tracts as food deserts: one in the Chatsworth-Porter Ranch CPA and one in the Sylmar CPA.

In 2011, approximately 90% of Los Angeles County adults age 18 and over reported that accessing fresh produce was very or somewhat easy. Figure 40 shows the percentage of adults felt that accessing fresh produce was very or somewhat easy for each HD. The San Fernando, West, West Valley, Northeast, and Central HDs all exceeded the County average. Adults in the South (51%), Southeast (68%), East Valley (73%), and Harbor HDs were the most likely to report that accessing produce was difficult.¹³⁶

Figure 40: Percent of Adults Who Reported that Accessing Fresh Produce (Fruits and Vegetables) was Very or Somewhat Easy by Health District in 2011



*The estimate is statistically unstable (relative standard error >23%) and therefore may not be appropriate to use for planning or policy purposes..

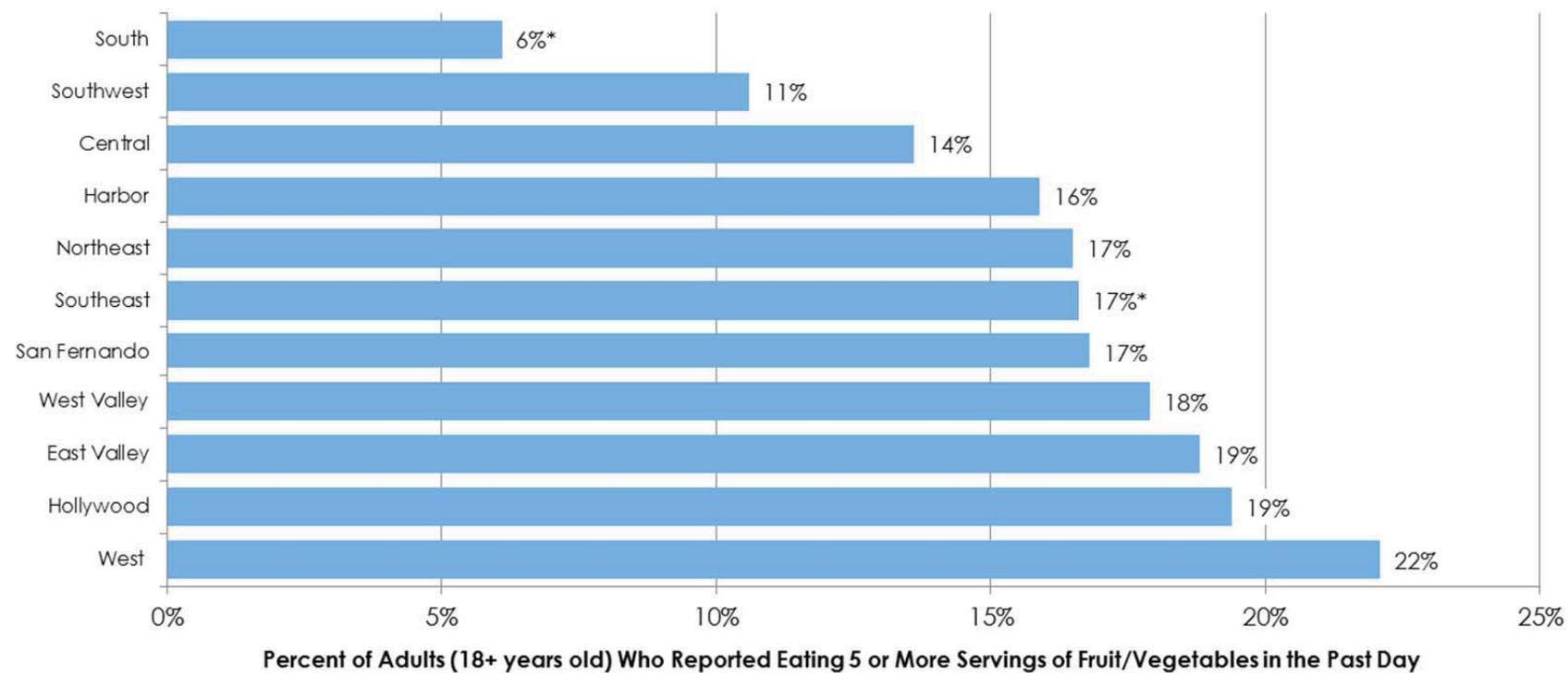
Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Fruits and Vegetables - Access [Data File].

¹³⁶ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Fruits and Vegetables Access [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

In Los Angeles County, 16% of the adults age 18 and over reported eating five or more fruits and vegetables during the past day. Women (20%) were more likely than men (13%) to report eating five or more fruits and vegetables each day. Those who identified as White (21%) had the highest rate of fruit and vegetable consumption, while African American (12%) and Latino (13%) were below the County average.¹³⁷

As shown in Figure 41, the West (22%), Hollywood (19%) and East Valley (19%) HDs had the highest proportions of the population that reported eating five or more servings of fruits and vegetables in the past day. The South (6%) and Southwest (11%) HDs had the lowest percentages of adults meeting this recommended guideline.¹³⁸

Figure 41: Percent of Adults (18+ years old) Who Reported Having Eaten Five or More Servings of Fruits or Vegetables in the Past Day by Health District in 2011



*The estimate is statistically unstable (relative standard error >23%) and therefore may not be appropriate to use for planning or policy purposes..

Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Fruits and Vegetables Consumption [Data File].

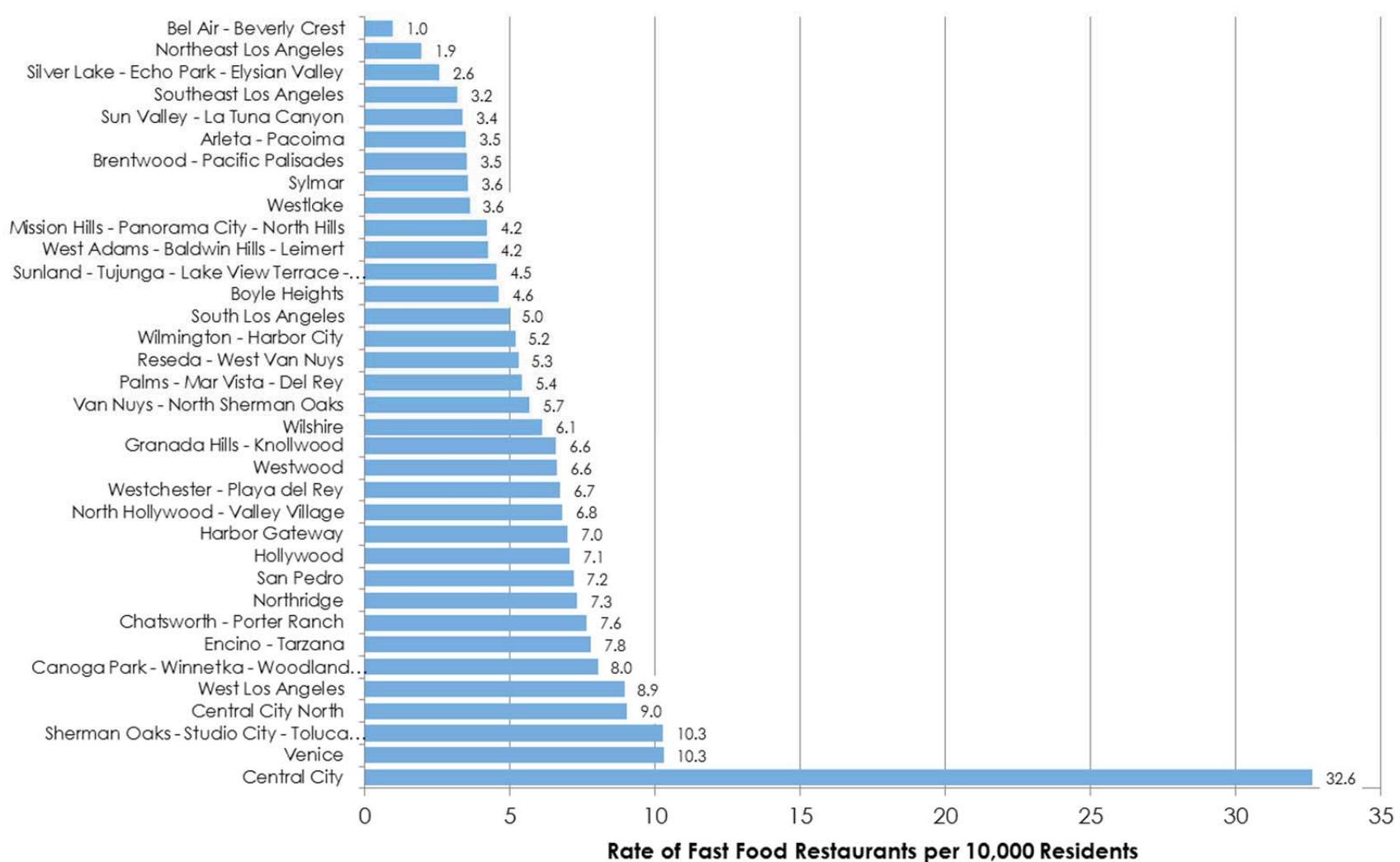
FAST FOOD

As noted earlier, areas with a higher proportion of fast food restaurants and convenience stores tend to experience higher levels of obesity and associated chronic disease. In 2011, the City of Los Angeles had over 2,000 fast food restaurants (which included sandwich and pizza establishments), with a citywide rate of 5.6 fast food restaurants per 10,000 people. Figure 42 shows the rate of fast food restaurants per 10,000 residents for each CPA. The Central City (33) CPA had the highest rate of fast food restaurants per 10,000 residents, more than triple the CPAs with the next highest rates, while the Bel Air-Beverly Crest (1) and Northeast Los Angeles (1.9) CPAs had the lowest rates of fast food establishments. Map 87 shows the rate of fast food restaurants per 10,000 residents.

¹³⁷ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Fruits and Vegetables Consumption [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

¹³⁸ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Fruits and Vegetables Consumption [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

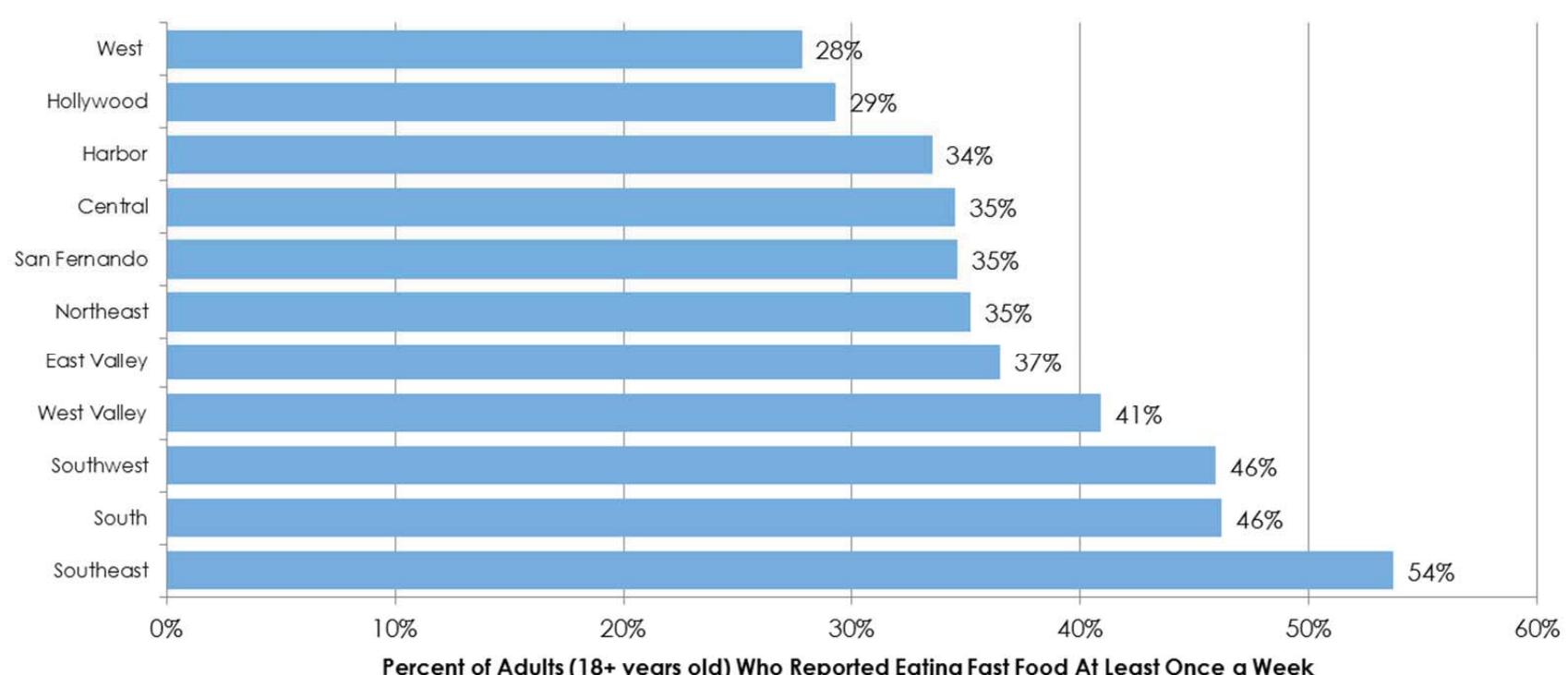
Figure 42: Rate of Fast Food Restaurants per 10,000 Residents by Community Plan Area in 2011



Source: Dun & Bradstreet fast food data (2011). 2010 U.S. Census population data.

In 2011, 40% of Los Angeles County residents reported eating fast food at least once a week, with key differences among demographic groups and neighborhoods. Almost 46% of men reported eating fast food once a week, compared to 34% of women. Over half of adults age 18 to 24 (58%) reported eating fast food each week, the highest of any age group. Forty-six percent of Latino and 45% of African American respondents ate fast food each week.¹³⁹ Figure 43 shows the percentage of adults who reported eating fast food at least once a week by HD. The Hollywood (29%) and West (28%) HDs had the lowest proportions of adults who reported eating fast food each week, while 45% or more of the adults in the Southeast, South, and Southwest HDs consumed fast food each week.¹⁴⁰

Figure 43: Percent of Adults (18+ years old) Who Reported Consuming Fast Food at Least Once a Week by Health District in 2011



Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Fast Food Consumption [Data File].

In 2011, approximately 51% of children countywide reported eating fast food at least once a week. Children who identified as White (40%) were much less likely to report eating fast food each week, while African American (57%), Latino (54%), and American Indian/Alaskan Native (63%) were the most likely to eat fast food.¹⁴¹

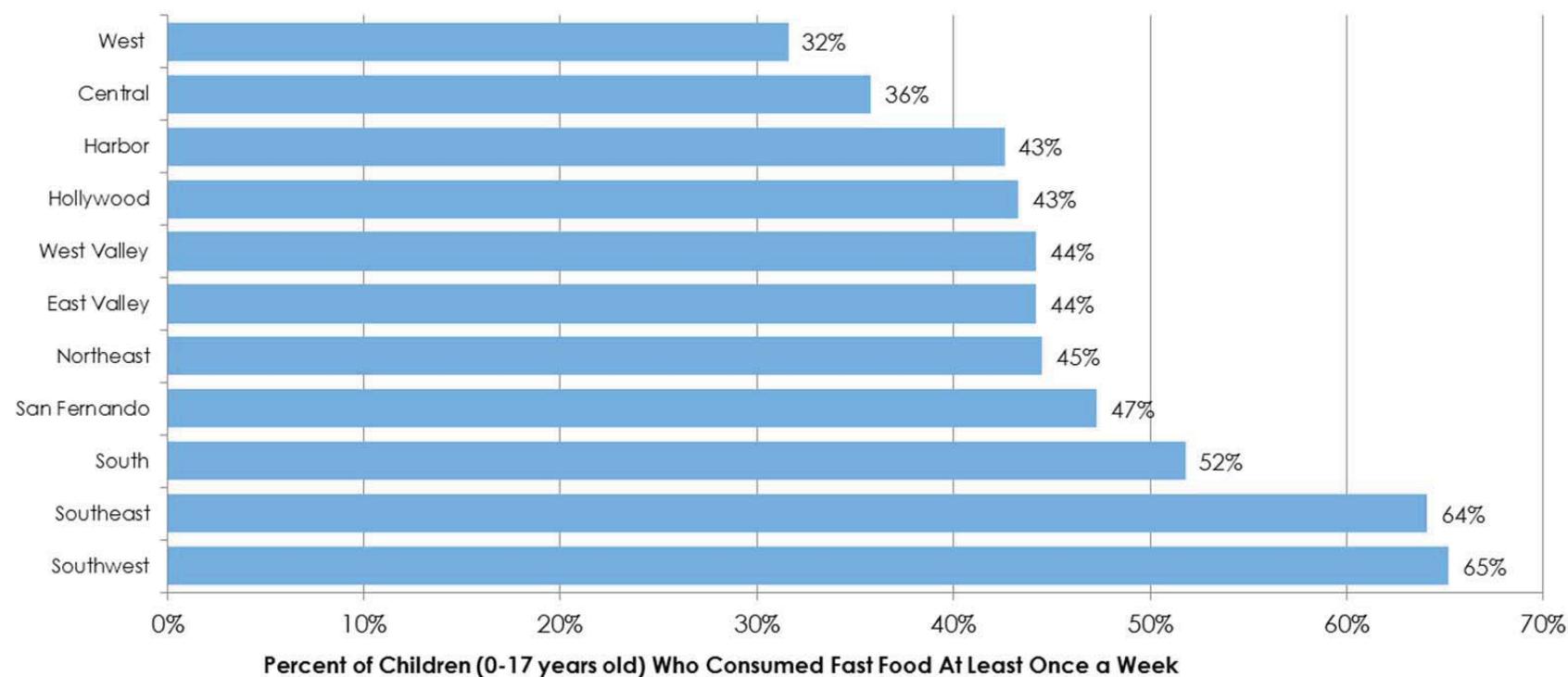
¹³⁹ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Fast Food Consumption [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>.

¹⁴⁰ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Fast Food Consumption [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>.

¹⁴¹ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Child Fast Food Consumption [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

Figure 44 shows the percentage of children age 0 to 17 that reported eating fast food each week for each HD in the City. Over half of the children in the South (52%), Southeast (64%), and Southwest (65%) HDs reported consuming fast food each week. Children in the West (32%) and Central HDs (36%) were the least likely to report eating fast food.¹⁴²

Figure 44: Percent of Children (0-17 years old) Who Consumed Fast Food At Least Once a Week by Health District in 2011



Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Child Fast Food Consumption [Data File].

ALCOHOL CONSUMPTION, ALCOHOL OUTLETS, AND MOTOR VEHICLE COLLISIONS INVOLVING ALCOHOL

Alcohol consumption can have consequences for the health of those who drink and of those around them. While most people who drink do it safely, the minority who consume alcohol heavily produce a significant impact. Alcohol is the third leading cause of lifestyle death in the U.S., with 80,000 annual deaths attributable to excessive alcohol use, and millions of emergency department and physician office visits are due to excessive drinking. Health risks from alcohol include unintentional injuries, such as motor vehicle collisions and falls, violence, unsafe sexual behavior, liver disease, and cardiovascular disease among others.¹⁴³

In 2011, 52% of Los Angeles County residents reported drinking alcohol in the past month. Almost 62% of men reported drinking alcohol during the last month, while only 43% of women reported drinking. Sixty-seven percent of white residents, 67% of residents with college or post graduate degrees, and 67% of residents who exceed the Federal Poverty Level drank alcohol each month, by far the highest proportion of respondents by race/ethnicity, education level, and income. The West HD (68%) had the highest portion of residents who consumed alcohol each month.¹⁴⁴

Excessive drinking includes heavy drinking, binge drinking, and any drinking by underage youth and pregnant women. Binge drinking is the most common form of excessive alcohol consumption. For women, binge drinking is defined as having 4 or more drinks on a single occasion, and for men, it is having 5 or more drinks during a single occasion. Fifteen percent of Los Angeles County residents reported binge drinking during the past month. Males (22%) and the age groups 18-24 (23%) and 25 to 29 (25%) were the groups most likely to participate in binge drinking. As shown in Figure 45, the Northeast (23%) and Central (21%) HDs had the highest percentages of the population who reported binge drinking, while the San Fernando (14%), Southeast (14%), and Harbor (14%) HDs had the lowest percentages.¹⁴⁵

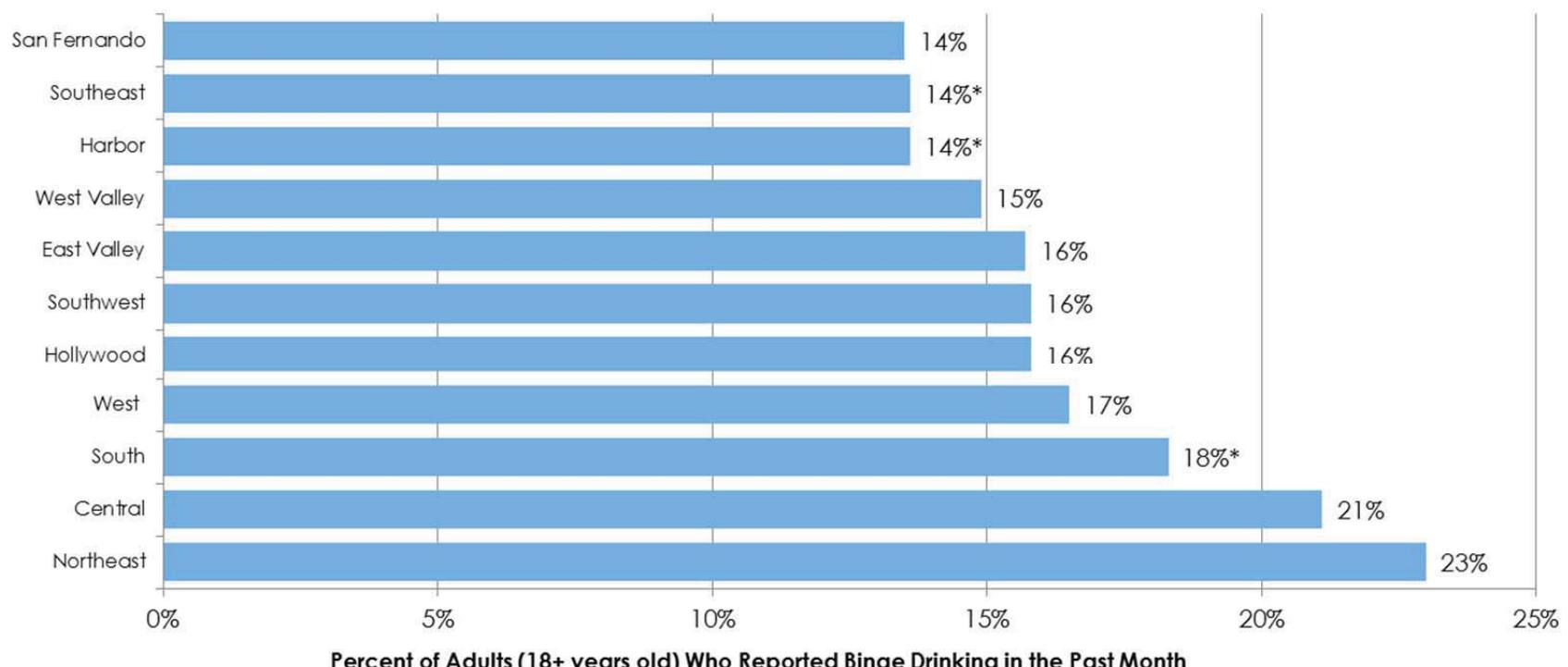
¹⁴² Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Child Fast Food Consumption [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

¹⁴³ CDC. (2013). Fact Sheets- Alcohol Use and Health. Retrieved from <http://www.cdc.gov/alcohol/fact-sheets/alcohol-use.htm>

¹⁴⁴ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Alcohol Consumption [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>.

¹⁴⁵ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Binge Drinking [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>.

Figure 45: Percent of Adults (18+ years old) Who Reported Binge Drinking in the Past Month by Health District in 2011



*The estimate is statistically unstable (relative standard error >23%) and therefore may not be appropriate to use for planning or policy purposes..

Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Binge Drinking [Data File].

Communities with a high density of liquor stores often suffer from a variety of health and safety problems. Communities in Los Angeles County with higher concentrations of liquor stores tend to have higher rates of alcohol-related harms, such as motor vehicle collisions involving alcohol and alcohol-related deaths.¹⁴⁶ Areas with higher concentrations of liquor stores have also been found to have higher numbers of childhood accidents, assaults, and abuse injuries;¹⁴⁷ and increased criminal activity, including violent crime.¹⁴⁸

There are two types of liquor licenses: on-sale and off-sale. On-sale licenses allow alcohol to be sold for consumption on-site, and include outlets such as restaurants and bars. Off-sale licenses allow alcohol to be sold for consumption off-site. Off-sale licenses are given to outlets such as grocery stores, convenience stores, and liquor stores.

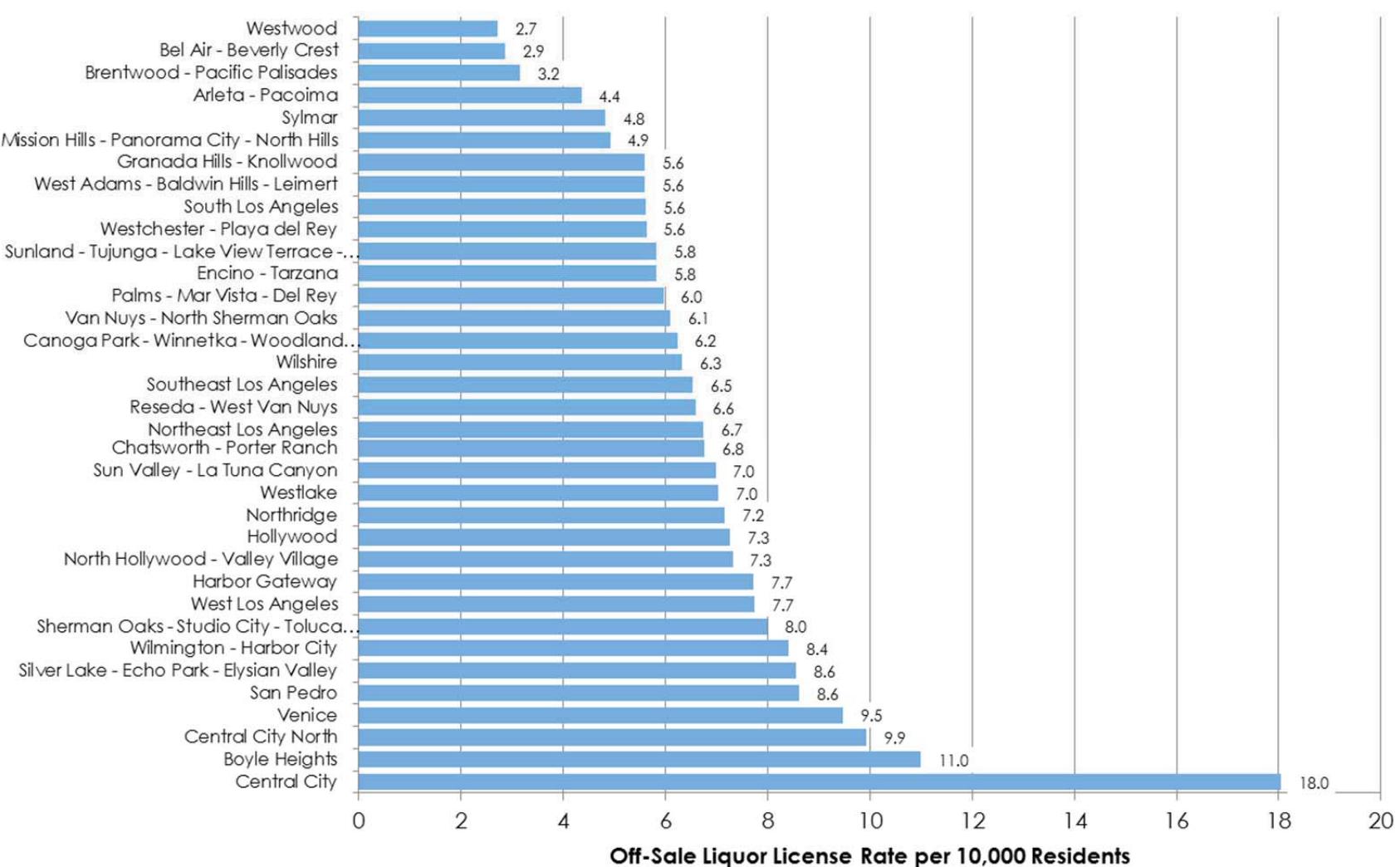
In 2012, there were over 18,000 on-sale liquor licenses and over 2,500 off-sale liquor licenses in the City of Los Angeles. Citywide, there are 48.7 on-sale liquor licenses per 10,000 residents (Map 88) and 6.6 off-sale liquor licenses per 10,000 residents (Map 89). As shown in Figure 46, the Central City (18.1), Boyle Heights (11), Central City North (9.9), and Venice (9.5) CPAs had the highest off-sale licenses rates, while Westwood (2.7), Bel Air-Beverly Crest (2.9), Brentwood-Pacific Palisades (3.2), and Arleta-Pacoima (4.4) had the lowest off-sale rates. The Southeast Los Angeles (182), Wilshire (176), Northeast Los Angeles (160), and South (152) CPAs had the largest total number of off-sale licenses.

¹⁴⁶ Los Angeles County Public Health Department, Substance Abuse Prevention and Control, Office of Health Assessment and Epidemiology. (2011, December). Reducing Alcohol-Related Harms in Los Angeles County: A Cities and Communities Health Report.

¹⁴⁷ Freisthler, B., P. Gruenewald, L. Ring, and E. LaScala. (2008). An Ecological Assessment of the Population and Environmental Correlates of Childhood Accident, Assault, and Child Abuse Injuries. *Alcoholism: Clinical and Experimental Research*, 32(11): p. 1969-1975.

¹⁴⁸ Stewart, K. (n.d). How Alcohol Outlets Affect Neighborhood Violence. Pacific Institute for Research and Evaluation. Retrieved from <http://urbanaillinois.us/sites/default/files/attachments/how-alcohol-outlets-affect-nbhd-violence.pdf>

Figure 46: Off-Sale Liquor License Rate by Community Plan Area in 2012

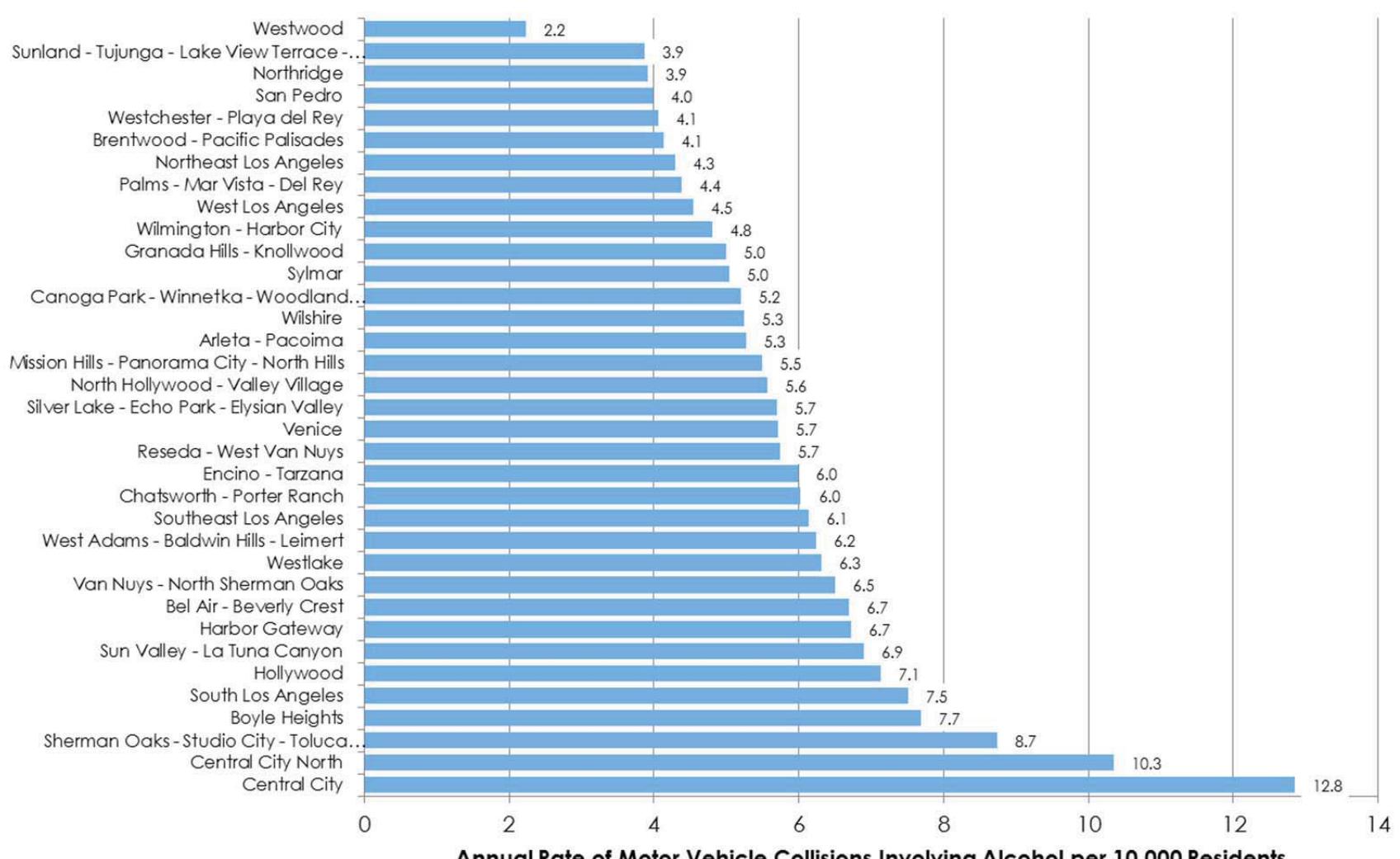


Source: California Alcohol Beverage Control liquor license data (2012). 2010 U.S. Census population data.

Similar to off-sale liquor licenses, Central City (545.2) and Central City North (225) had the highest rates of on-sale licenses per 10,000 residents, followed by Wilmington-Harbor City (175.6) and Hollywood (133.8). By far, the Hollywood (2,653), Wilshire (2,268), and Central City (2,054) CPAs had the most establishments with on-sale liquor licenses. The Southeast Los Angeles (4.5) and Arleta-Pacoima (6.8) CPAs had the lowest rates of on-sale liquor licenses.

Alcohol consumption is one of the leading causes of premature death and disability in the County. In 2010, there were 2,068 motor vehicle collisions involving alcohol, resulting in 79 fatalities and 168 severe injuries. Figure 47 and Map 90 show the rate of collisions involving alcohol per 10,000 residents by CPA. The Central City and Central City North CPAs have the highest rates of collisions involving alcohol (greater than 10 per 100,000 residents), while Westwood has the lowest rate (2.2). The Central City, Central City North, Sherman Oaks-Studio City-Toluca Lake-Cahuenga Pass, Boyle Heights, and Hollywood CPAs all have relatively high rates of on- and off-sale liquor licenses, while Westwood has a relatively low number and rate of liquor licenses.

Figure 47: Average Annual Rate of Motor Vehicle Collisions Involving Alcohol per 10,000 Residents by Community Plan Area between 2001 and 2010



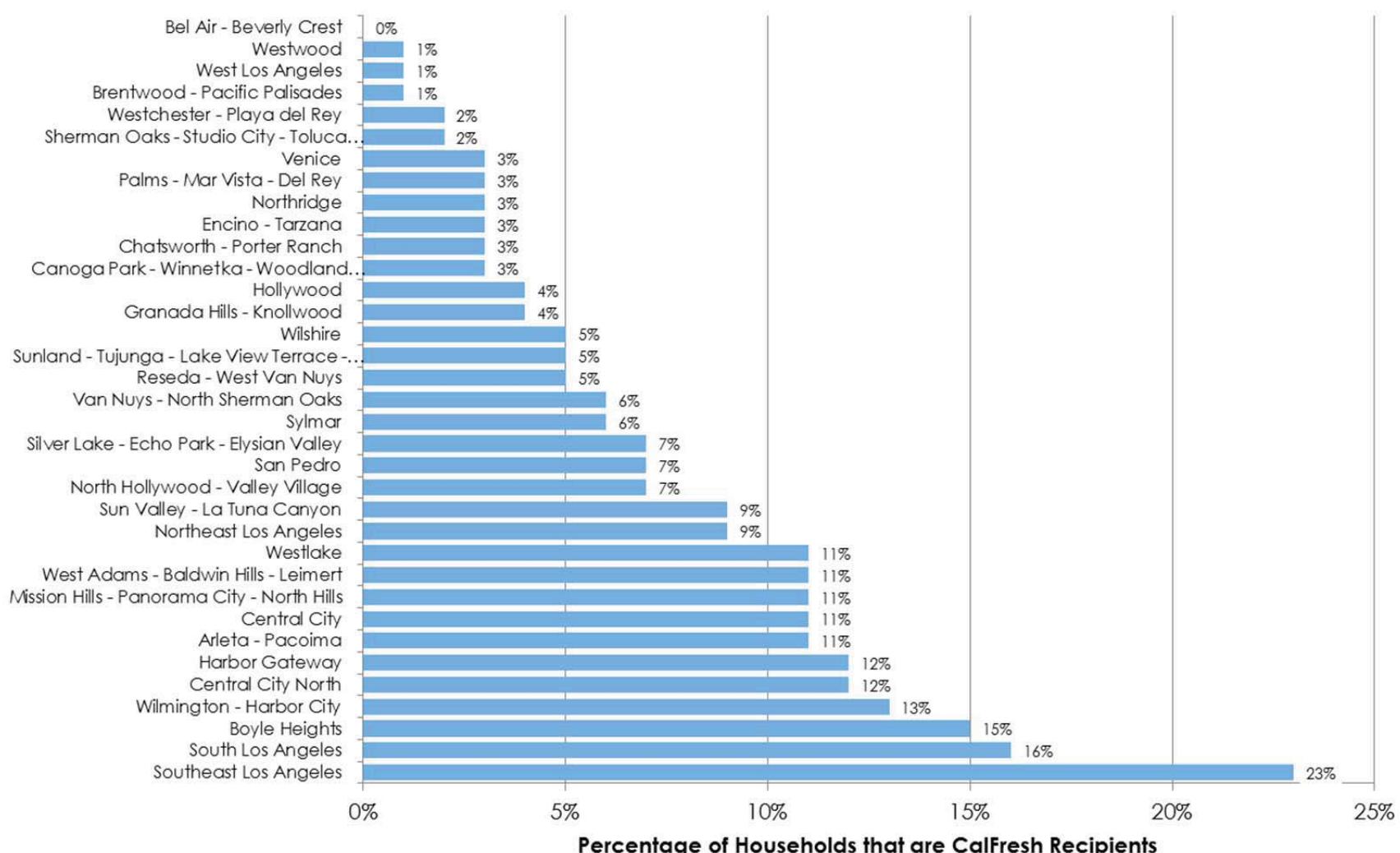
Source: SWITRS collision data from TIMS at U.C. Berkeley (2001-2010). 2010 U.S. Census population data.

INCOME AND FOOD ACCESS

“Food security” is defined as having access to enough food for an active, healthy life for all people at all times.¹⁴⁹ Food insecurity can lead to undernourishment and malnutrition, which coincide with fatigue, stunted child development, and other health issues. Undernourished pregnant women are more likely to bear babies with low birth weight, and the babies are then more likely to experience developmental delays that can lead to learning problems.¹⁵⁰ Hunger and food insecurity can also accelerate the development of disease or worsen existing diseases. Ironically, food insecurity and obesity co-exist in some households where people eat foods that are inexpensive while high in fat and sugar, but low in nutritional quality. Finally, food insecurity causes anxiety and stress, which weakens immune systems and decreases overall quality of life.¹⁵¹

Households that lack “food security” are typically low-income households and these households can obtain supplemental assistance from government programs, such as the CalFresh program and the Women Infants and Children (WIC) program. In 2012, approximately 7% of households in the City of Los Angeles were CalFresh recipients, and Map 91 displays the proportion of CalFresh participants and vendors. As shown in Figure 48, the highest proportion of CalFresh recipients was in the Southeast Los Angeles CPA, where 23% of households participated in the program. In the South Los Angeles and Boyle Heights CPAs, over 15% of the households participated in CalFresh. In the Bel Air-Beverly Crest, Westwood, West Los Angeles, and Brentwood-Pacific Palisades CPAs, less than 2% of the households participated in the program. The Southeast Los Angeles and South Los Angeles CPAs had the largest number of CalFresh and WIC vendors as shown in Map 92.

Figure 48: Percentage of Households that are CalFresh Recipients by Community Plan Area in 2010



Source: 2010 Census ACS. Accessed from American FactFinder.

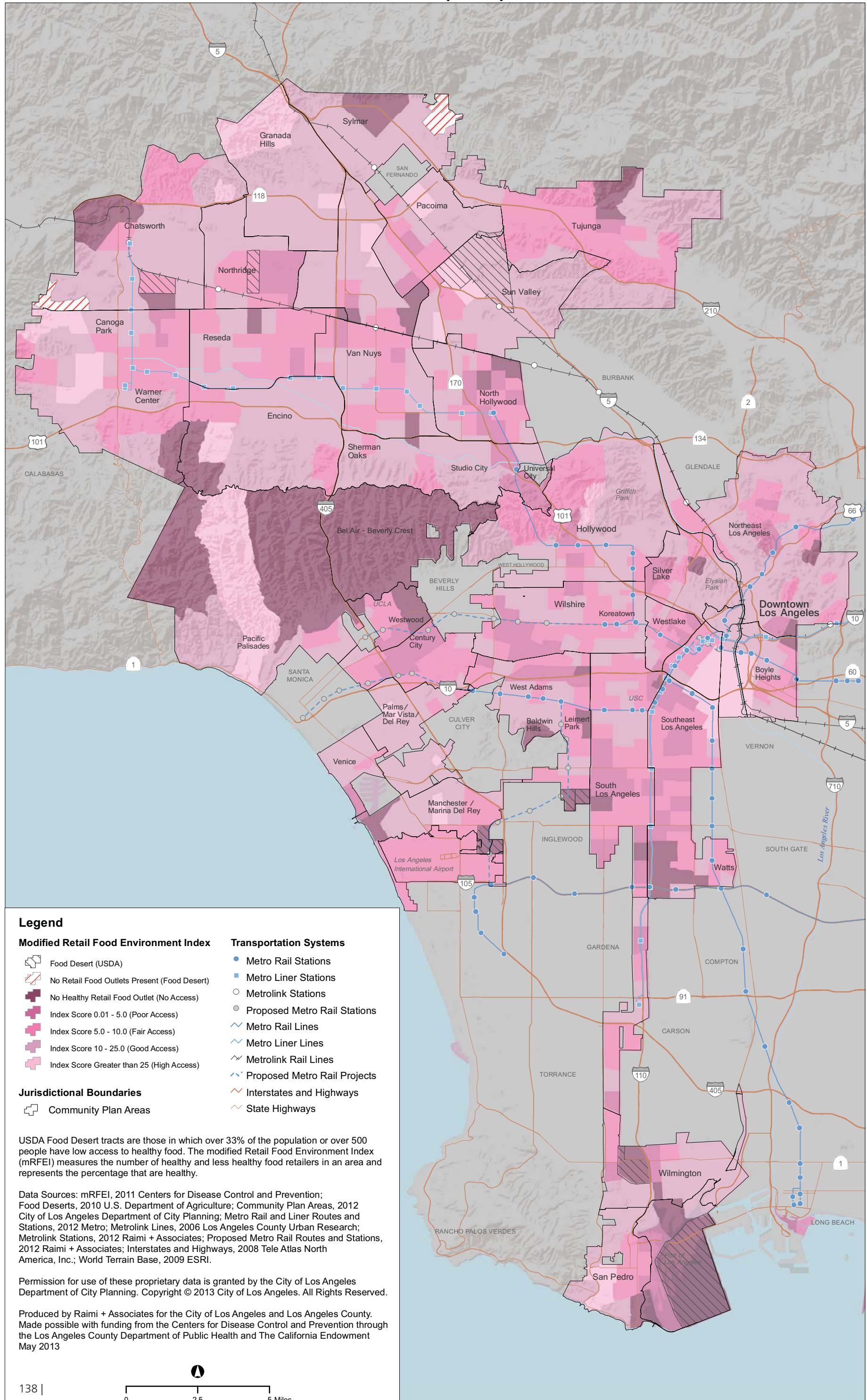
¹⁴⁹ United States Department of Agriculture, Economic Research Service. (2009). Report to Congress: Access to Affordable and Nutritious Food: Measuring and Understanding Food Deserts and Their Consequences. Retrieved from http://www.ers.usda.gov/media/242675/ap036_1_.pdf.

¹⁵⁰ Cook, J. T. (2004). Food Insecurity Is Associated with Adverse Health Outcomes among Human Infants and Toddlers. *The Journal of Nutrition*, 134(6), pp. 1432-1438.

¹⁵¹ Curtis, S. (2008, Spring/Summer). Food Insecurity: Family Problem, Community Challenge. *Northwest Public Health*. p. 10. Retrieved from http://www.nwpublichealth.org/docs/nph/s2008/curtis_s2008.pdf

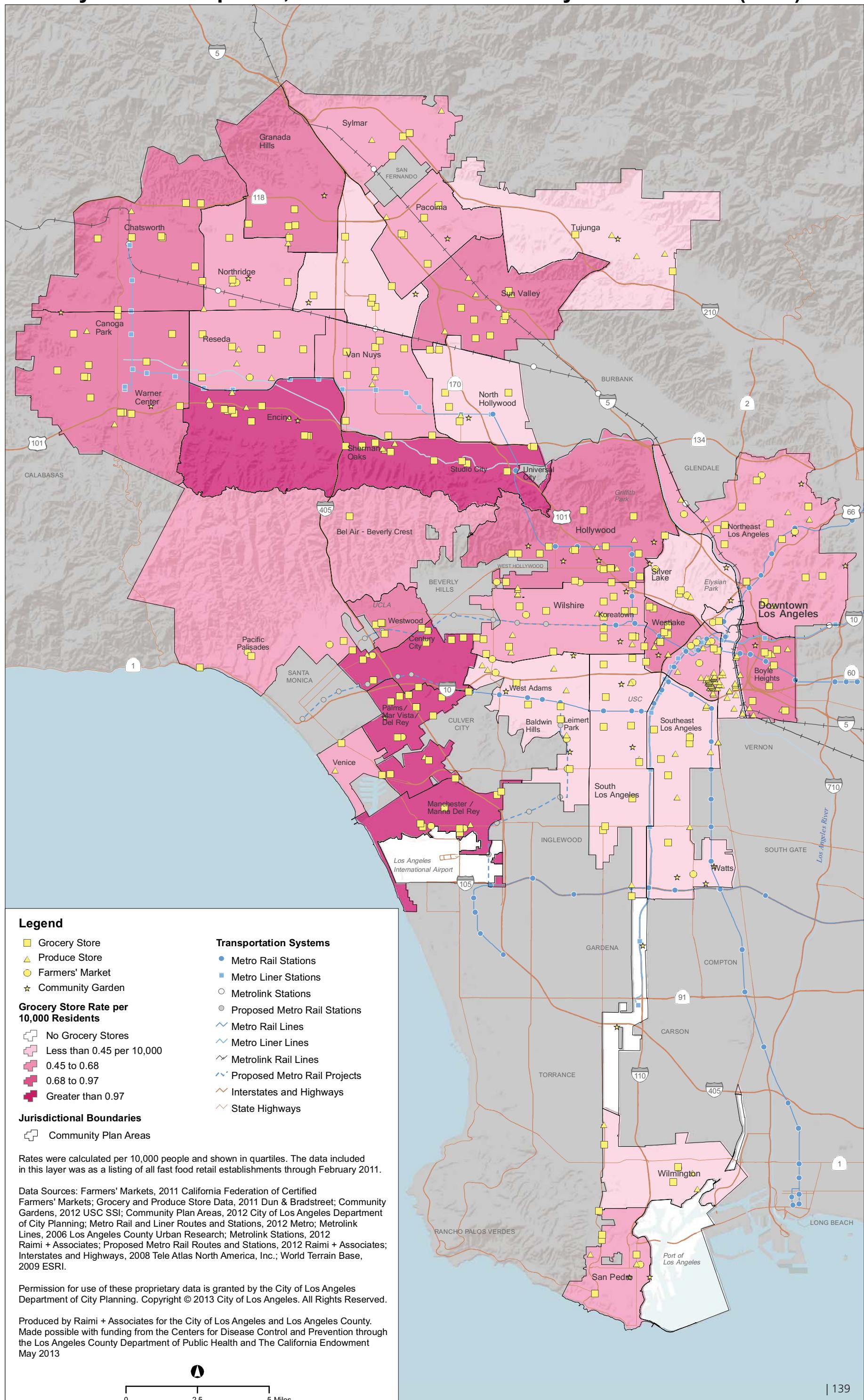
Map 85

Modified Retail Food Environment Index (2011)



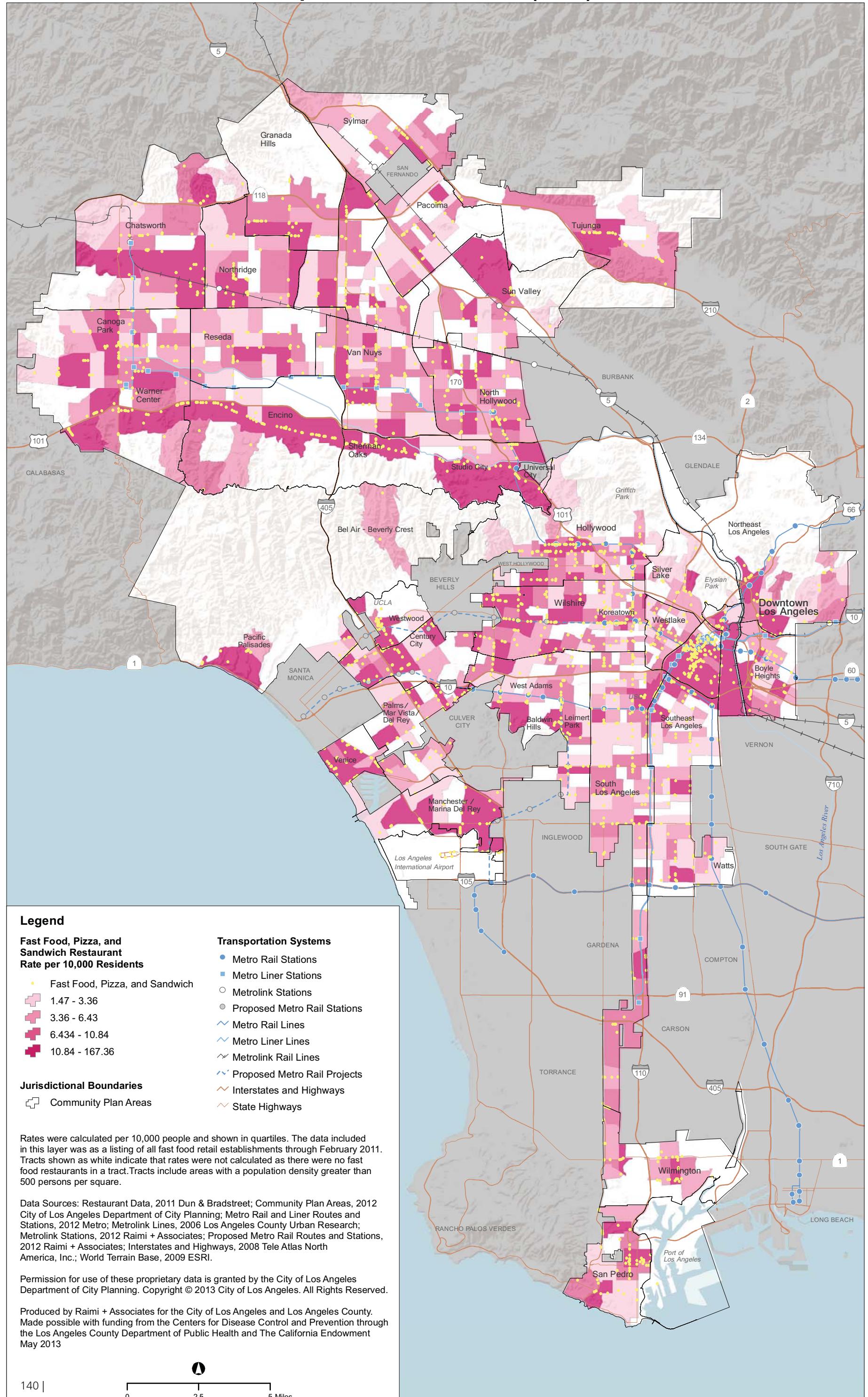
Map 86

Grocery Store Rate per 10,000 Residents and Healthy Food Sources (2011)



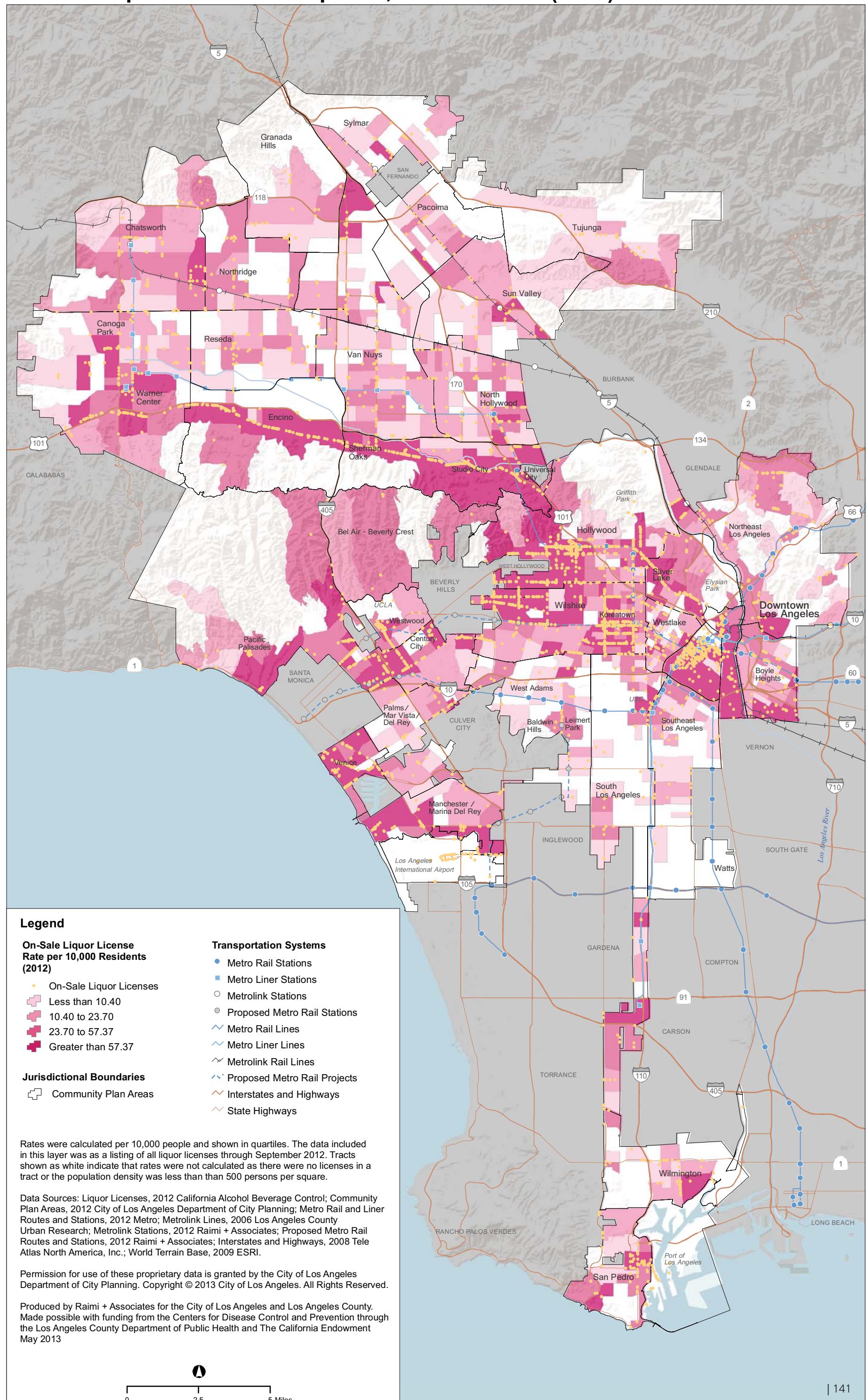
Map 87

Fast Food Restaurant Rate per 10,000 Residents (2011)



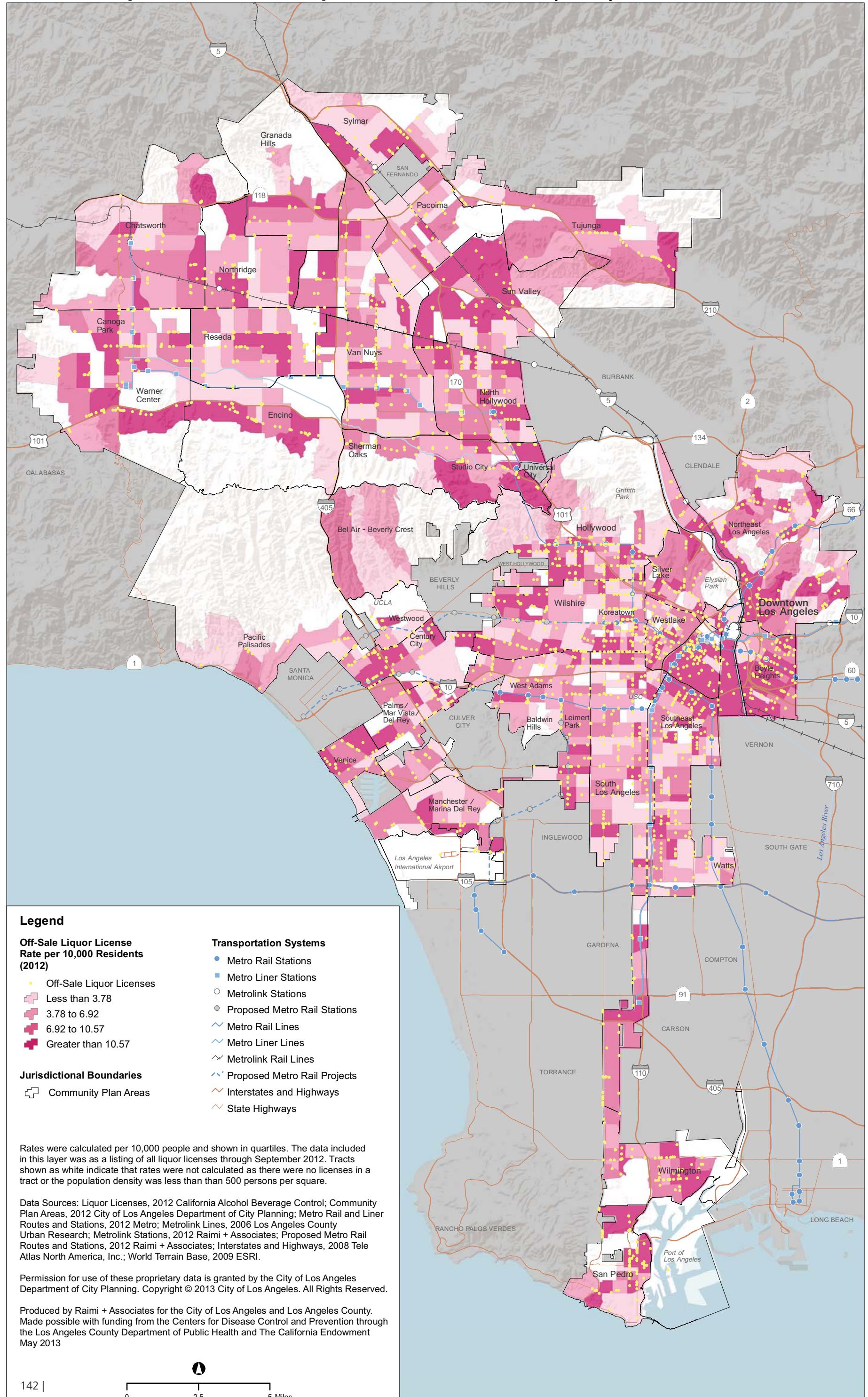
Map 88

On-Sale Liquor License Rate per 10,000 Residents (2012)



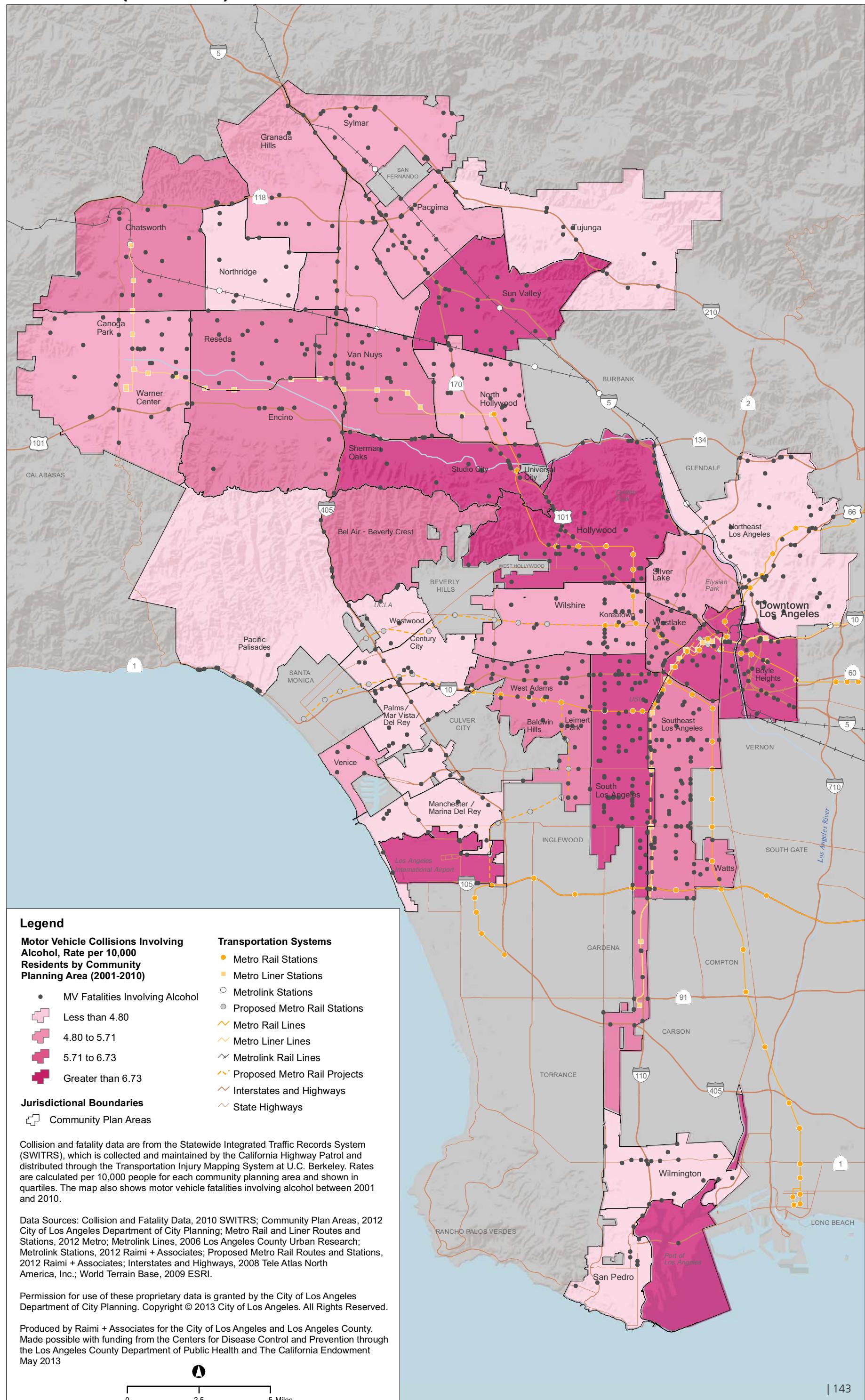
Map 89

Off-Sale Liquor License Rate per 10,000 Residents (2012)



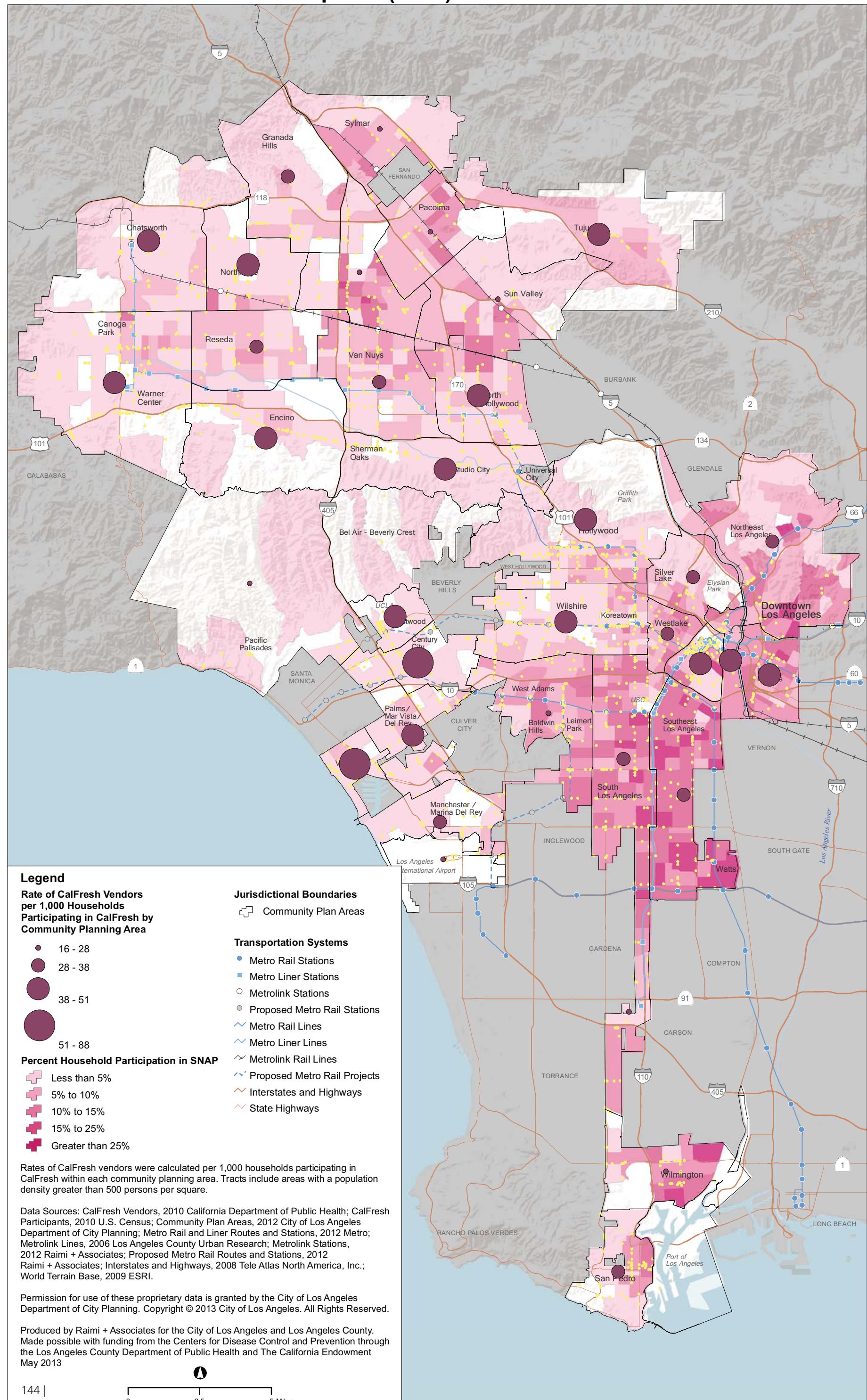
Map 90

Average Annual Rate of Motor Vehicle Collisions Involving Alcohol per 10,000 Residents (2001-2011)



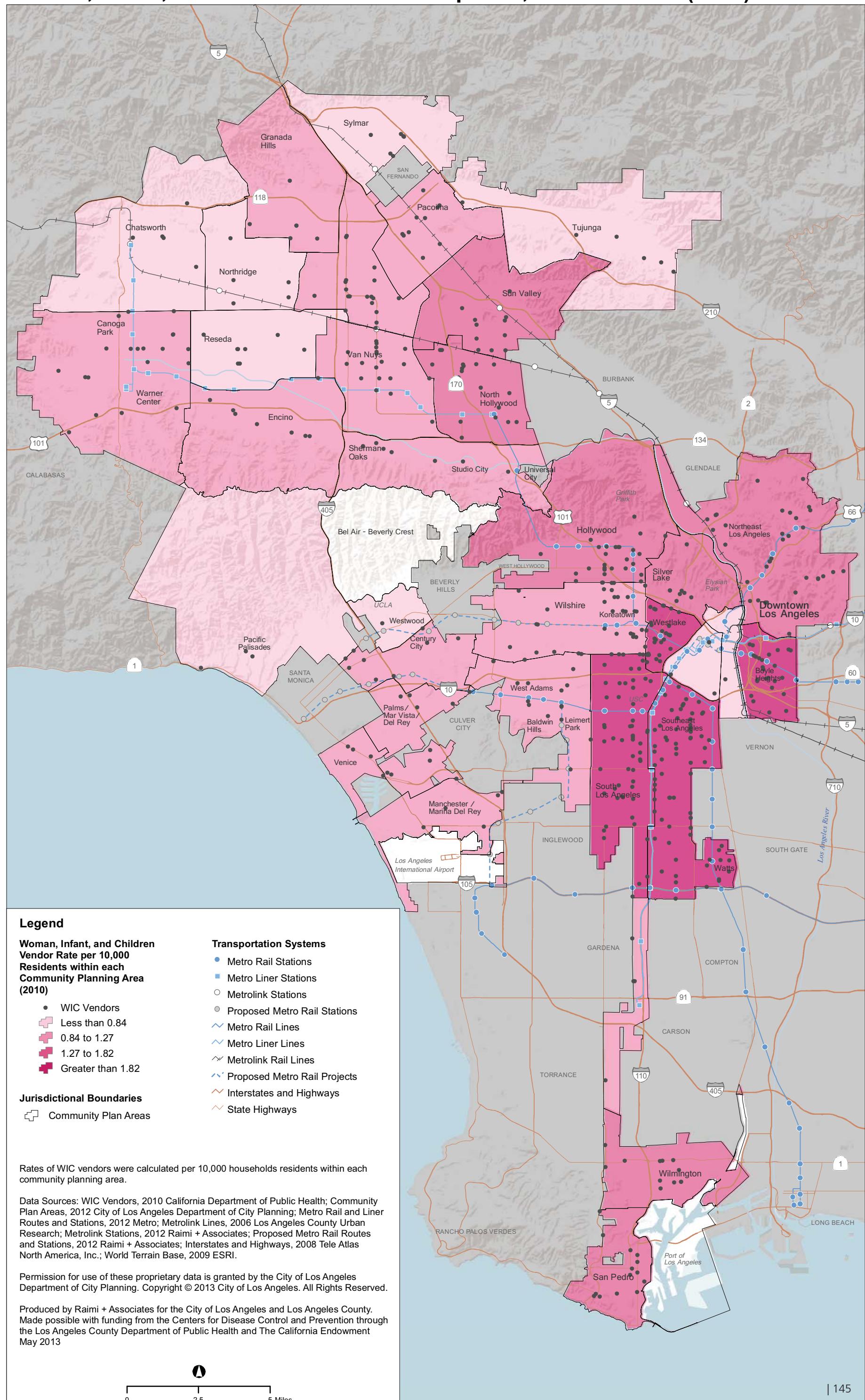
Map 91

CalFresh Vendors and Participants (2010)



Map 92

Woman, Infant, and Children Vendor Rate per 10,000 Residents (2010)



This page is intentionally left blank.

10 | Crime

Crime can have health, social, and behavior implications for victims and their families. Violent crime, such as homicides, physical assaults, rapes, and sexual assaults affect the health outcomes of communities. Between 2000 and 2009, an average of approximately 400 people died annually from homicides in the City of Los Angeles.¹⁵² In many communities across the City, homicides are one of the leading causes of years of life lost (YLL) and disability-adjusted life years (DALYs).¹⁵³ Violent physical assaults also have health implications. Between 2005 and 2010, about 6,000 people in Los Angeles were treated in emergency rooms as a result of physical assault.¹⁵⁴ Direct exposure to physical violence is associated with a range of negative health consequences, such as depression, anxiety, suicide, post-traumatic stress disorder, decreased cognitive functioning, and negative social behaviors.¹⁵⁵¹⁵⁶¹⁵⁷ When children or adolescents are victims of violence, the experience can affect their scholastic achievement,¹⁵⁸ and it can limit their overall success as adults.¹⁵⁹

Along with direct exposure to crime, indirect exposure to property crime and violence can have a broad impact on the rest of the community. Research has documented a spectrum of physical and psychological health impacts associated with neighborhood crime levels. Residents' worries about safety in their neighborhoods can be a cause of chronic stress.¹⁶⁰ Witnessing community violence causes longer-term behavioral and emotional problems in youth.¹⁶¹ Additionally, fear of crime can modify people's behavior. An individual's perception of neighborhood safety can be a disincentive to engage in physical activity outdoors. Parents who are afraid of neighborhood crime may keep their children indoors, which may limit opportunities to be physically active and to develop support networks.¹⁶²

MAPS AND INDICATORS

The Crime Chapter of the *Health Atlas* examines information about the physical location of criminal activity within the City and the location of victims of specific types of violent crime. The following describes each of the maps within this section and the data source associated with the map.

- **Crime Rate for All Part I Offences per 1,000 Residents:** The map shows the combined rate of property and violent crimes per 1,000 residents as reported to the Los Angeles Police Department from April to September 2012. Crimes include all Part I Crimes: homicide, rape, assault, robbery, burglary, theft, grand theft auto, and theft from auto. The map shows a six-month rate by census tract.
- **Violent Crime Rate per 1,000 Residents:** The map shows the rate of the violent crimes per 1,000 residents as reported to the Los Angeles Police Department from April to September 2012. Crimes include the following Part I Crimes: homicide, rape, assault, and robbery. The map shows a six-month rate by census tract.
- **Property Crime Rate per 1,000 Residents:** The map shows the rate of property crimes per 1,000 residents as reported to the Los Angeles Police Department from April to September 2012. Crimes include the following Part I Crimes: burglary, theft, grand theft auto, and theft from auto. The map shows a six-month rate by census tract.
- **Emergency Department Visits for Assault per 100,000 Residents:** The map shows treat-and-release emergency department visit rate per 100,000 residents for assault injuries. The data is a rate between 2005 and 2010 and is displayed at the zip code level. Data is derived from Emergency Department Visit Data, California OSHPD.
- **Homicide Rate per 100,000 Residents:** The homicide rate per 100,000 residents map shows the homicide mortality rate for victims of a firearm. The data is a rate between 2000 and 2009, and is displayed at the zip code level. Data is from the Death Statistical Master File, California Department of Health Services, Center for Health Statistics.
- **Crime Rate Index:** The Crime Index was developed to compare crime conditions of one place to another. The Index standardizes property crime rates per 1,000 residents and violent crime rates per 1,000 residents, and then averages them together, yielding a score on a scale of 0-100. Violent crime was weighted by a factor of two. Higher values indicate a higher Crime Index score.

KEY FINDINGS

CRIME RATES

From April 2012 through September 2012, the six-month crime rate for the City of Los Angeles was 13.5 crimes per 1,000 residents. The property crime rate was 11 per 1,000 and the violent crime rate was 2.5 per 1,000. Figure 49 shows the crime rates for each CPA. The three CPAs with the lowest total crime rates were Westwood, Brentwood-Pacific Palisades, and Bel Air-Beverly Hills, which are all clustered together on the western edge of Los Angeles. Three of the next four CPAs with the lowest crime rates are along the northern edge of the City. Eight CPAs had crime rates higher than the citywide average, including Central City North, Sherman Oaks-Studio City-Toluca Lake-Cahuenga Pass, West Adams-Baldwin Hills-Leimert, Southeast Los Angeles, Hollywood, San Pedro,

¹⁵² California Department of Health Services, Center for Health Statistics. (2012). Death Statistical Master File: Homicide Deaths from 2000-2009.

¹⁵³ Los Angeles County Department of Health Services and the UCLA Center for Health Policy. (2000, January). The Burden of Disease in Los Angeles: A Study of the Patterns of Morbidity and Mortality in County Population. Retrieved from <http://healthpolicy.ucla.edu/publications/Documents/PDF/The%20Burden%20of%20Disease%20in%20Los%20Angeles%20County.pdf>

¹⁵⁴ California Office of Statewide Health Planning and Development. (2012). Emergency Department Visit Data: Average Annual Treat & Release Emergency Department Visits for Assault Injuries.

¹⁵⁵ Buka, S. L., Stichick T. L., Birdthistle I., and Earls F.J. (2001). Youth Exposure to Violence: Prevalence, Risks, and Consequences. *American Journal of Orthopsychiatry*. 71(3): pp. 298-310.

¹⁵⁶ Margolin, G., and Gordis E. (2000). The Effects of Family and Community Violence on Children. *Annual Review of Psychology*. 51: pp. 445-79.

¹⁵⁷ Haynie, D., Petts, R., Maimon, M., and Piquero, A. (2009). Exposure to Violence in Adolescence and Precocious Role Exits. *Journal of Youth and Adolescence*. 38(3): pp. 269-86.

¹⁵⁸ Glew, G.M., Fan, M., Wayne, K., and Rivara, F.P. (2008). Bullying and School Safety. *The Journal of Pediatrics*. 152, pp. 123-8. Rigby, K. Does Bullying Really Do Harm? Available from <http://www.education.unisa.edu.au/bullying/harm.html>.

¹⁵⁹ U.S. Department of Justice Office of Justice Programs. (2002). Overview of the Research Literature on Consequences of Criminal Victimization. Available at http://www.ncjrs.gov/html/ojjdp/yv_2002_2_1/page1.html

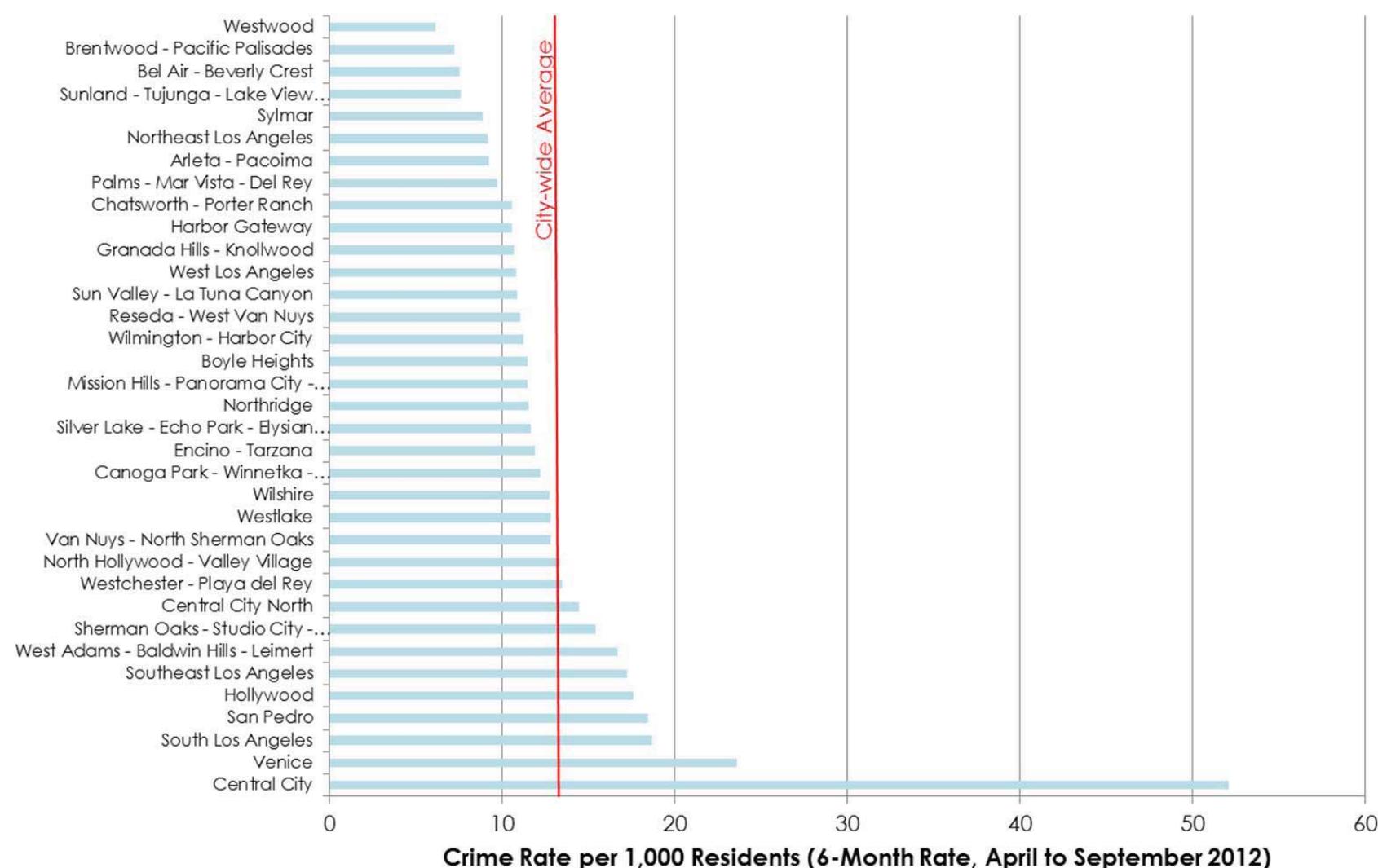
¹⁶⁰ Altschuler, A., Somkin, C.P., Adler, N.E. (2004). Local services and amenities, neighborhood social capital, and health. *Social Science & Medicine*, 59, pp. 1219-1229.

¹⁶¹ Perez-Smith, A.M., Albus, K.E., and Weist M.D. (2001). Exposure to violence and neighborhood affiliation among inner-city youth. *Journal of Clinical Child Psychology*, 30(4), pp. 464-72.

¹⁶² Foster, S., and Giles-Corti, B. (2008). The Built Environment, Neighborhood Crime, and Constrained Physical Activity: An Exploration of Inconsistent Findings. *Preventive Medicine*, 47(3), pp. 241-51.

South Los Angeles, Venice, and Central City. In particular, the six-month crime rate calculated for Central City (52.1 per 1,000) far exceeds any other CPA (more than twice the CPA with the second highest rate) and is nearly double the average citywide crime rate for all of 2011 (27.7 per 1,000). Map 93 shows the crime rate per 1,000 residents.

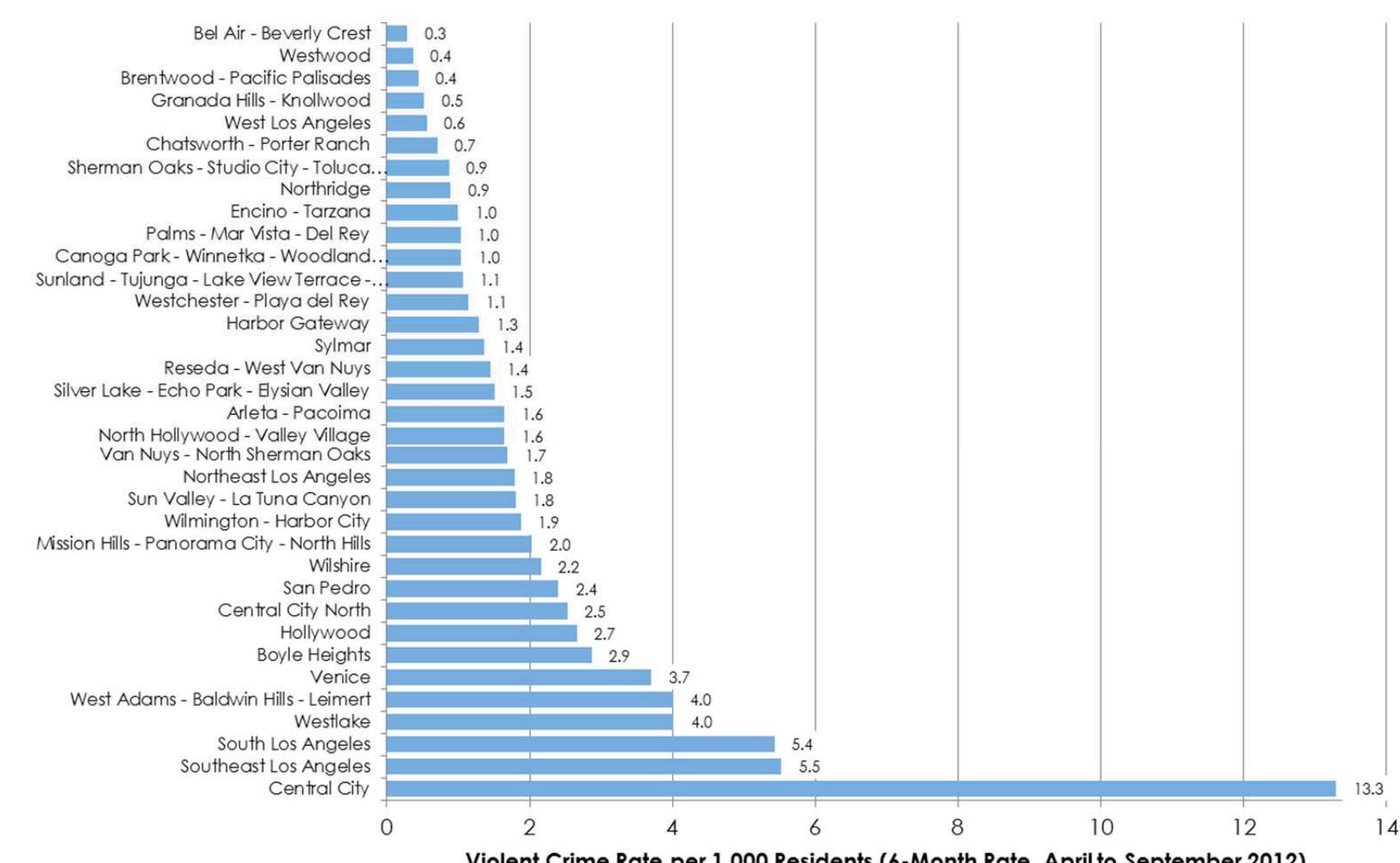
Figure 49: Total Crime Rate per 1,000 Residents by Community Planning Area (6-month rate from April 2012 through September 2012)



Source: Los Angeles Police Department Part I Crimes (2012). 2010 U.S. Census population data.

Figure 50 shows the violent crime rate per 1,000 residents for each CPA. CPAs on the Westside of Los Angeles had the lowest violent crime rates, including Bel Air-Beverly Crest, Westwood, Brentwood-Pacific Palisades, and West Los Angeles. The Central City, Southeast Los Angles, South Los Angeles, Westlake, and West Adams-Baldwin Hills-Leimert CPAs had the highest violent crime rates with rates at or above four per 1,000 residents. The Central City CPA had the highest violent crime rate, over two times the next highest rate. Map 94 shows the violent crime rate per 1,000 residents.

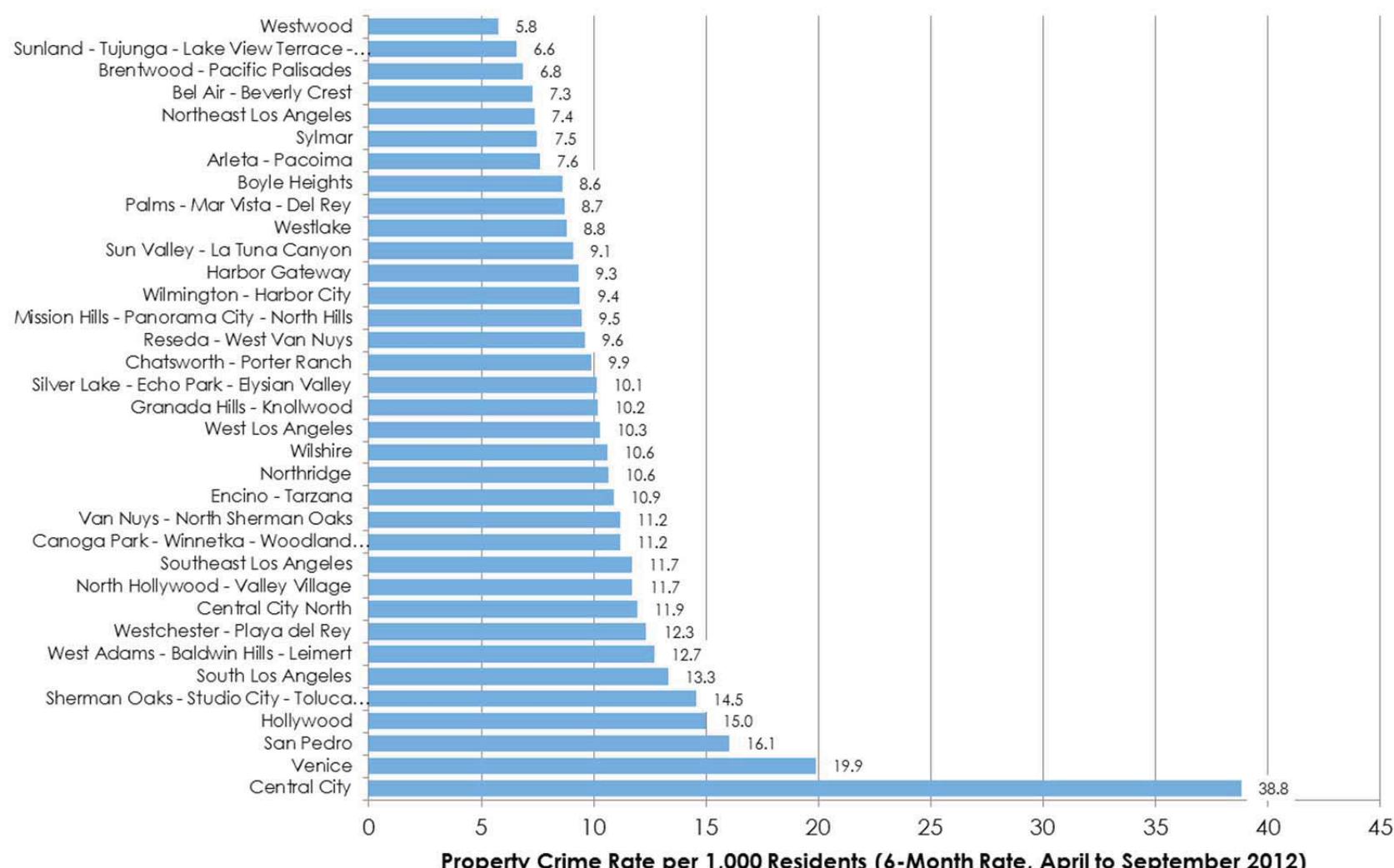
Figure 50: Violent Crime Rate per 1,000 Residents by Community Planning Area (6-month rate from April 2012 through September 2012)



Source: Los Angeles Police Department Part I Crimes (2012). 2010 U.S. Census population data.

The six-month property crime rate for the City of Los Angeles was 11 crimes per 1,000 residents, and the property crime rate per 1,000 residents is shown on Map 95. There were 22 CPAs below the City average rate. Figure 51 shows the property crime rate per 1,000 residents by CPA. Bel Air-Beverly Crest, Westwood, and Brentwood-Pacific Palisades had the three lowest property crime rates. Conversely, 13 CPAs exceeded the City average, with the Central City, Venice, San Pedro, and Hollywood CPAs as the top areas for property crimes.

Figure 51: Property Crime Rate per 1,000 Residents by Community Planning Area (6-month rate from April 2012 through September 2012)

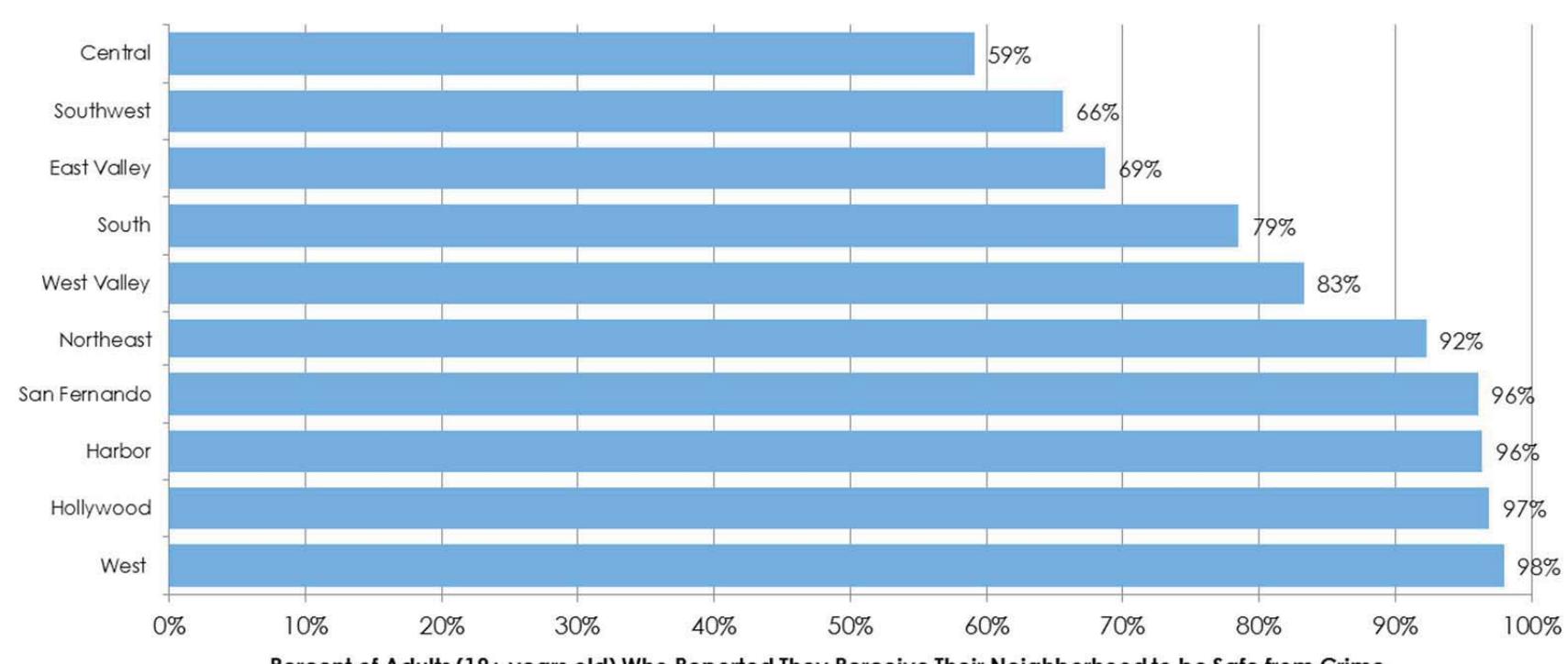


Source: Los Angeles Police Department Part I Crimes (2012). 2010 U.S. Census population data.

NEIGHBORHOOD SAFETY

In 2011, 84% of adults countywide reported that they perceived their neighborhood to be safe from crime, but this perception varied significantly by Health District. Adults in the West (98%), Hollywood (97%), Harbor (96%), San Fernando (96%), and Northeast (92%) had higher perceptions of safety from crime. Adults in the Central (59%), Southwest (66%), and East Valley (69%) HDs had the lowest rates of perceived neighborhood safety.¹⁶³

Figure 52: Percentage of Adults Who Reported They Perceive Their Neighborhood to be Safe from Crime by Health District in 2011



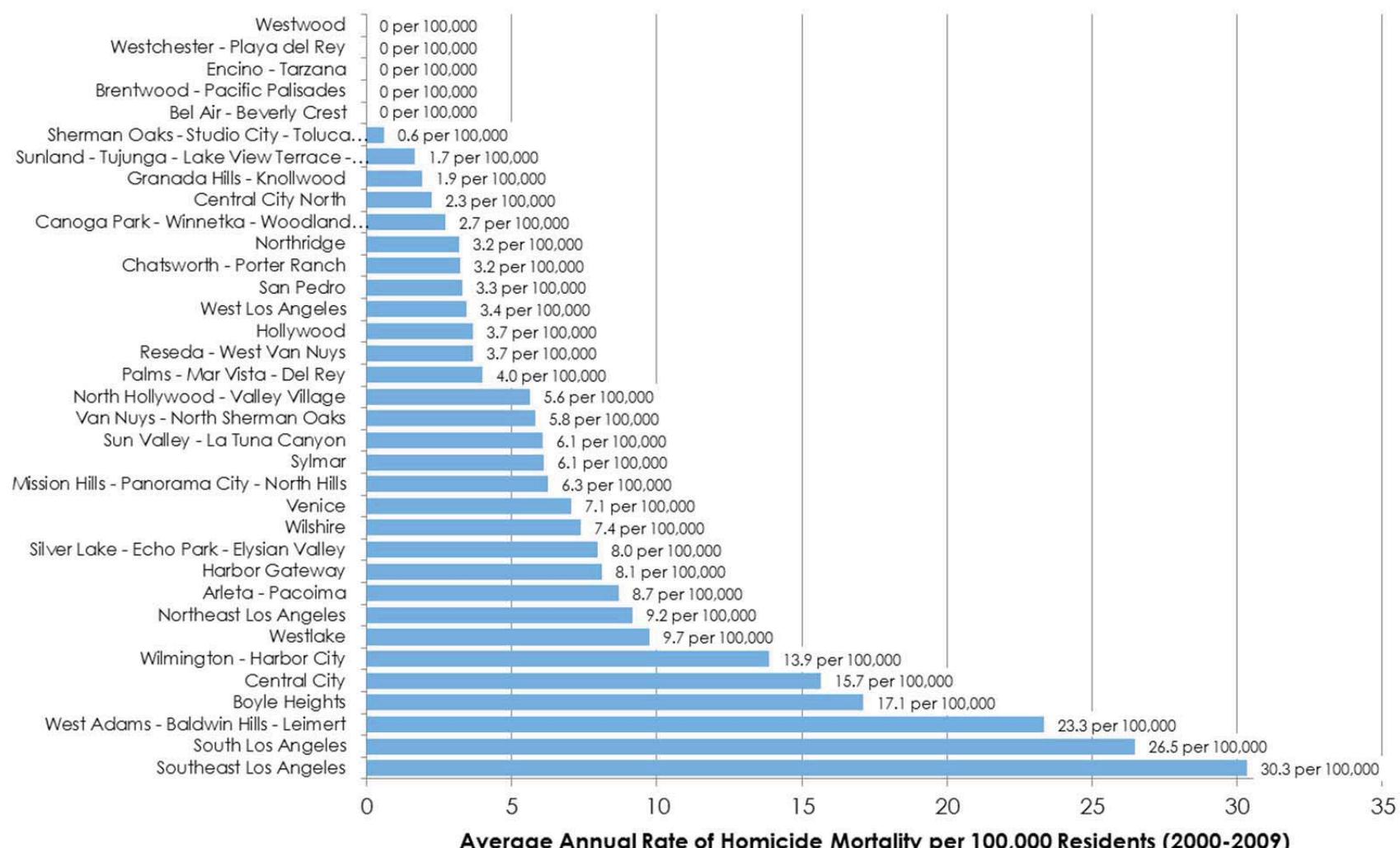
Source: Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Perceived Safety from Neighborhood Crime [Data File].

¹⁶³ Office of Health Assessment and Epidemiology, Los Angeles County Department of Public Health. (2013). 2011 Los Angeles County Health Survey: Perceived Safety of Neighborhood from Crime [Data File]. Retrieved from <http://publichealth.lacounty.gov/ha/LACHSDataTopics2011.htm>

HOMICIDE

Between 2000 and 2009, the citywide homicide rate per 100,000 was 8.7. As a comparison, the nationwide homicide rate per 100,000 was 6.1 in 2007.¹⁶⁴ Homicide rates per 100,000 residents are shown on Figure 53 and in Map 97. The Encino-Tarzana, Westwood, Brentwood-Pacific Palisades, Westchester-Playa Del Rey, and Bel Air-Beverly Crest CPAs had an average homicide mortality rate near zero. The Boyle Heights (17.1 per 100,000), West Adams-Baldwin Hills-Leimert (23), South Los Angeles (26), and Southeast Los Angeles (30) CPAs had the highest homicide rates and all were at least two to three times the citywide average.

Figure 53: Average Annual Homicide Rate per 100,000 Residents by Community Planning Area between 2000 and 2009



Source: California Department of Health Services, Center for Health Statistics. Death Statistical Master File. Leading Causes of Injury Death prepared by Los Angeles County Public Health Department in 2012.

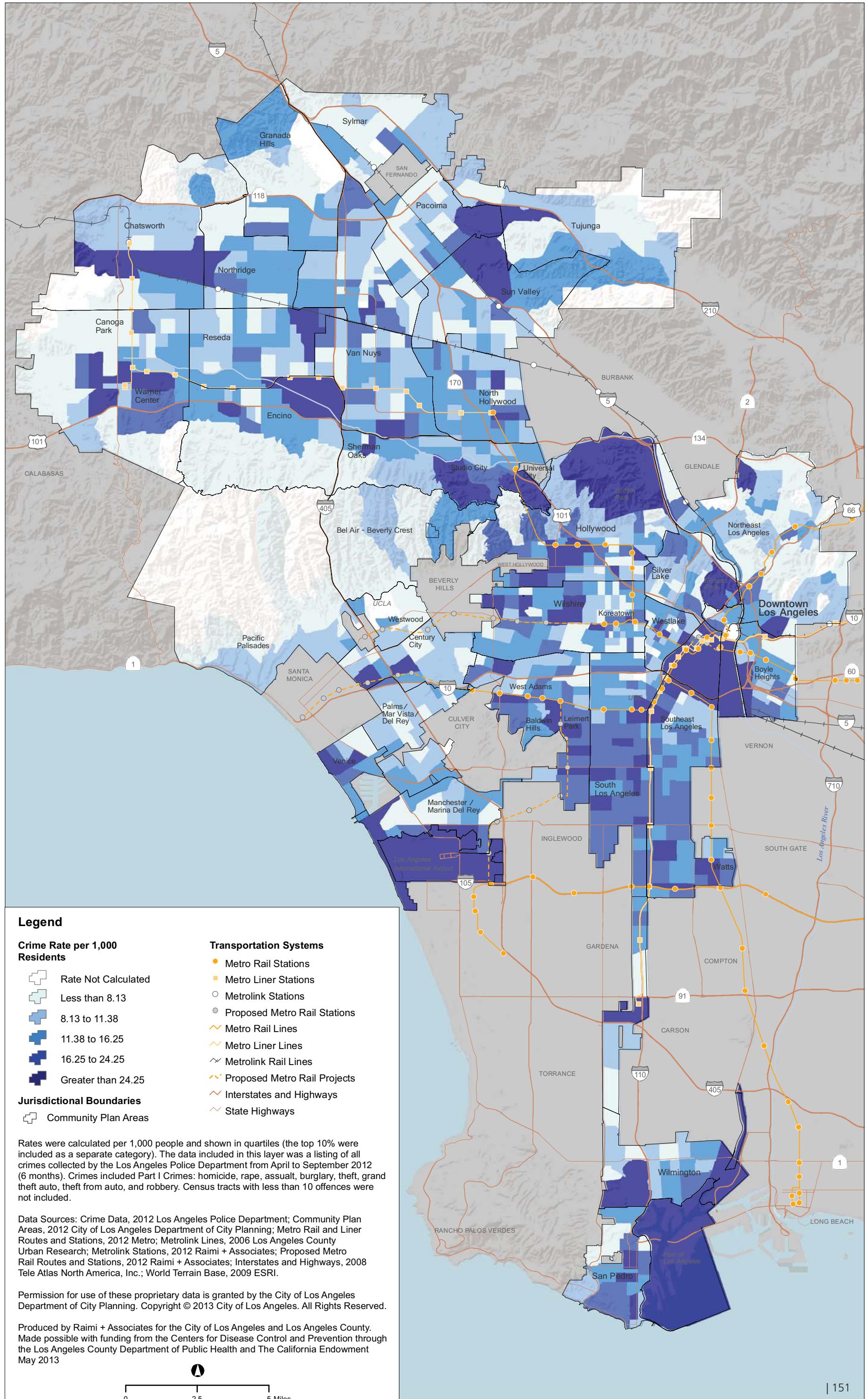
CRIME RATE INDEX

The Crime Rate Index was developed to assess the crime conditions of one neighborhood to another. The Index standardizes property crime rates per 1,000 residents and violent crime rates per 1,000 residents, and then averages them together, yielding a score on a scale of 0-100. To account for the significant impacts of violent crime on a neighborhood, the violent crime rate was weighted by a factor of two. Higher values indicate a higher Crime Rate Index score.

As shown on Map 98, zip codes in the Brentwood-Pacific Palisades, Bel Air-Beverly Crest, Palms-Mar Vista-Del Rey, Canoga Park-Winnetka-Woodland Hills-West Hills, and Westwood CPAs had the lowest Index scores. Zip codes in the Venice, Manchester-Playa Del Rey, West Adams-Baldwin Hills-Leimert, South Los Angeles, and Southeast Los Angeles, Central City, Hollywood, and Westlake CPAs had the highest Crime Rate Index scores.

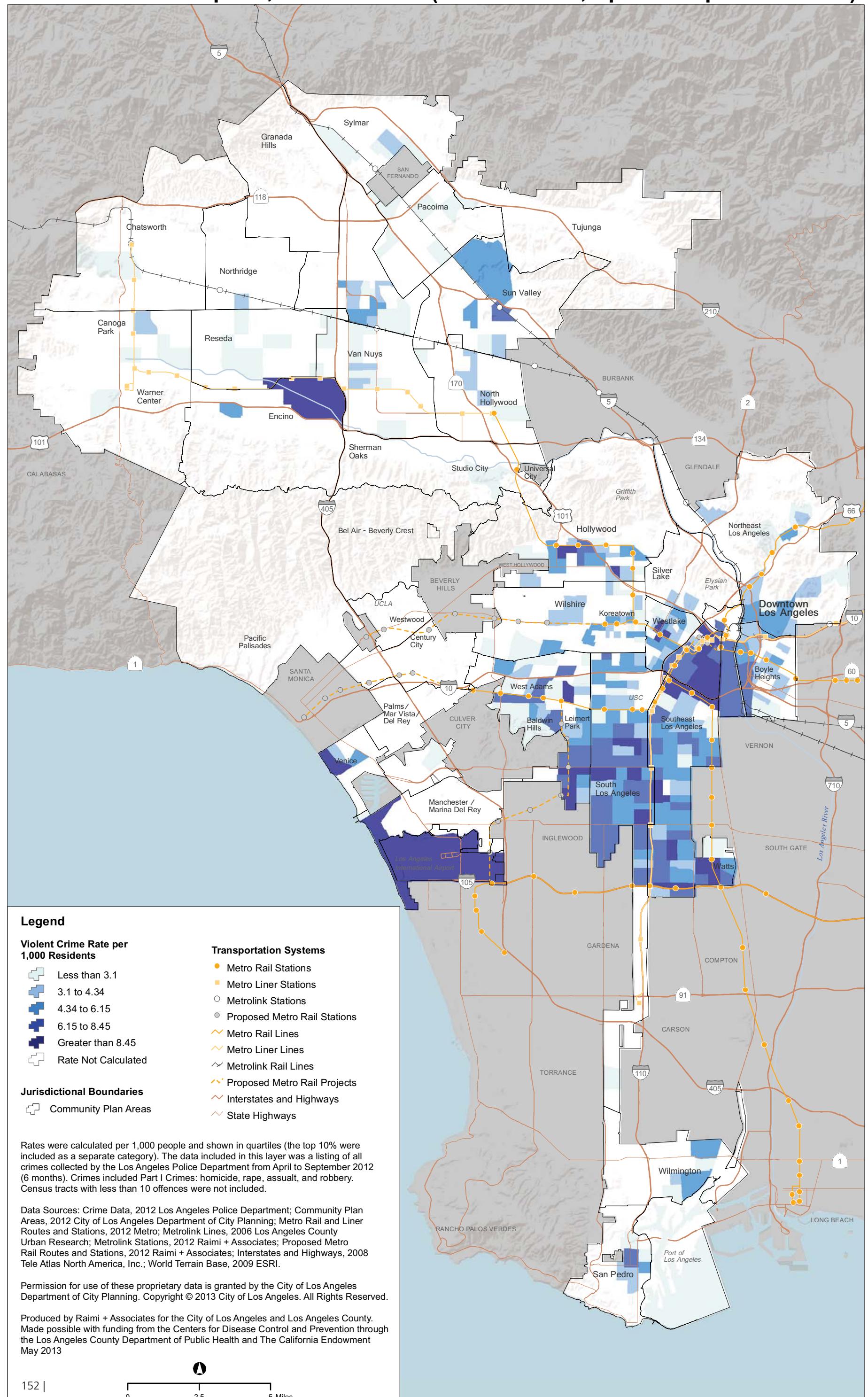
¹⁶⁴ U.S. Department of Health and Human Services. (2012). Healthy People 2020: Leading Indicators. Retrieved from <http://www.healthypeople.gov/2020/LHI/default.aspx>

Map 93
Crime Rate for All Part I Offences per 1,000 Residents (6-Month Rate, April to September 2012)



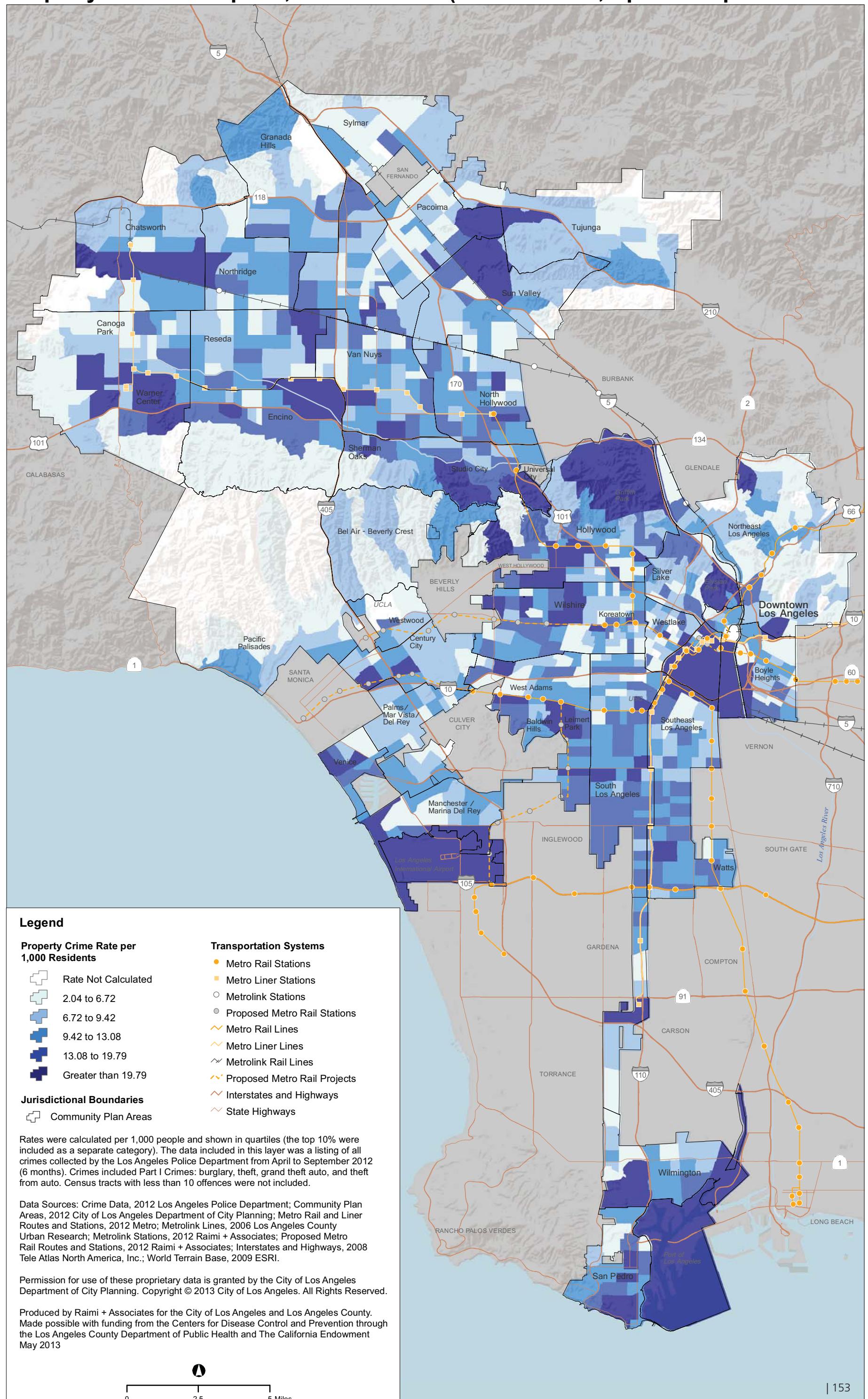
Map 94

Violent Crime Rate per 1,000 Residents (6-Month Rate, April to September 2012)



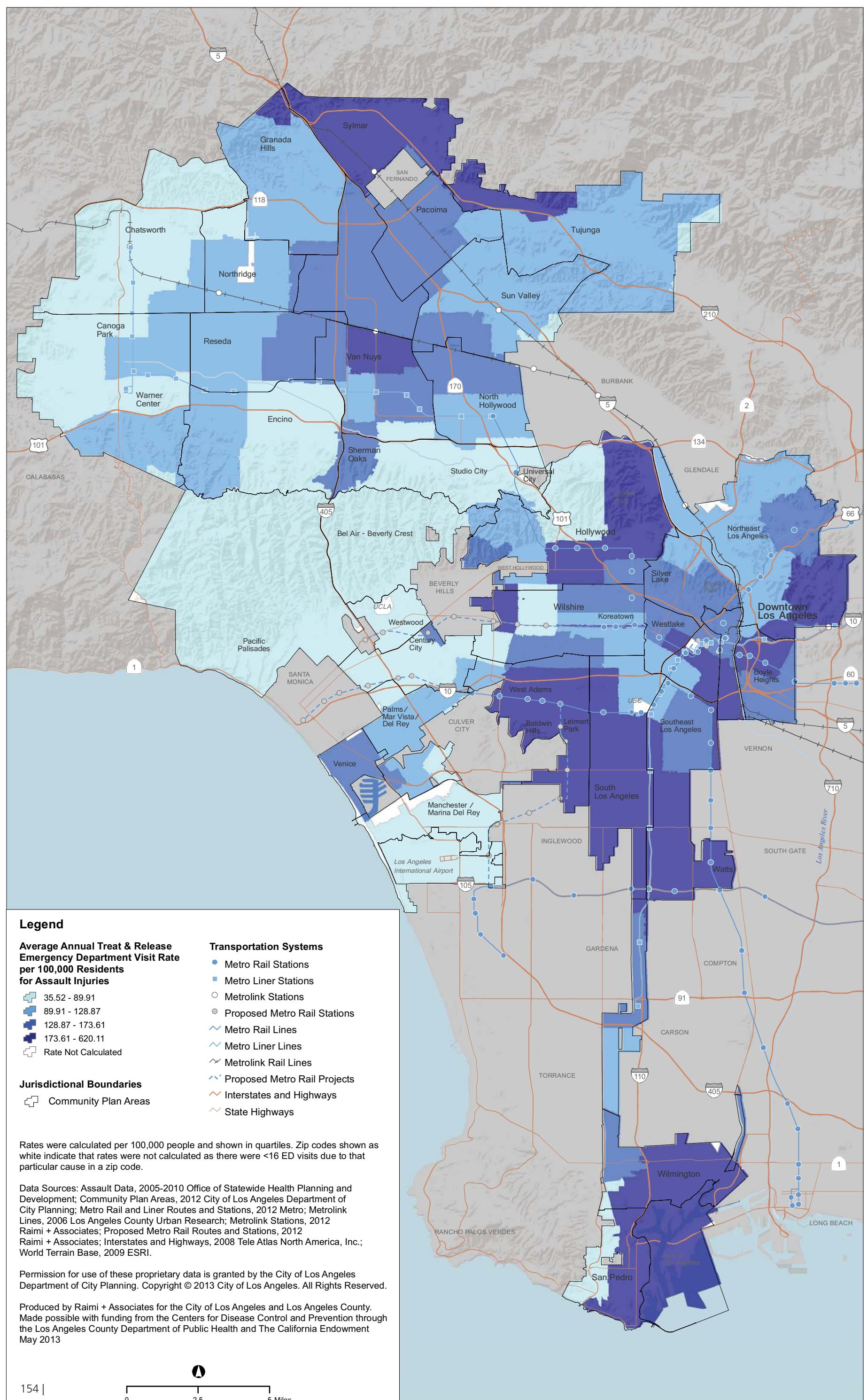
Map 95

Property Crime Rate per 1,000 Residents (6-Month Rate, April to September 2012)



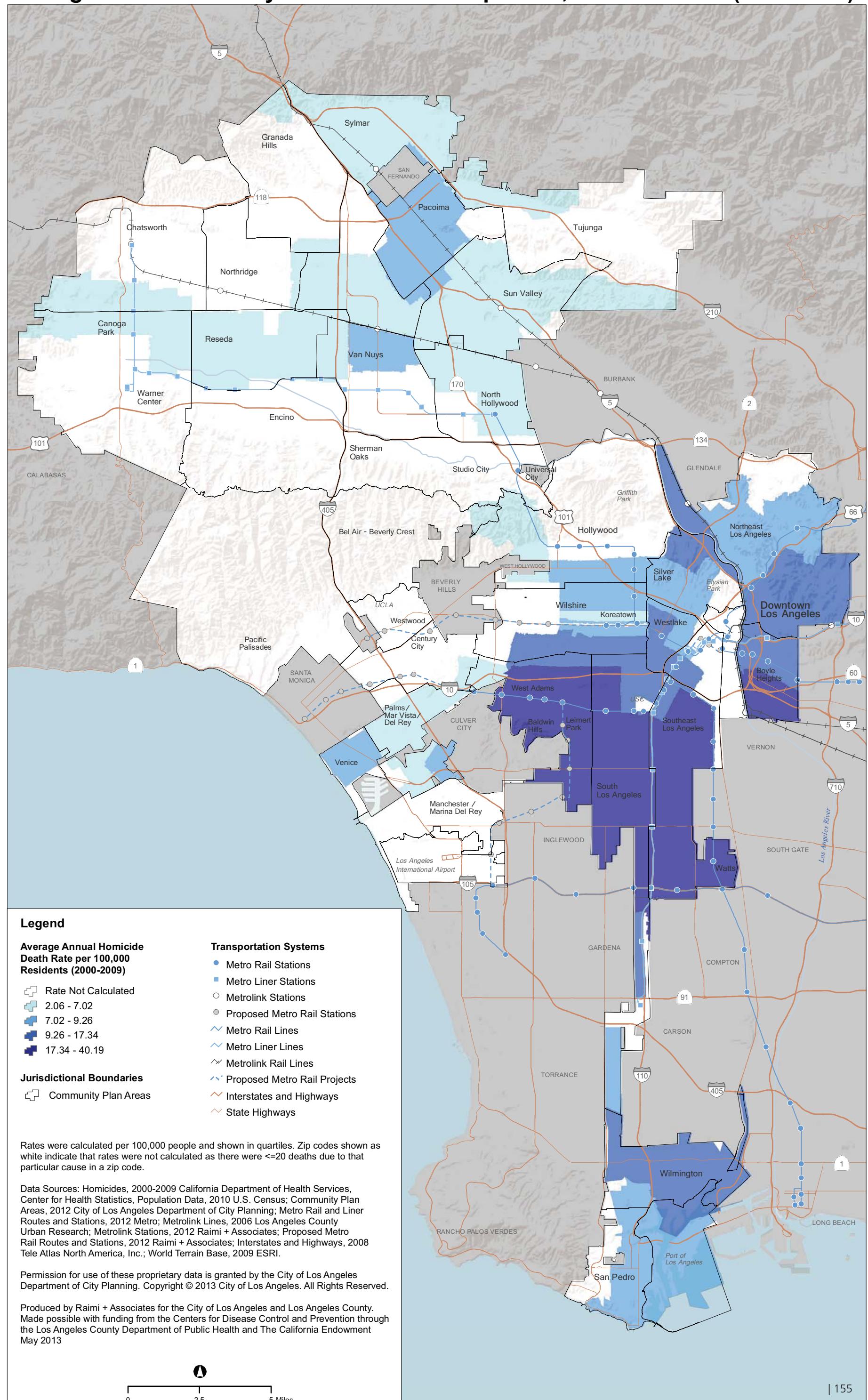
Map 96

Average Annual Emergency Department Visit Rate for Assault per 100,000 Residents (2005-2010)



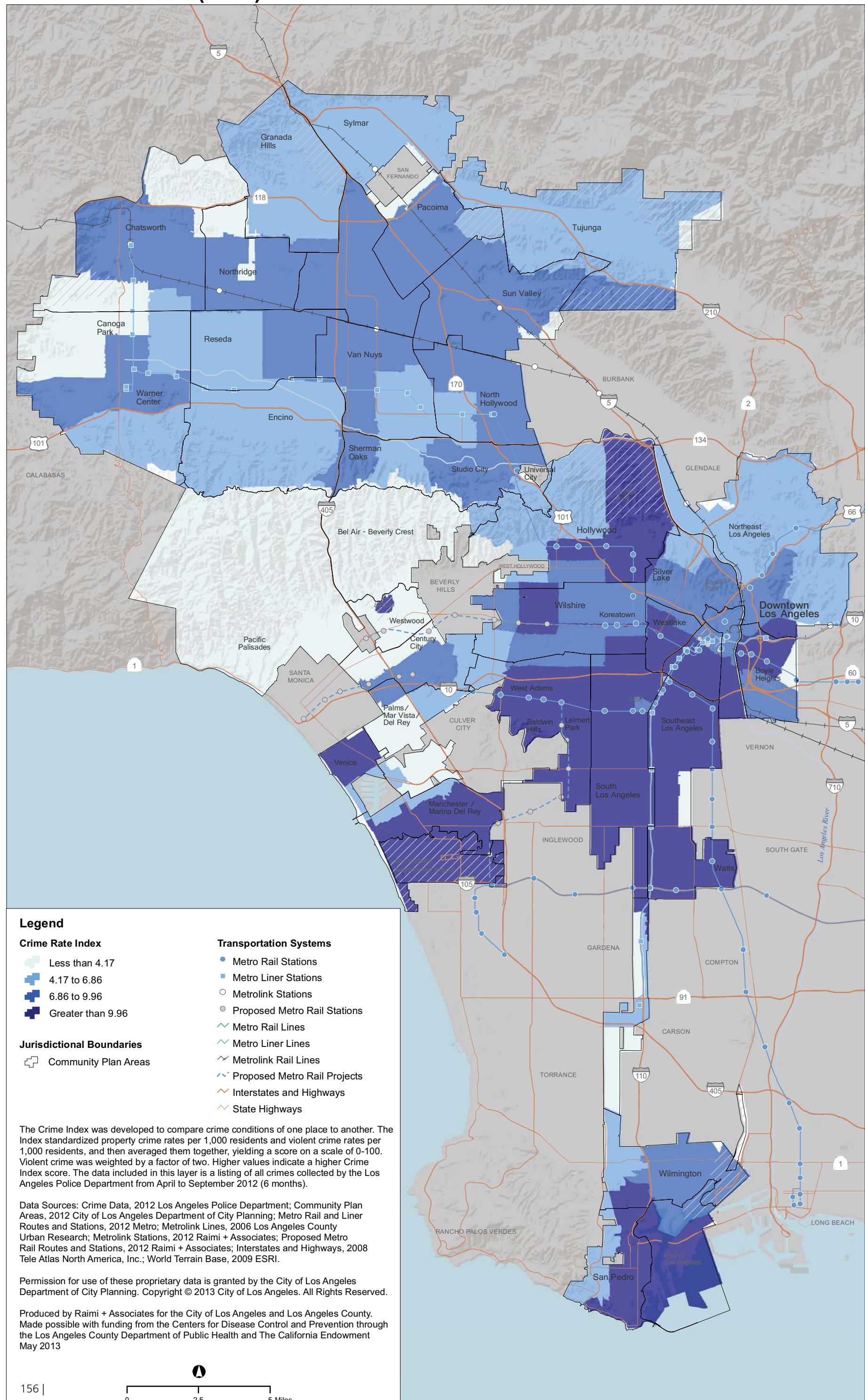
Map 97

Average Annual Mortality Rate for Homicide per 100,000 Residents (2000-2009)



Map 98

Crime Rate Index (2012)



11 | Housing

A home represents safety, security, shelter, family, and friends. Housing is often the single largest monthly expenditure for a family. The conditions within a home, housing affordability, and the surrounding neighborhood affect the health of families. Substandard and inadequate housing can contribute to lead exposure and poisoning; respiratory conditions, including asthma; exposure to carcinogenic air pollutants, like radon and tobacco smoke; injuries resulting from poor construction or maintenance; and other health-related issues.¹⁶⁵ A scarcity of affordable housing limits a family's choice about where to live, often requiring families to move into inadequate or substandard housing in neighborhoods with higher crime and violence.¹⁶⁶ Housing affordability also affects a household's stability and ability to afford health insurance and other necessities.¹⁶⁷

MAPS AND INDICATORS

The Housing Chapter includes data and information on housing density, diversity, overcrowding, and cost. The following lists the maps and associated indicators included in this section.

- **Residential Density:** The net residential density map is the ratio of the total units per census tract to the area devoted to residential uses. Data is from Los Angeles County Office of the Assessor's parcel information for 2012.
- **Housing Diversity:** The map shows a composite score for the diversity of housing within each census tract. The scoring methodology was derived from the U.S. Green Building Council's LEED for Neighborhood Development Checklist, and it includes 20 combinations of housing type and size. Data is from Los Angeles County Office of the Assessor's parcel information for 2012.
- **Percentage Renter-Occupied Housing Units:** The map shows the percentage of renter-occupied housing units for each census block. Data is from the 2010 U.S. Census.
- **Renter-Occupied Housing Units:** The map shows the census blocks where renter-occupied housing units account for 75% or more of the housing units. Data is from the 2010 U.S. Census.
- **Housing Units with One Person or More per Room:** The map shows the proportion of housing units in a census tract with one person or more per room. Data is from the 2010 U.S. Census ACS 5-year Estimates.
- **Housing Units with More than 1.5 Persons per Room:** The map shows the proportion of housing units in a census tract with 1.5 persons or more per room. Data is from the 2010 U.S. Census ACS 5-year Estimates.
- **Percentage of Households Paying More than 30% of Income on Housing Costs:** The map shows the percentage of the households in a census tract paying more than 30% of monthly income on housing costs. Data is from the 2010 U.S. Census ACS 5-year Estimates.
- **Subsidized Housing Units:** The map shows public housing, Section 236 projects, Section 8 new construction, Low Income Housing Tax Credits, and other subsidized multifamily housing in 2008. Data is from the Department of Housing and Urban Development.

KEY FINDINGS

HOUSING DENSITY AND DIVERSITY

Compact suburban and urban areas can typically support more neighborhood-serving uses, providing goods and services within walking and biking distance of homes; they have more potential customers (neighborhood residents) in a smaller service area. Similarly, as residential density and non-residential intensity increase, transit ridership and walking rates increase, while rates of obesity decline.^{168 169 170}

Net residential density is the ratio of the total units per census tract to the area devoted to residential uses and is shown on Map 99. The average residential density of the City of Los Angeles was 12.9 units per acre. Figure 54 shows the housing density by CPA. Housing density is highest in the Central City and Westlake CPAs, where there are 80 and 53 housing units per acre of residential land, respectively. The Bel Air-Beverly Crest (1.6) and Brentwood-Pacific Palisades (4.3) CPAs have the lowest residential density in the City.

¹⁶⁵ Braveman, P., et. al. (2011, May). Housing and Health. *Exploring the Social Determinants of Health*. Robert Wood Johnson Foundation. Retrieved from <http://www.rwjf.org/content/dam/web-assets/2011/05/housing-and-health>.

¹⁶⁶ Baath, M., et. al. (Date unknown). Association between Neighborhood Conditions and Health Outcomes at Local Level. Santa Clara County Public Health Department. Retrieved from <http://www.sccgov.org/sites/sccphd/us/Partners/Data/Documents/neighborhoods%20poster%20combined%20final.pdf>.

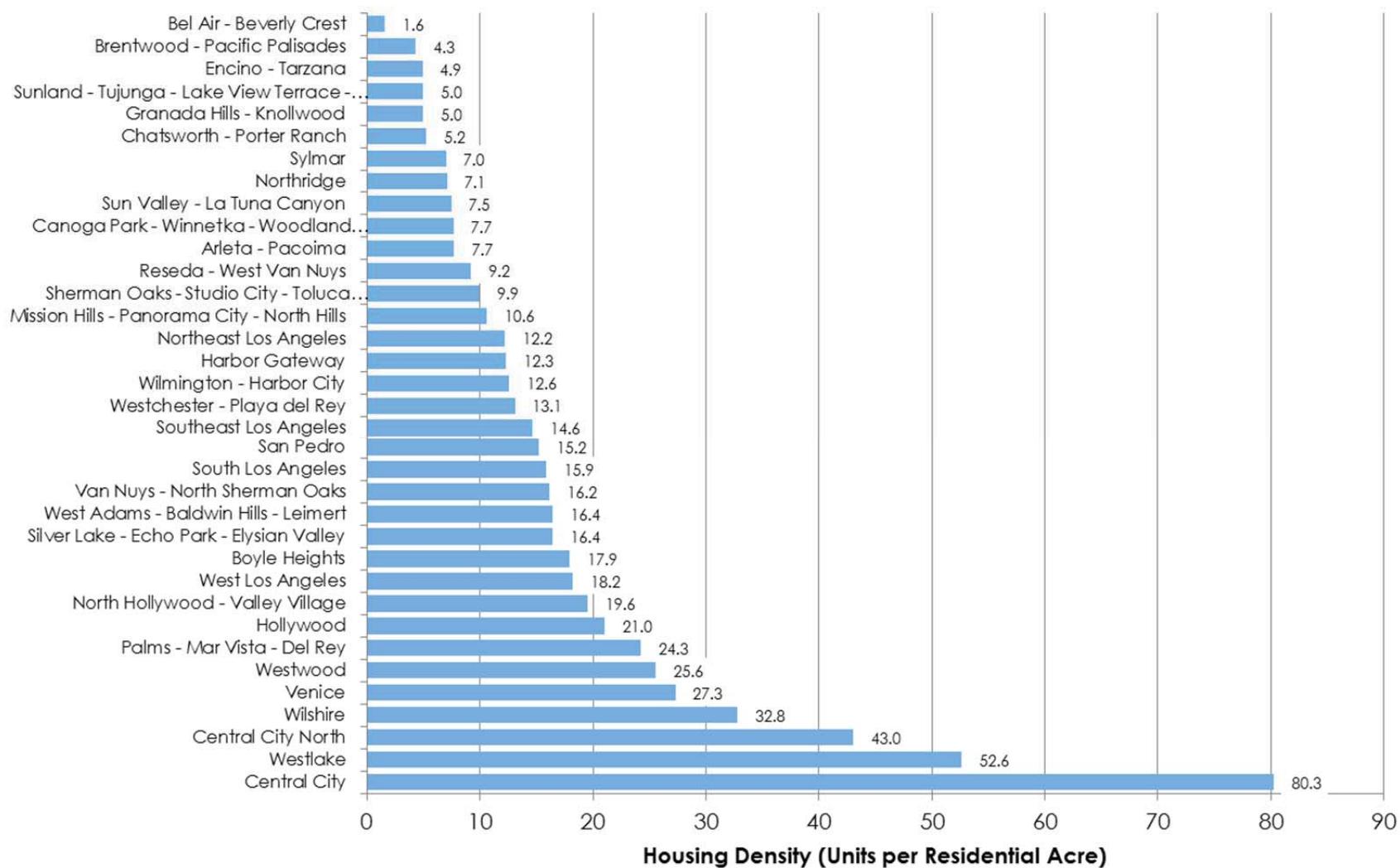
¹⁶⁷ Rossi, P., and Weber, E. (1996). The Social Benefits of Homeownership: Empirical Evidence from National Surveys. *Housing Policy Debate* 7(1), pp. 1-35.

¹⁶⁸ Ewing, R. and Cervero, R. (2010). Travel and the Built Environment. *Journal of the American Planning Association*, 76: 3, pp. 265-294.

¹⁶⁹ Cervero, R. and Guerra, E. (2011). Urban Densities and Transit: A Multi-dimensional Perspective (Working paper). Institute of Transportation Studies at the University of California at Berkeley. Retrieved from <http://www.its.berkeley.edu/publications/UCB/2011/VWP/UCB-ITS-VWP-2011-6.pdf>.

¹⁷⁰ Frank, L. (2004). Obesity Relationships with Community Design, Physical Activity and Time Spent in Cars. *American Journal of Preventive Medicine*, 27(2), p. 90.

Figure 54: Housing Density by Community Plan Area in 2012



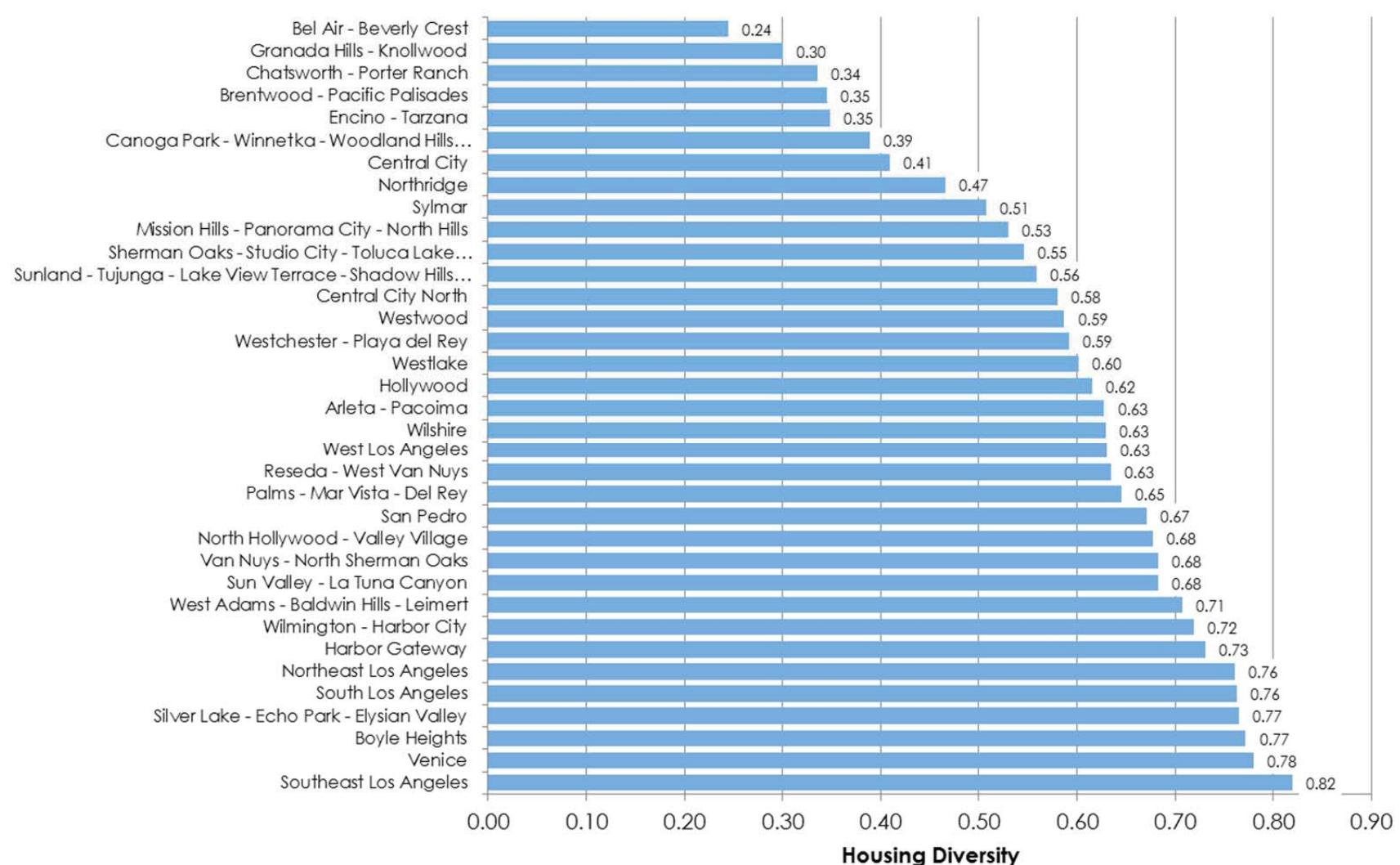
Source: Los Angeles County Office of the Assessor (2012). *Parcel Database*.

A diverse housing mix supports housing affordability and a diverse population. In addition, a mix of housing types supports those who choose to age in place in the same community throughout their different life stages. It also facilitates life transitions, such as renting an apartment as a young adult or purchasing a home as a new family.¹⁷¹

To assess housing diversity, a composite score within each census tract and CPA was derived from the LEED for Neighborhood Development Checklist, Neighborhood Pattern and Design Credit 4. The list includes 20 combinations of housing type and size, including detached single family units less than 1,250 square feet, detached single family units greater than 1,250 square feet, duplex units by size, and multifamily units by size. The housing diversity score represents the probability that any two randomly selected housing units in a tract or CPA will be of a different type and size. Higher scores denote greater housing diversity. Figure 55 shows the housing diversity score for each CPA in Los Angeles. The housing diversity scores are highest in Southeast Los Angeles (0.82) and Venice (0.78). The Bel Air-Beverly Crest (0.24) and Granada Hills-Knollwood (0.3) CPAs have the lowest housing diversity scores. Map 100 shows housing diversity by census tract.

¹⁷¹ American Association of Retired People. (2012). *Housing Policy Solutions to Support Aging in Place*. Retrieved from <http://www.nhc.org/media/documents/fs172-aging-in-place.pdf>.

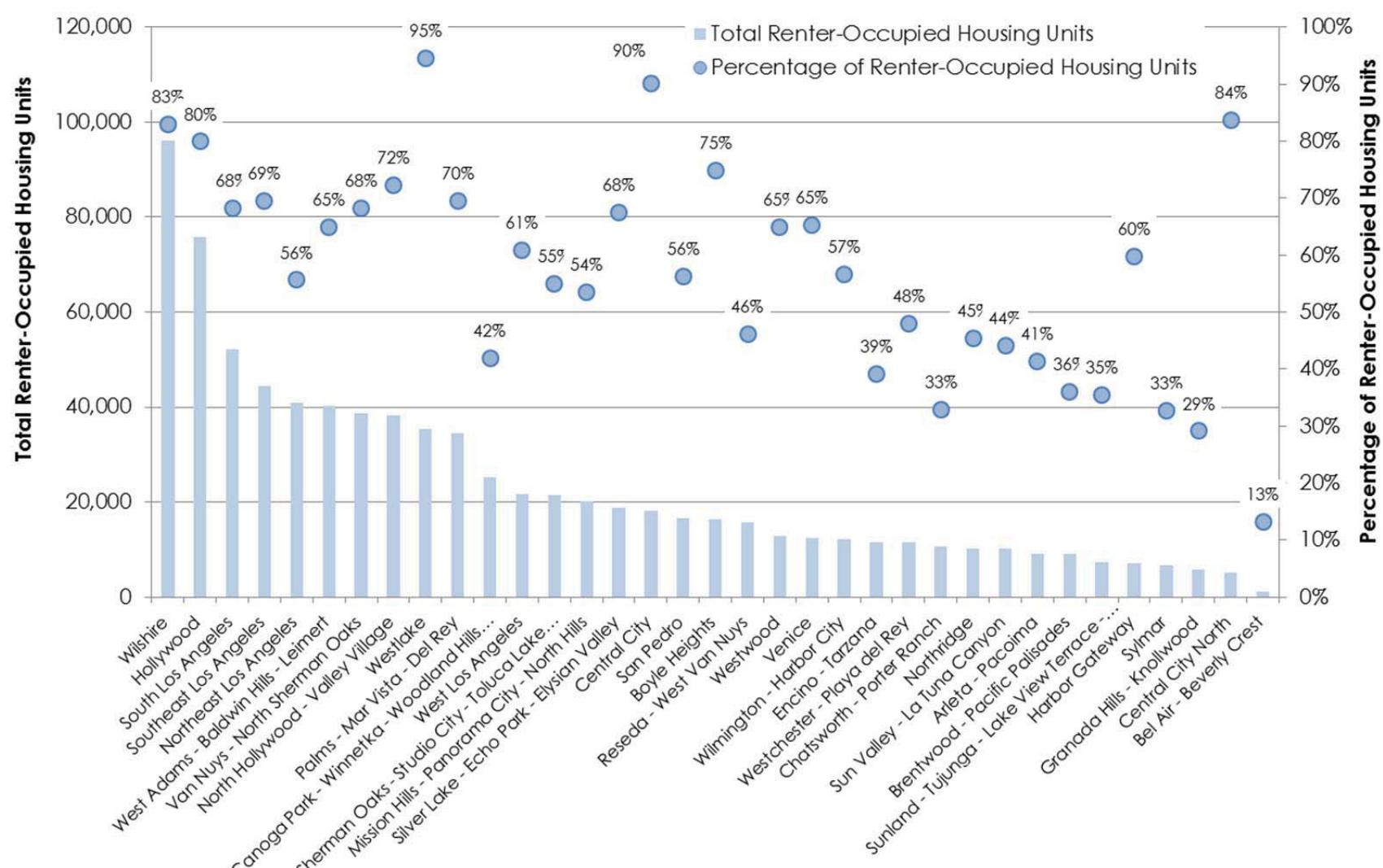
Figure 55: Housing Diversity by Community Plan Area in 2012



Source: Raimi + Associates. (2012). Land Use Mix Analysis for the City of Los Angeles.

Unsurprisingly, CPAs with higher residential densities and housing diversity tended to have a higher proportion of renter-occupied housing units. Figure 56 shows the number and proportion of renter-occupied housing units within each CPA. Westlake (95%) and Central City (90%) have the highest percentage of renter-occupied housing units, while Bel Air-Beverly Crest (13%) and Granada Hills-Knollwood (29%) have the lowest. Map 101 shows the proportion of renter-occupied housing units by census block, and Map 102 shows the census blocks where over 75% of the housing units are occupied by renters.

Figure 56: Renter-Occupied Housing Units by Community Plan Area in 2010



Source: 2010 Census ACS. Accessed from American FactFinder.

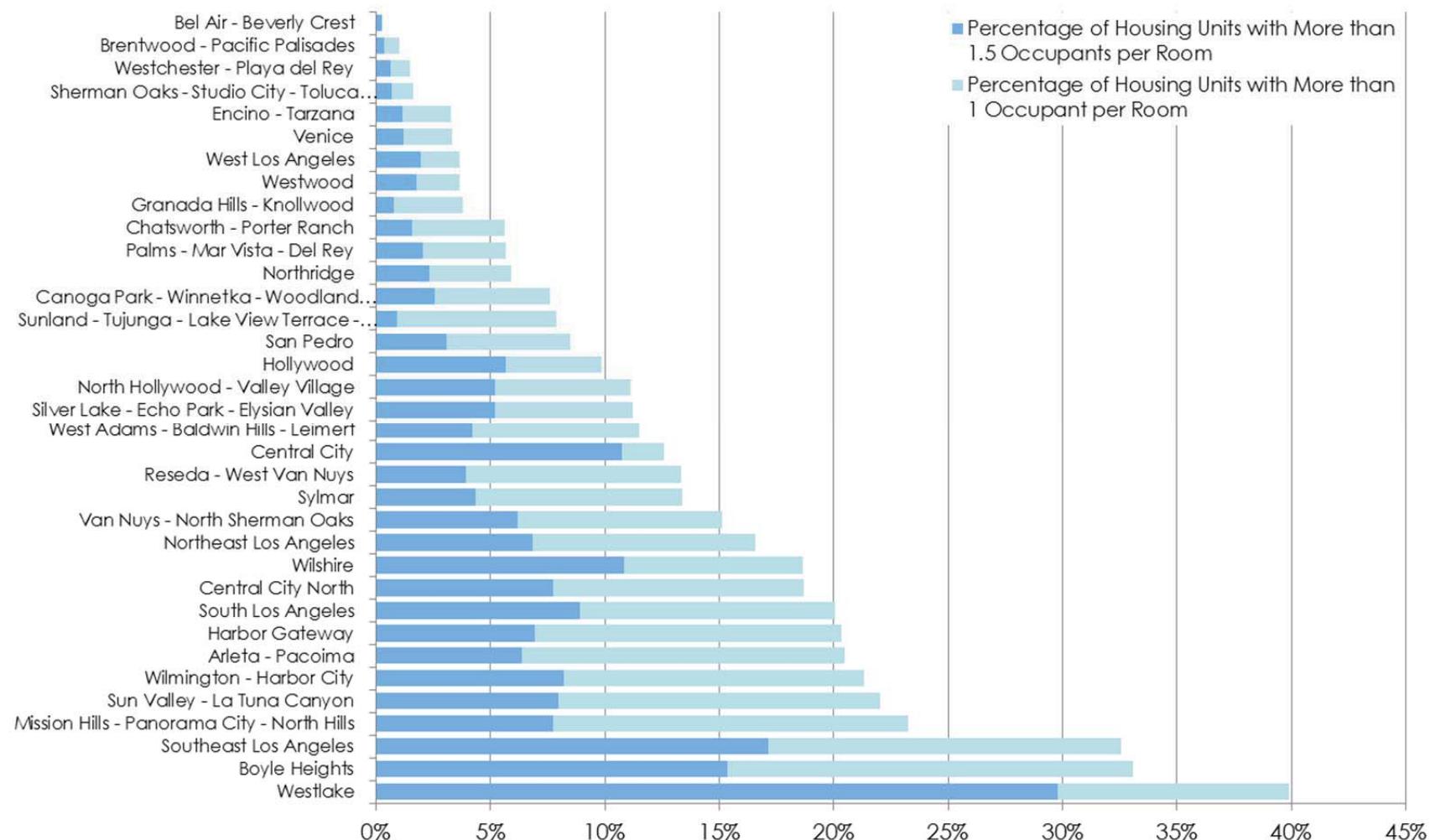
OVERCROWDING

Overcrowded housing directly influences a person's physical and mental health, and can affect the development and educational achievements of children. Studies have found a relationship between overcrowding and respiratory health, meningitis, and

tuberculosis in children. For adults, a relationship exists between overcrowding and respiratory diseases and some forms of cancer.¹⁷² Evidence also suggests that overcrowding is associated with mental health issues in women and racial and ethnic minorities. Overcrowding is also associated with child mistreatment and domestic violence.¹⁷³ In addition, overcrowding can increase noise, which increases overall chronic stress and decreases the amount and quality of sleep.^{174 175}

The U.S. Census Bureau defines overcrowded housing as housing with more than one person per room, including the living room in the housing unit. Having more than 1.5 persons per room is considered severe overcrowding. The percentage of housing units with more than one person per room in the City of Los Angeles is 14% (Map 103), and it is 6.6% for housing units with 1.5 persons per room (Map 104). As shown in Figure 57, the Westlake (40%), Southeast Los Angeles (33%), and Boyle Heights (33%) CPAs had the highest proportions of housing units with more than one occupant per room. These three CPAs also had the highest percentages of housing units with more than 1.5 persons: Westlake (30%), Southeast Los Angeles (17%), and Boyle Heights (15%). The Bel Air-Beverly Crest (less than 1%) and Brentwood-Pacific Palisades (1%) CPAs had the lowest percentages of overcrowding.

Figure 57: Overcrowded Housing by Community Plan Area in 2010



Source: 2010 Census ACS. Accessed from American FactFinder.

HOUSING COST

Housing affordability may lead to better health outcomes for residents. Higher rents or mortgage payments, especially for low- and moderate-income families, limit the amount that a family can spend on other necessities, such as nutritious food, heating fuels, and health care.¹⁷⁶ Families with access to affordable housing are also less likely to move frequently. Residential stability, in turn, can reduce emotional and behavioral problems among children, and lower the risk of pregnancy, drug use, and depression during adolescence.¹⁷⁷ An adequate supply of affordable housing may also improve the health of the elderly and those with disabilities and chronic disease, by creating a stable platform for health care and services.¹⁷⁸ Scarce affordable housing also limits a household's choice about where they live, often forcing a move into inadequate or substandard housing in neighborhoods with higher crime and violence.¹⁷⁹ In addition, high housing costs force many with lower incomes to live outside of the County and commute long distances. This contributes to problems of stress, increased levels of traffic congestion on area roadways, and increased levels of air pollution.¹⁸⁰

Housing affordability is defined as the cost of housing (rent or mortgage) relative to household income. Housing is considered affordable if it costs less than 30% of a household budget. Households that pay more than 30% of their monthly income on housing are considered cost-burdened.¹⁸¹ In the City of Los Angeles, 53% of the households pay more than 30% of their monthly income housing and Map 105 displays the proportion of households in each census tract that pay more than 30% of their monthly

¹⁷² Krieger, J., and Higgins, D.L. (2002). Housing and Health: Time again for Public Health Action. *American Journal of Public Health*, 92, pp. 758-768.

¹⁷³ Office of the Deputy Prime Minister. (2004) *The Impact of Overcrowding on Health and Education: A Review of the Evidence and Literature*. Retrieved from <http://dera.ioe.ac.uk/5073/>.

¹⁷⁴ Evans, G., and Marcynyszyn, L.A. (2004). Environmental Justice, Cumulative Environmental Risk, and Health among Low- and Middle-Income Children in Upstate New York. *American Journal of Public Health*, 94, pp. 1942-1944.

¹⁷⁵ Cooper, M. (2001). Housing Affordability: A Children's Issue. *Canadian Policy Research Networks Discussion Paper*.

¹⁷⁶ Bashir, S.A. (2002). Home is Where the Harm is: Inadequate Housing as a Public Health Crisis. *American Journal of Public Health*, 92(5), pp. 733-738.

¹⁷⁷ Lubell, J., Crain, R., and Cohen, R. (2007). *Framing the Issues--the Positive Impacts of Affordable Housing on Health*. Washington, D.C.: Center for Housing Policy.

¹⁷⁸ Lubell, J., Crain, R., and Cohen, R. (2007). *Framing the Issues--the Positive Impacts of Affordable Housing on Health*. Washington, D.C.: Center for Housing Policy.

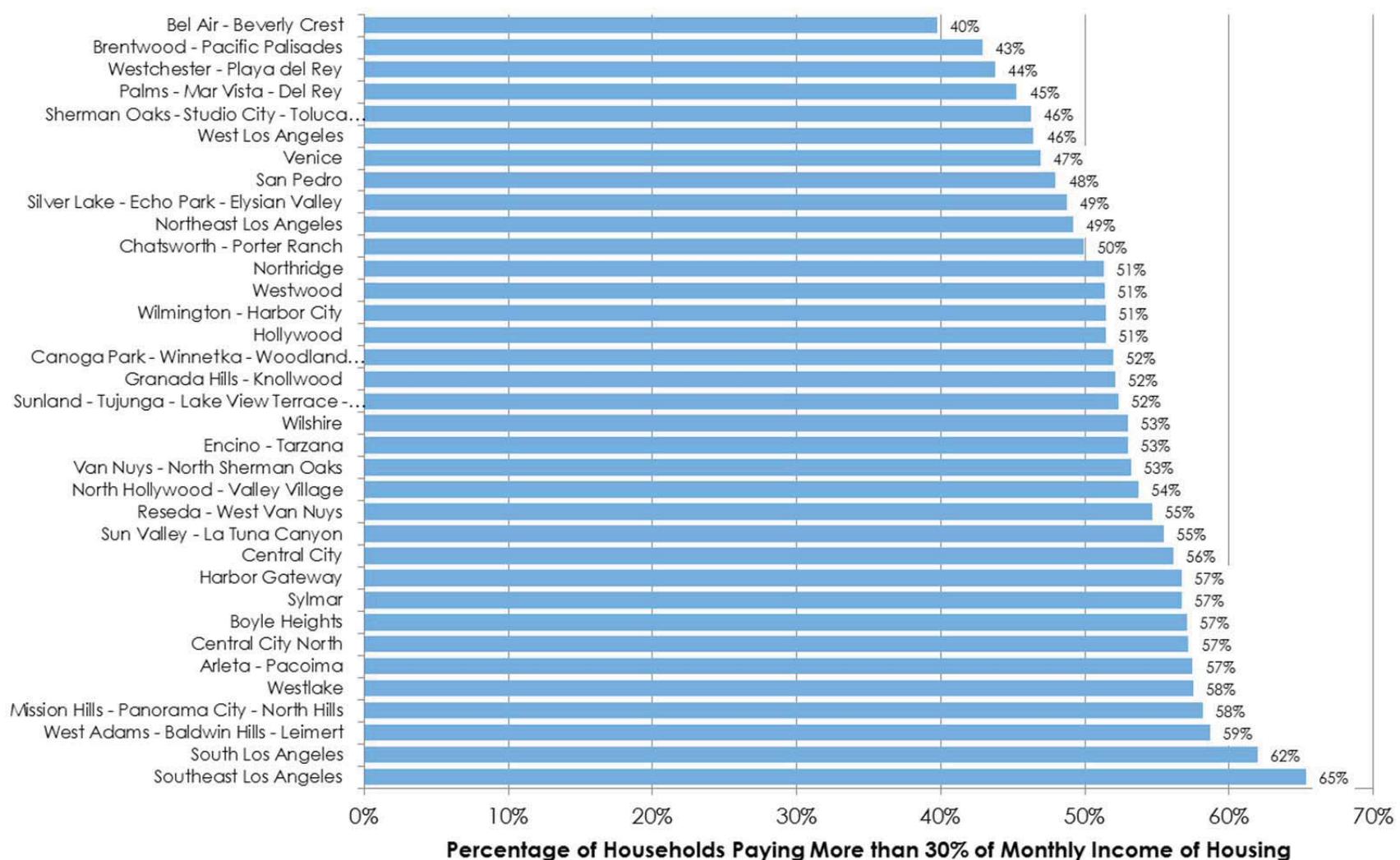
¹⁷⁹ Baath, M., et. al. (Data unknown). Association between Neighborhood Conditions and Health Outcomes at Local Level. Santa Clara County Public Health Department. Retrieved from <http://www.sccgov.org/sites/sccphd/en-us/Partners/Data/Documents/neighborhoods%20poster%20combined%20final.pdf>.

¹⁸⁰ Urban Habitat and Non-Profit Housing Association of Northern California. (2012). *Moving Silicon Valley Forward: Housing, Transit & Traffic at a Crossroads*. Retrieved from http://nonprofithousing.org/pdf_pubs/MovingSiliconValleyForward.pdf

¹⁸¹ U.S. Department of Housing and Urban Development. (2012). *Affordable Housing*. Retrieved from http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing

income on housing. In 2010, 56% of renters paid more than 30%, while 49% homeowners were cost-burdened. As shown in Figure 58, over 62% of the population in the South Los Angeles and Southeast Los Angeles CPAs were cost-burdened, which were the highest rates in the City. The Hollywood (51%) and Wilshire (53%) CPAs had lower proportions of households that were cost-burdened but had large numbers of households that paid more than 30% on housing, 48,807 and 62,454, respectively.

Figure 58: Households Paying More than 30% of Monthly Income on Housing Costs by Community Plan Area in 2010



Source: 2010 Census ACS. Accessed from American FactFinder.

HOMELESSNESS

Poor health and homelessness are closely related. The rates of chronic and acute diseases are high among the homeless population, and diseases such as tuberculosis, HIV/AIDS, diabetes, hypertension, addiction, and mental disorders are difficult to treat when individuals lack permanent housing.¹⁸²

Studies have found that homeless people experience illness and injury three to six times more frequently than housed individuals experience and die 30 years earlier.¹⁸³ Homeless individuals who are mentally ill may use drugs and/or alcohol to self-medicate, placing them at risk for communicable and other diseases.¹⁸⁴ With difficulty treating homeless persons and an increase in health risks, the cost of providing services for this subpopulation is significant. A 2009 study on the cost of housing and homelessness showed consistent findings that public costs can be reduced by nearly 80% when homeless individuals are housed and provided with supportive care.¹⁸⁵ Figure 59 shows that providing supportive housing for homeless persons reduces the overall public cost.

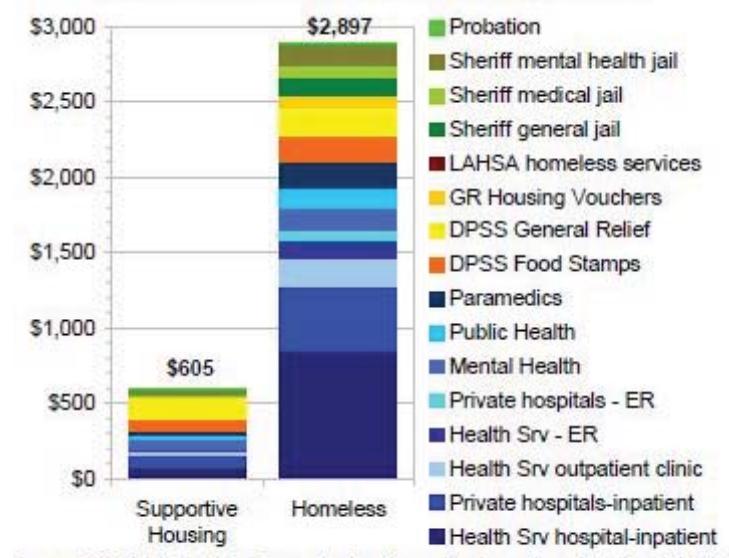
¹⁸² National Coalition for the Homeless. (2006, June). Health Care and Homelessness. NCH Fact Sheet #8. Retrieved from <http://www.nationalhomeless.org/publications/facts/Health.pdf>.

¹⁸³ National Health Care for the Homeless Council. (2012). Retrieved from <http://www.nhchc.org/>.

¹⁸⁴ National Coalition for the Homeless. (2006, June). Health Care and Homelessness. NCH Fact Sheet #8. Retrieved from <http://www.nationalhomeless.org/publications/facts/Health.pdf>.

¹⁸⁵ Los Angeles Homeless Services Authority. (2009) Where We Sleep: Costs when Homelessness and Housed in Los Angeles. pp. 1

Figure 59: Average Monthly Public Costs for Persons in Supportive Housing and Comparable Homeless Persons for Los Angeles County in 2008

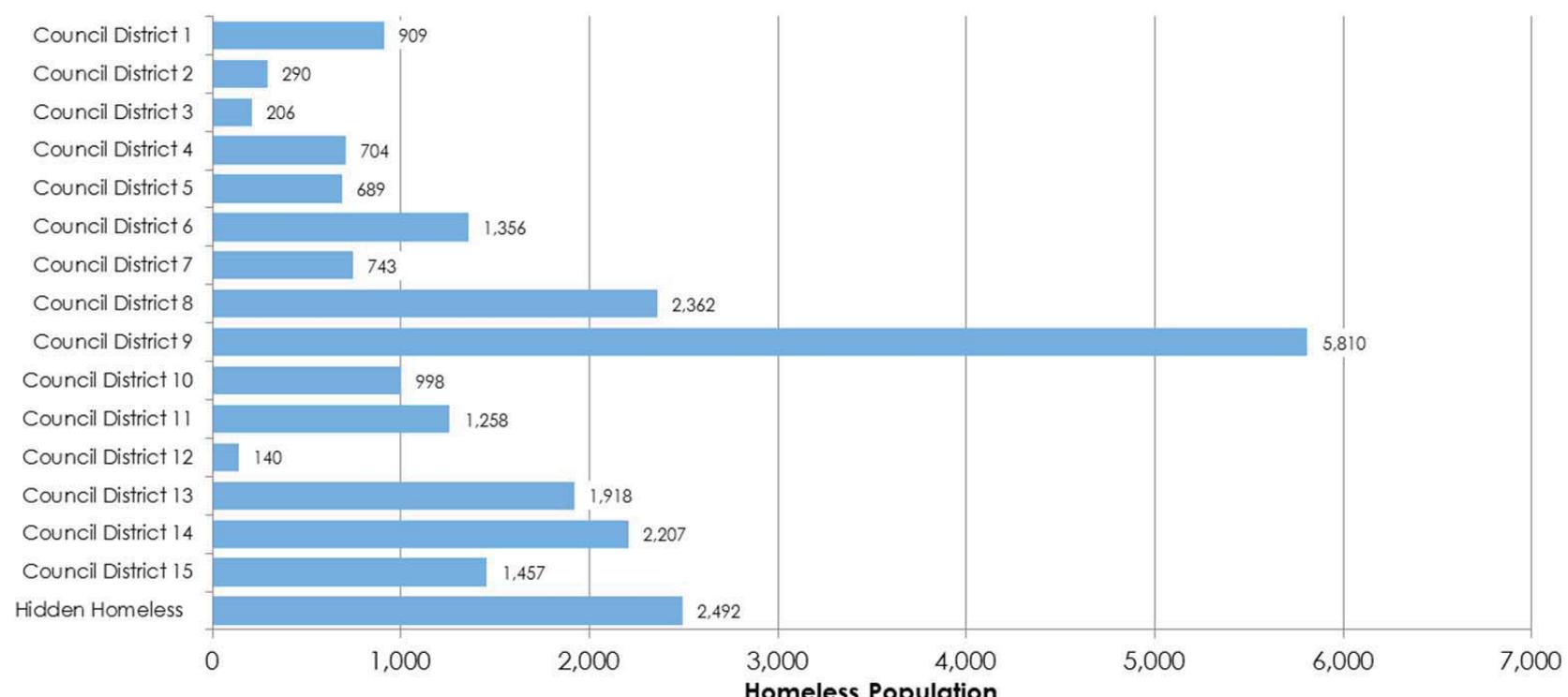


Source: 279 Matched pairs of supportive housing residents and homeless General Relief recipients. Costs shown in 2008 dollars.

Source: *Economic Roundtable. (2009). Where We Sleep: Costs when Homeless and Housed in Los Angeles.*

Although homelessness in the City overall has declined by 9% from 2009 to 2011, there were marked increases occurring in specific areas throughout the City. The homeless population increased by over half in Council District 8, over one-third in Council District 5 and over one-quarter in Council District 7. Conversely, homelessness in Council District 12 declined by nearly three-quarters, and in Council Districts 3 and 4 it declined at a rate of 44% and 29%, respectively.¹⁸⁶ Figure 60 and Map 108 shows the homeless population by City Council District.

Figure 60: Homeless Population by City Council District in 2011



Source: *Los Angeles Homeless Services Authority. (2011, August). 2011 Greater Los Angeles Homeless Count Report.*

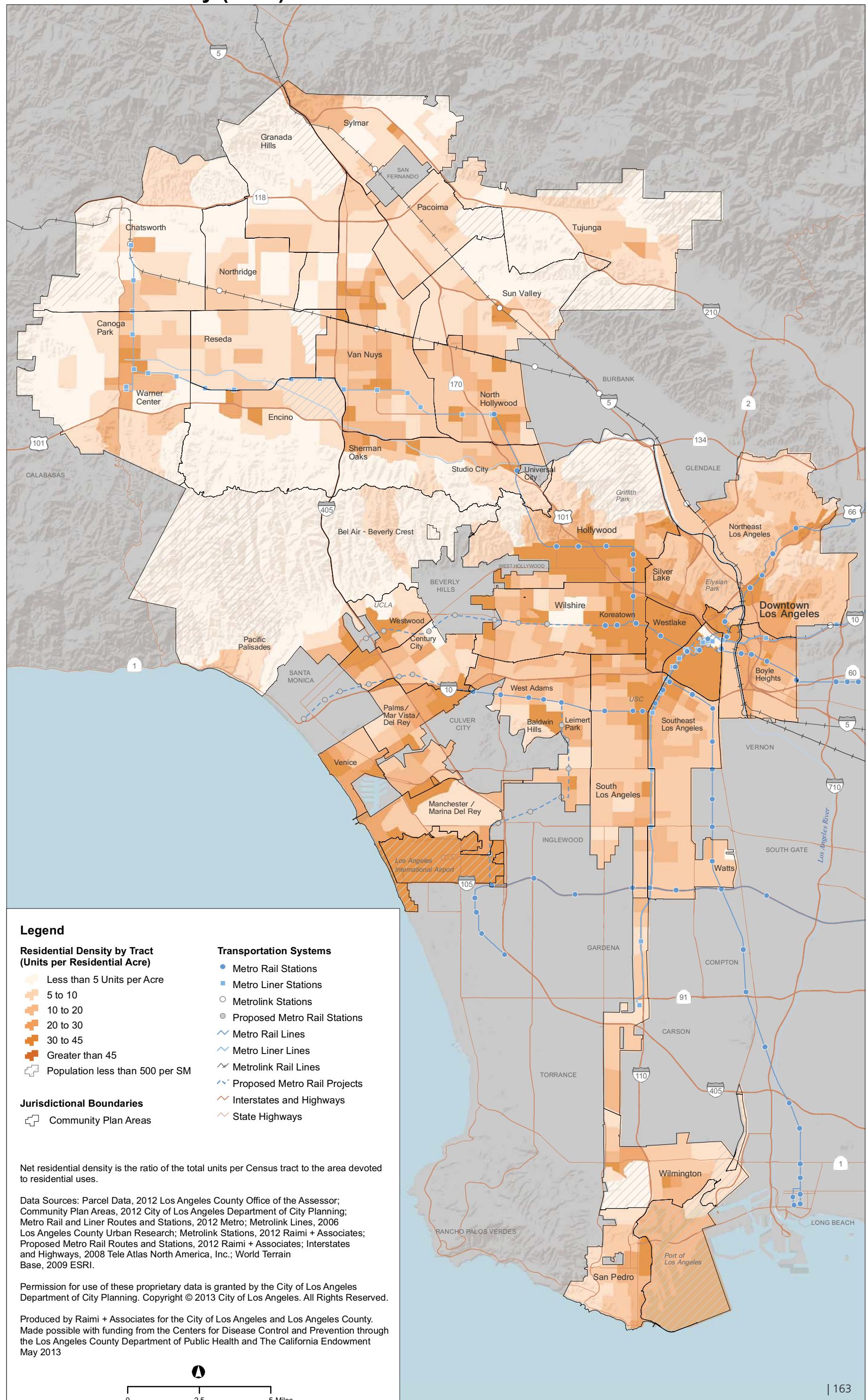
African Americans accounted for nearly half of the City's homeless population in 2011, Latinos represented nearly one-quarter, and Whites accounted for 22%. Asian or Pacific Islander and American Indian and Alaskan Natives represented a small share of the population, accounting for 3% and 1%, respectively. Nearly a quarter of the City's homeless population is considered to be chronically homeless, an especially vulnerable sub population. Skid Row, located in the Central City CPA, is home to the largest concentration of homeless individuals in the City. Homelessness in Skid Row has increased by 14% from 2009 to 2011. The highest concentrations of homeless people are located in Council Districts 8, 9, 13 and 14.¹⁸⁷

¹⁸⁶ Los Angeles Homeless Services Authority. (August 2011). The Greater Los Angeles Homeless Count Report.

¹⁸⁷ Los Angeles Homeless Services Authority. (August 2011). The Greater Los Angeles Homeless Count Report.

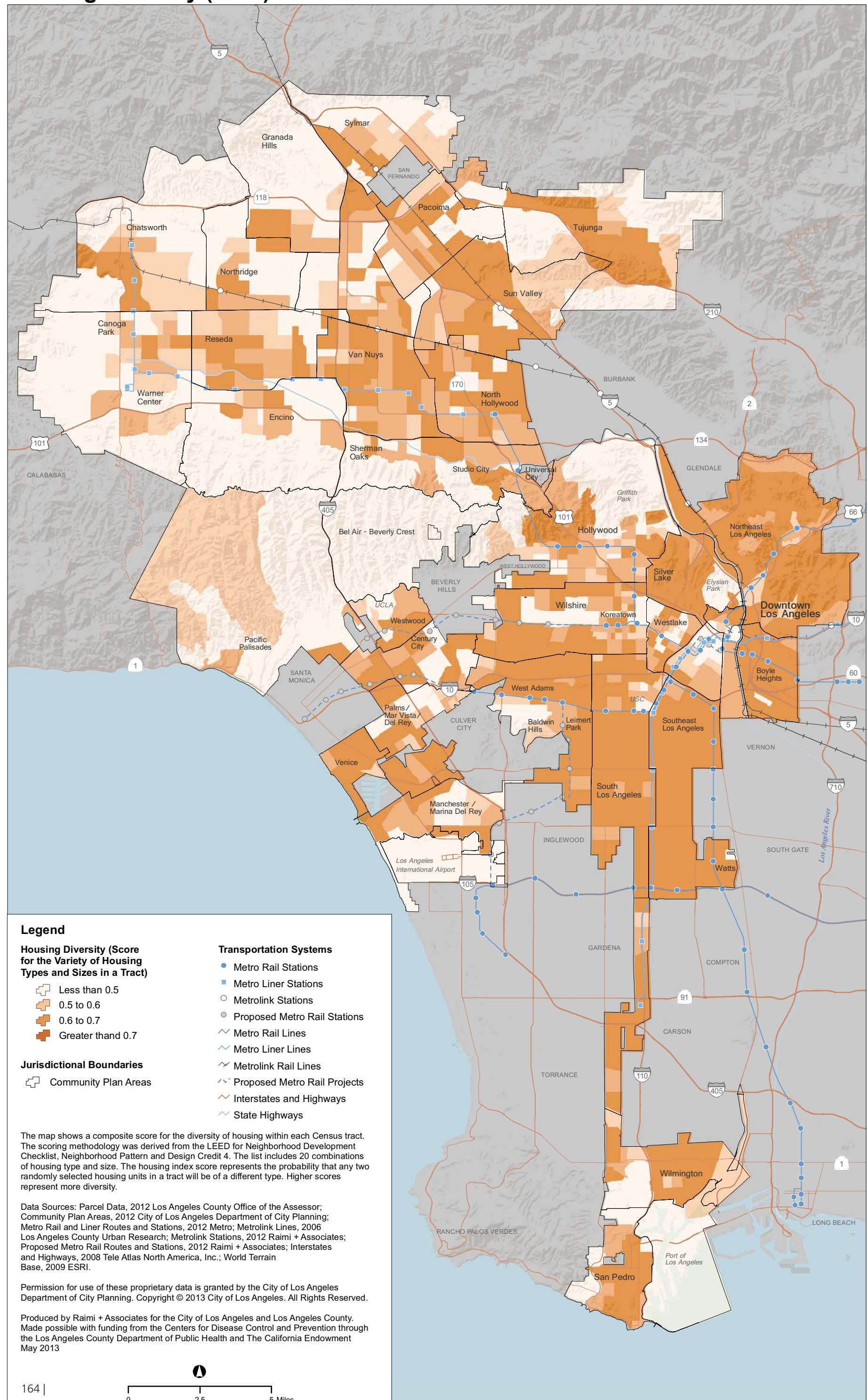
Map 99

Residential Density (2012)



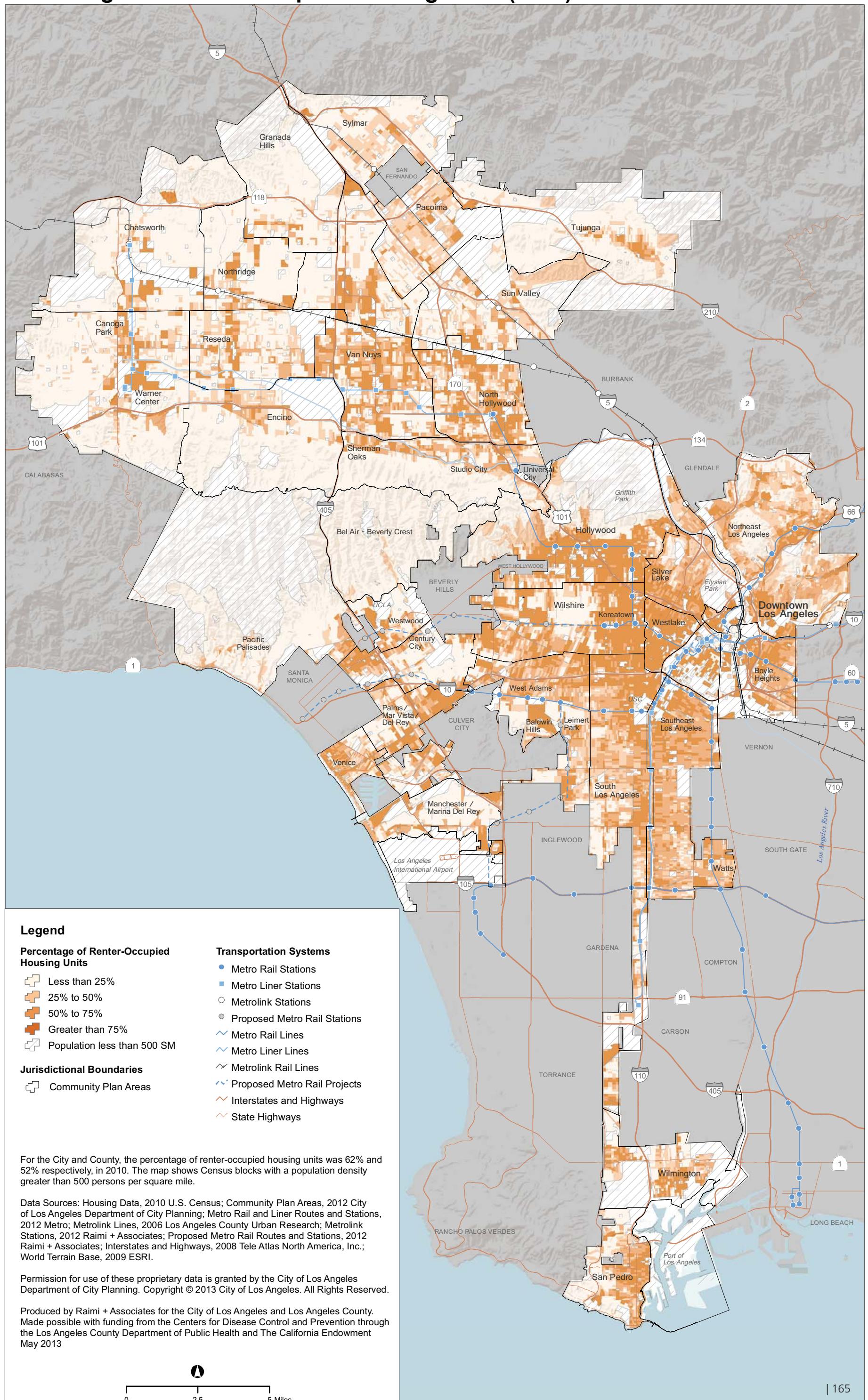
Map 100

Housing Diversity (2012)



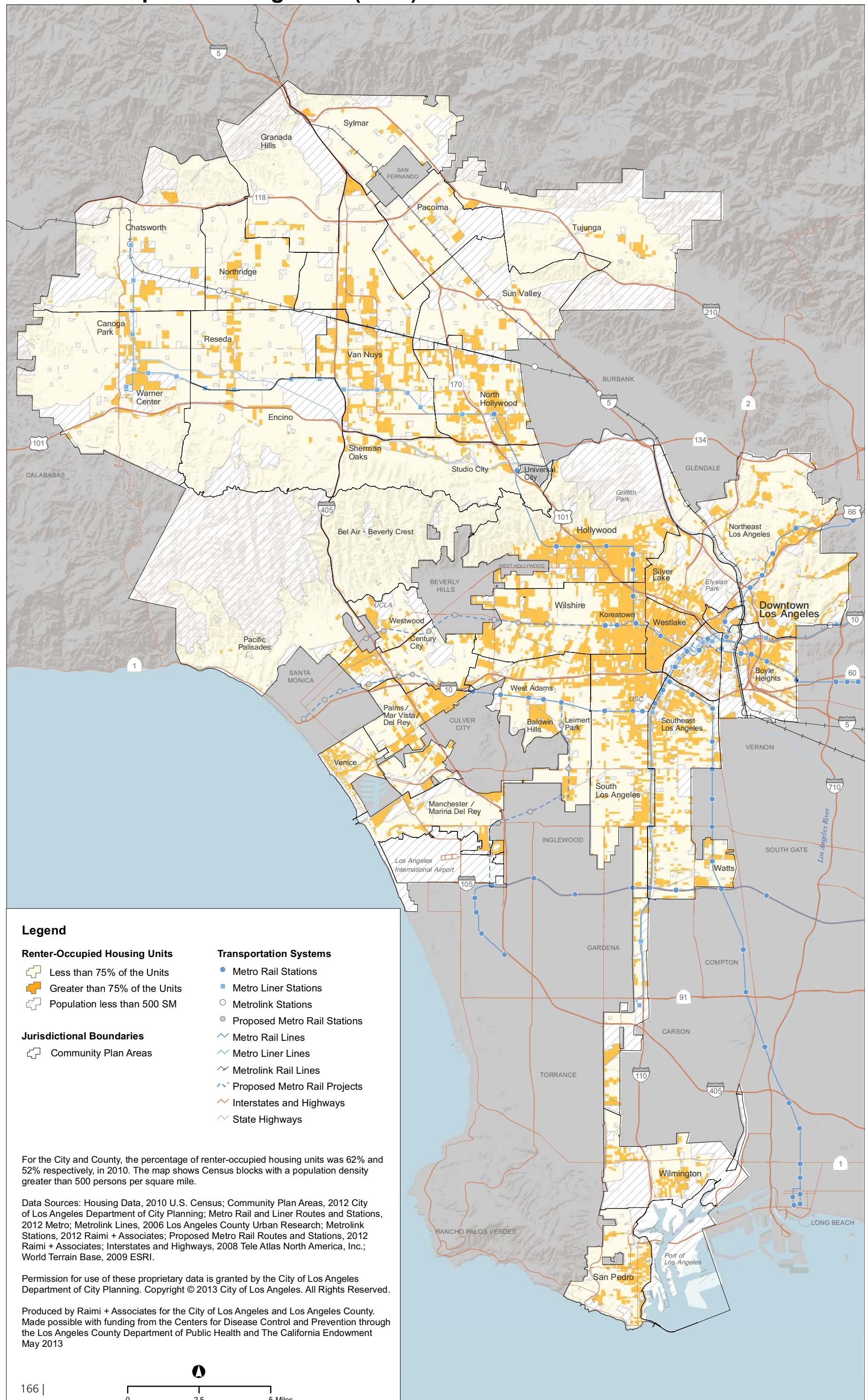
Map 101

Percentage of Renter-Occupied Housing Units (2010)



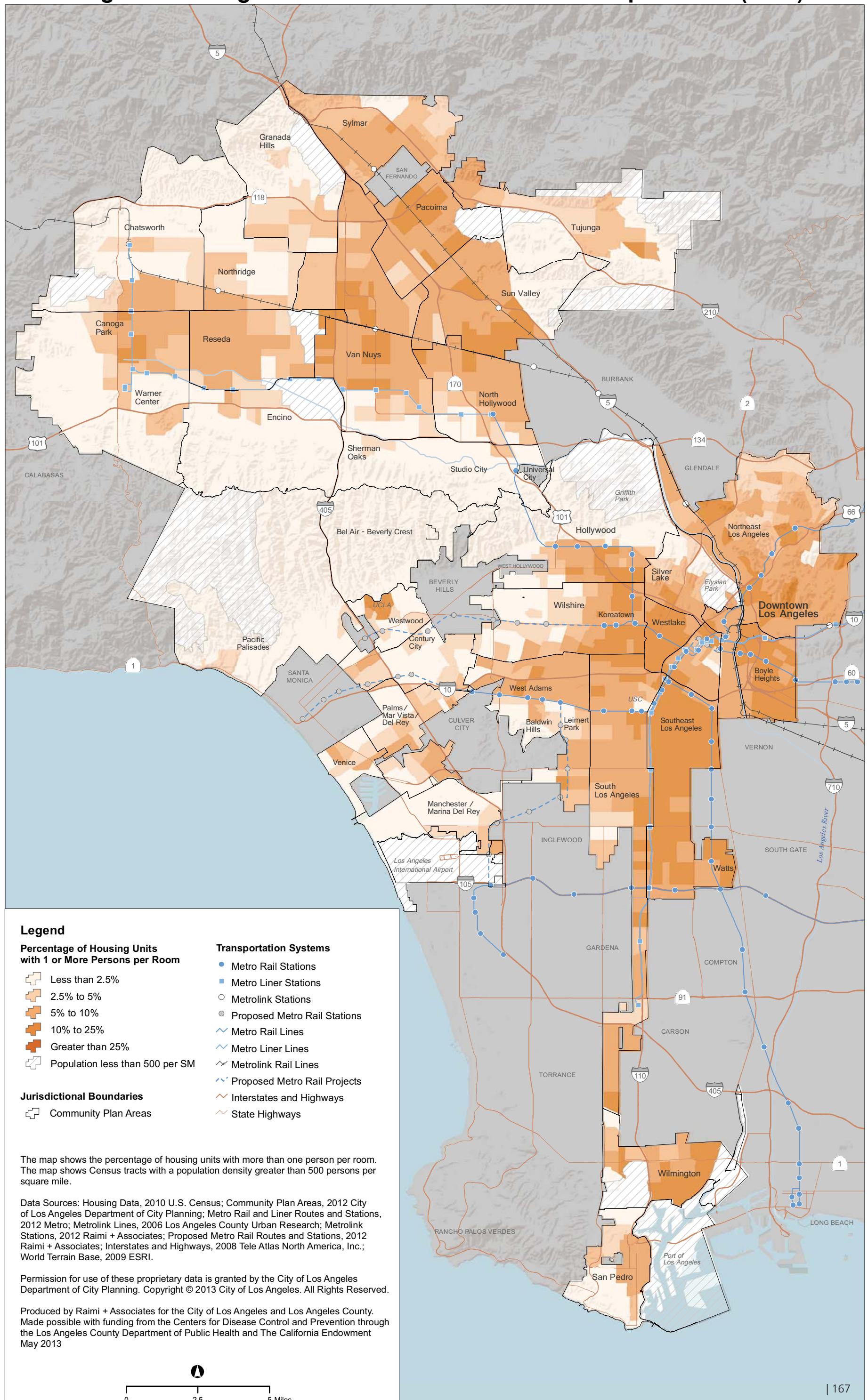
Map 102

Renter-Occupied Housing Units (2010)



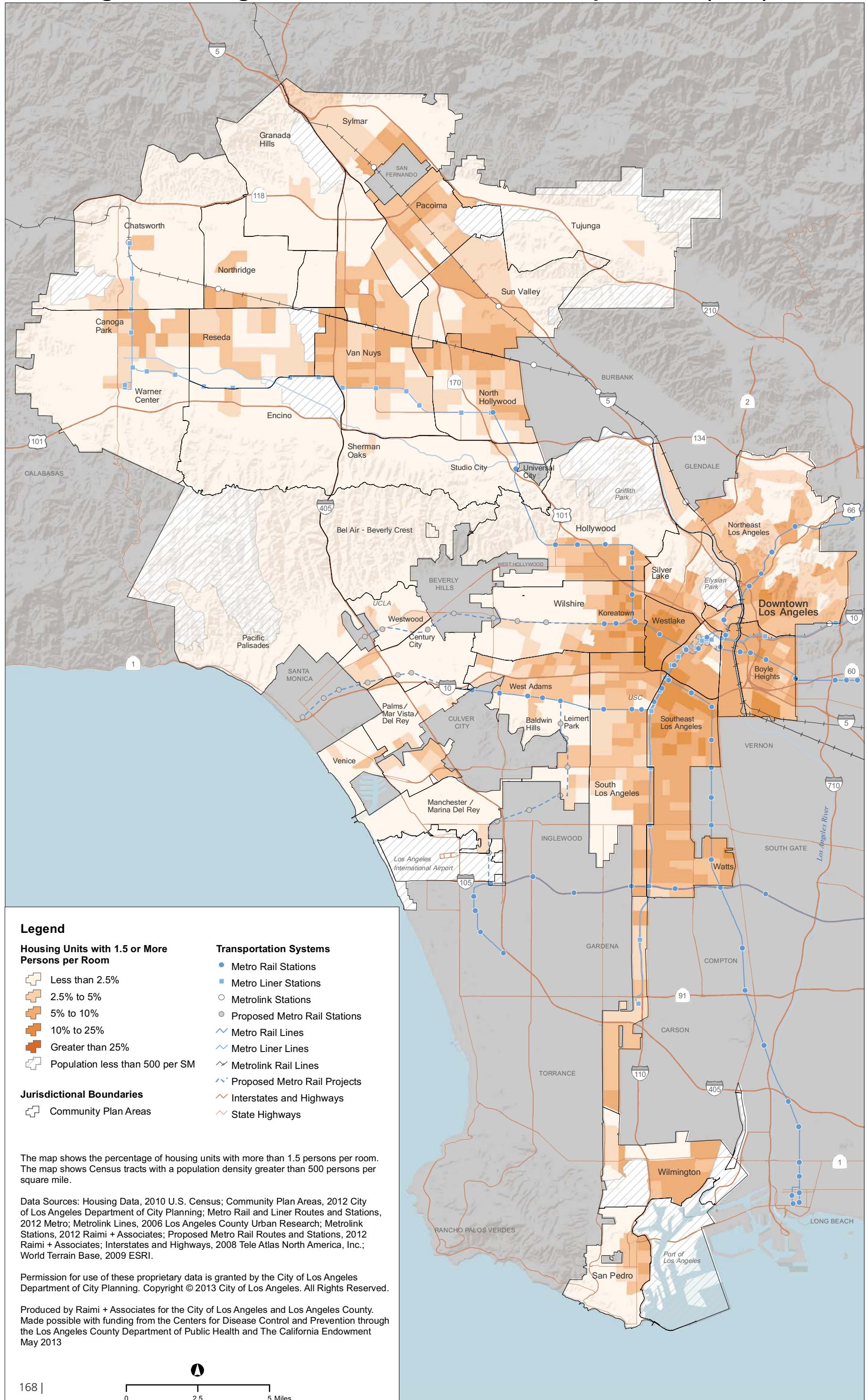
Map 103

Percentage of Housing Units with 1 or More than Persons per Room (2010)



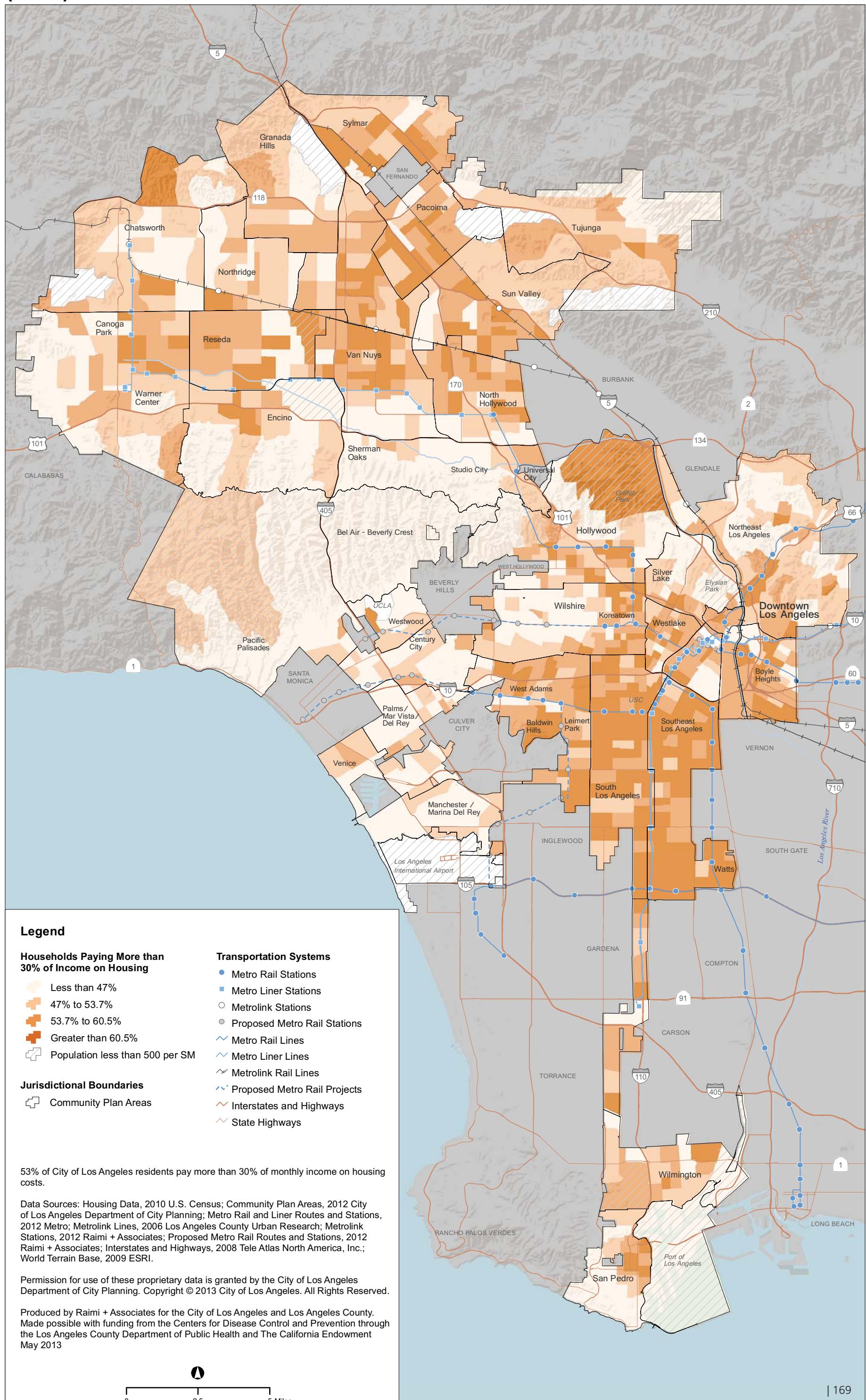
Map 104

Percentage of Housing Units with 1.5 or More Persons per Room (2010)



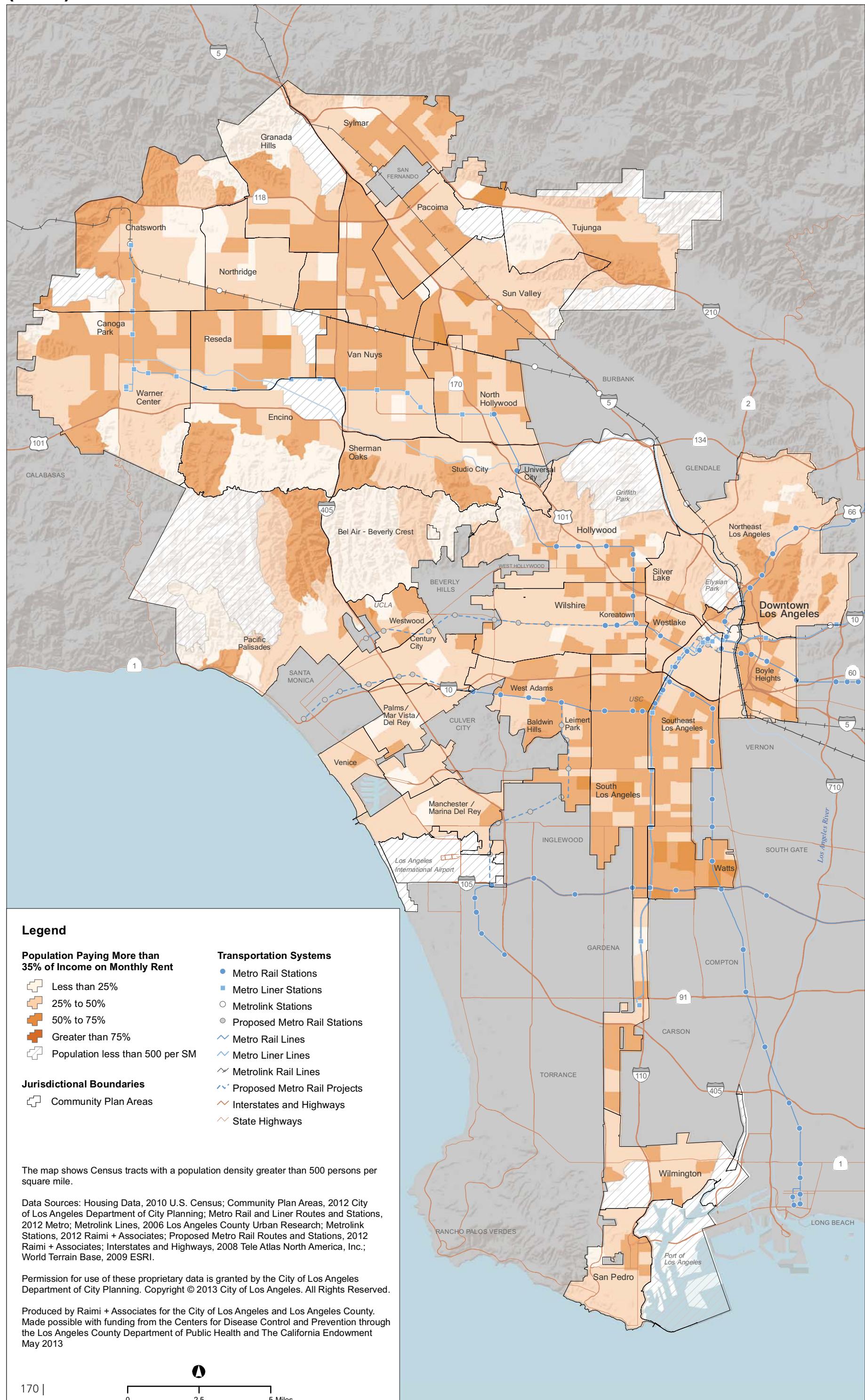
Map 105

Percentage of Households Paying More than 30% of Income on Housing Costs (2010)



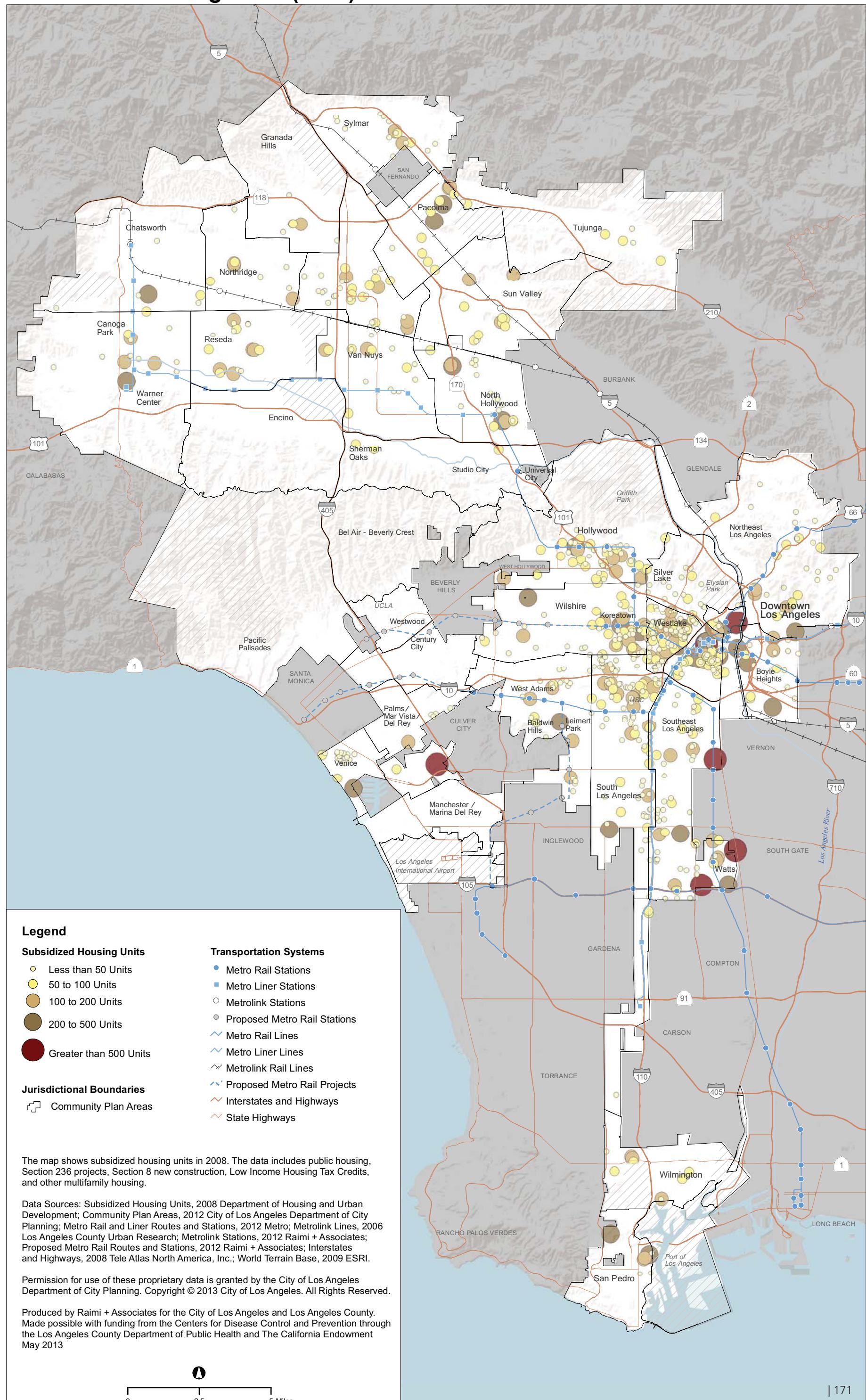
Map 106

Percentage of Population Paying More than 35% of Income on Monthly Rent (2010)



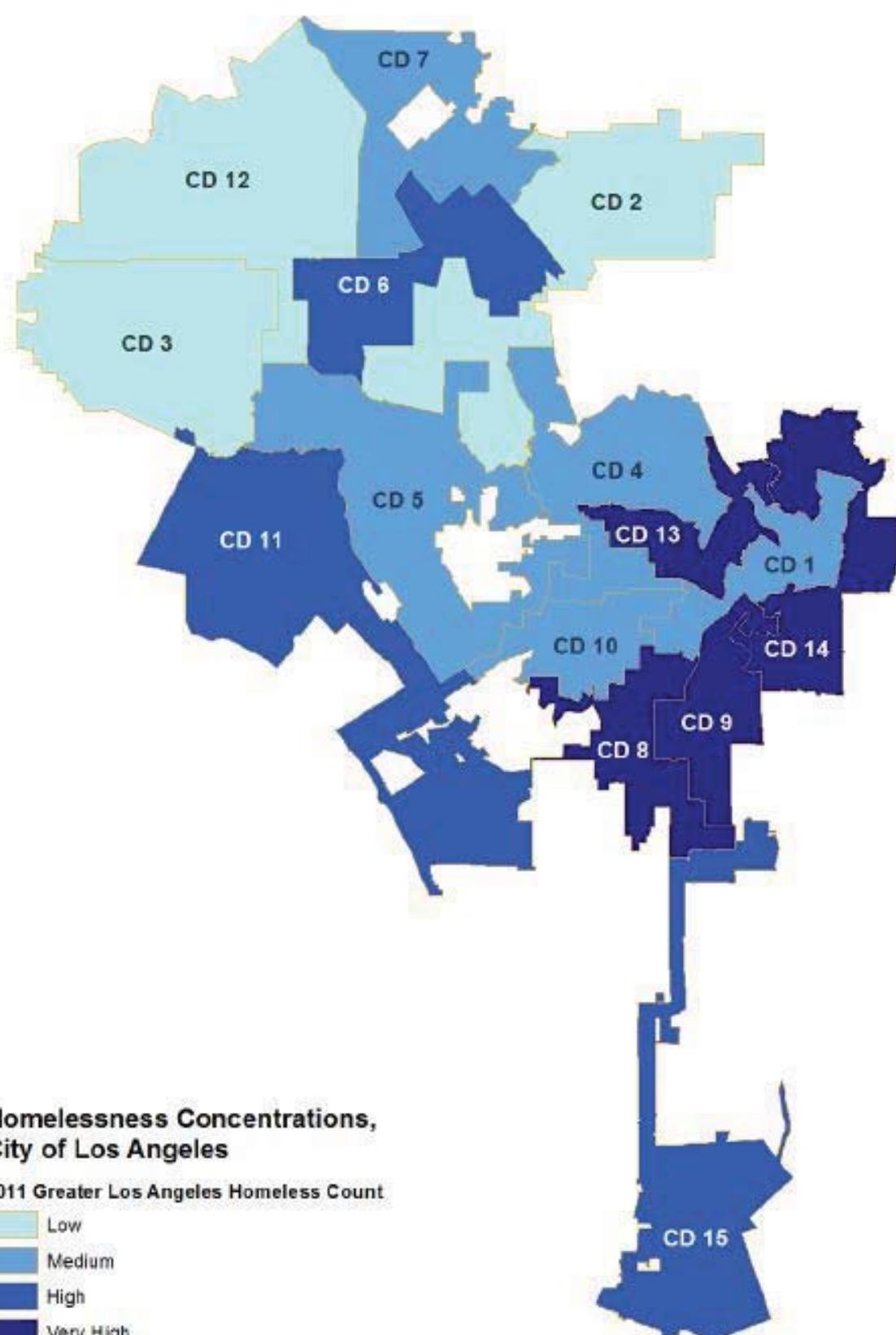
Map 107

Subsidized Housing Units (2008)



Map 108

Homelessness by City Council District (2011)¹⁸⁸



Homeless Concentrations, City of Los Angeles. The maps shows the concentrations of homeless persons by City Council District in 2011. The data is from the Los Angeles Homeless Services Authority's 2011 Greater Los Angeles Homeless Count Report.

¹⁸⁸ Los Angeles Homeless Services Authority. (August 2011). The Greater Los Angeles Homeless Count Report

12 | Environmental Health

Environmental health covers a wide range of topics that include the physical, chemical, and biological factors external to a person that impact overall human health. The subject includes air pollution, the quality of drinking water, exposure to chemicals in building and cleaning materials, exposure to soils containing toxic substances, and other similar exposures.

Understanding environmental health conditions is a complex problem. There are tens of thousands of substances in our environment. Some of these substances may be harmless, while others are highly toxic; some may cause short-term health issues while exposure to others may cause long-term, chronic health impacts that could lead to death. Indeed, about 8% of all deaths worldwide are due to acute- and long-term exposure to environmental hazards.¹⁸⁹

In the City of Los Angeles, the cumulative impacts of pollution have been found to be high in Los Angeles's eastside, Southeast Los Angeles, Arleta-Pacoima, and the community surrounding the Port of Los Angeles. These "toxic hot spots" have high levels of pollution from stationary and mobile sources that elevate health risks. In close proximity to these sources of pollution, these communities have land uses, such as schools, day care facilities, parks, senior housing, and health care facilities that cater to populations sensitive to pollution, such as children and seniors.¹⁹⁰

MAPS AND INDICATORS

The Environmental Health Chapter includes information on a number of exposures to pollution and the burdens that many communities face from different environmental pollutants. The following list describes the maps and associated indicators included within this section.

- **Population Density of Census Blocks within 500 Feet of Truck Routes:** The map shows the population density of census blocks within 500 feet of Caltrans' designated truck network, including National Network, Terminal Access, California Legal Network, and California Legal Advisory routes. Truck route data is from Caltrans and population data is from the U.S. Census for 2010.
- **Population Density of Census Blocks within 500 Feet of Manufacturing, Warehousing and Distribution, and Refinery and Chemical Plants Lands and the Port:** The map shows the population density of census blocks within 500 feet of manufacturing, industrial, and port lands. Land use data is from Office of the Assessor for 2012 and population data is from the U.S. Census for 2010.
- **Pollution Exposure:** The map shows the average percentiles of the six exposures indicators, including ozone and PM_{2.5} concentrations, diesel PM concentrations, pesticide use, toxic releases from facilities, and traffic density. The 2013 data is from CalEPA for the California Communities Environmental Health Screening Tool.
- **Environmental Effects:** The map shows the average percentiles of four Environmental Effects indicators, including cleanup sites, impaired water bodies, groundwater threats, and solid waste sites and facilities and hazardous waste facilities. The 2013 data is from CalEPA for the California Communities Environmental Health Screening Tool.
- **Pollution Burden Score:** The map shows the average percentiles of the six exposures indicators, including ozone and PM_{2.5} concentrations, diesel PM concentrations, pesticide use, toxic releases from facilities, and traffic density, and four Environmental Effects indicators, including cleanup sites, impaired water bodies, groundwater threats, and solid waste sites and facilities and hazardous waste facilities. The 2013 data is from CalEPA for the California Communities Environmental Health Screening Tool.

KEY FINDINGS

PROXIMITY TO TRUCK ROUTES AND INDUSTRIAL AND MANUFACTURING LANDS

Air pollution occurs when chemical and biological materials contaminate the air. The most common air pollutants are called "criteria pollutants." The State and Federal government use health-based standards to regulate six criteria air pollutants including ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter (PM₁₀), and fine particulate matter (PM_{2.5}). Particulate matter is the term for suspended particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. While all State and Federal air quality standards are based on health and medical data and are designed to protect public health, PM_{2.5} poses the most serious health threat. Because of their small size, PM_{2.5} particles can lodge deeply into the lungs.¹⁹¹

The smallest particles in air pollutants generally pass through the throat and nose and enter the lungs. Once inhaled, these particles can cause serious health effects. Numerous scientific studies have linked ozone and particle pollution to lung cancer, asthma attacks, heart attacks, strokes, and early death, as well as increased hospitalizations for breathing problems.^{192 193 194 195}

A major source of air pollution is PM from diesel exhaust, which is concentrated near freeways, ports, and other major transportation infrastructure. Over 360,000 residents of the City of Los Angeles live within 500 feet of a major truck route (Map 109). As shown in Figure 61, the Southeast Los Angeles, South Los Angeles, San Pedro, Wilshire, and Boyle Heights CPAs had the highest number of people living within 500 feet of a truck route (greater than 20,000). The percentage of population within 500 feet of truck routes was highest in the San Pedro (31%), Harbor Gateway (28%), and Boyle Heights (25%) CPAs.

¹⁸⁹ Prüss-Ustün, A., Vickers, C., Haefliger, P., and Bertollini, R. (2011). Knowns and Unknowns on Burden of Disease Due to Chemicals: A Systematic Review. *Environmental Health*, 10(9).

¹⁹⁰ Los Angeles Collaborative for Environmental Health and Justice. (2010, December). Hidden Hazards: A Call to Action for Healthy, Livable Communities. Retrieved from <http://cleanupgreenup.files.wordpress.com/2010/12/hidden-hazards-low-res-version.pdf>

¹⁹¹ U.S. Environmental Protection Agency. (2012, July). Six Common Air Pollutants. PM Frequently Asked Questions. Retrieved from <http://www.epa.gov/pmdesignations/faq.htm>

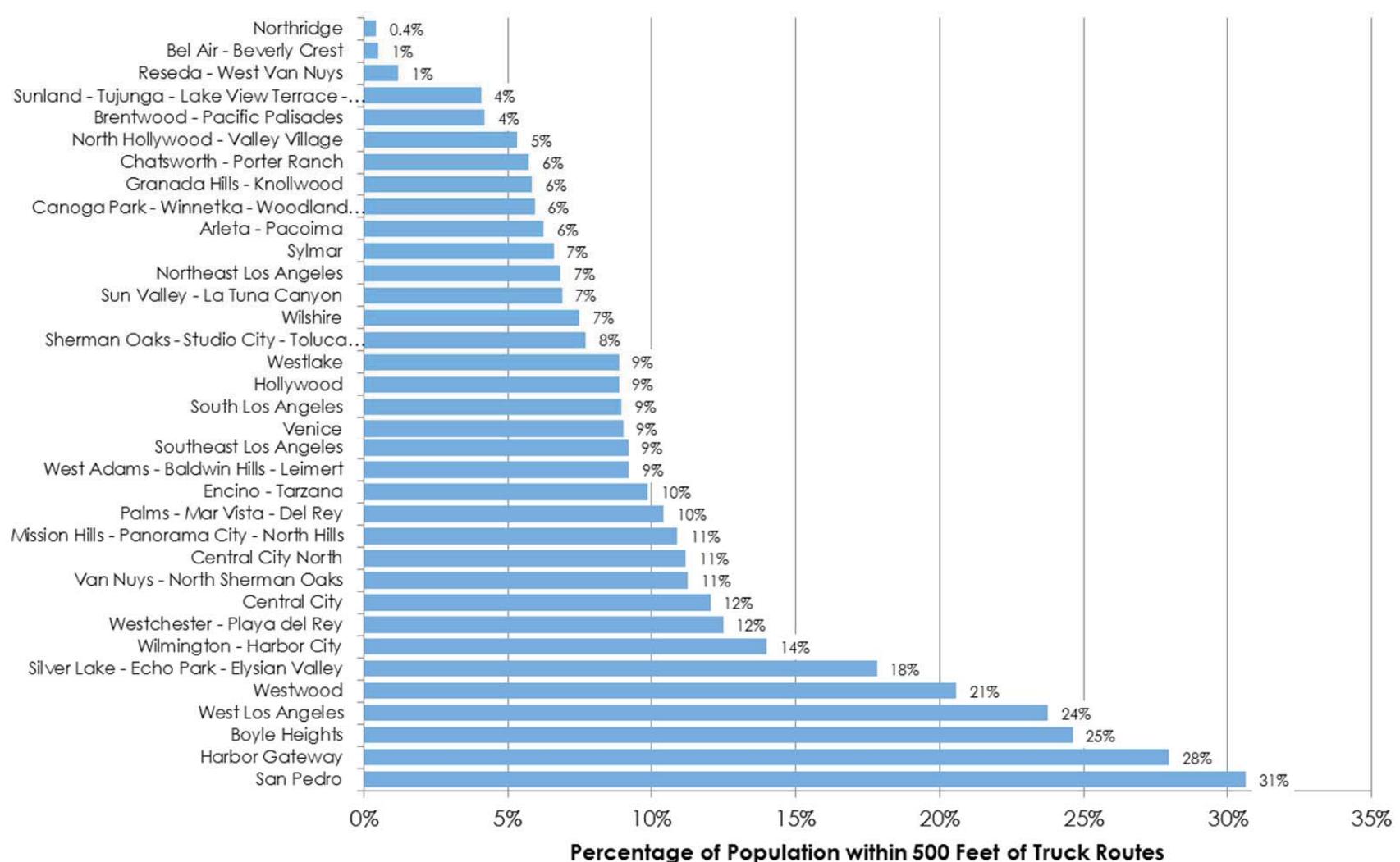
¹⁹² Brunekreef, B., et. al. (1997). Air Pollution from Truck Traffic and Lung Function in Children Living Near Motorways. *Epidemiology*, 8(3), pp. 298-303.

¹⁹³ Lin S., Munsie, J.P., Hwang, S.A., Fitzgerald, E., and Cayo, M.R. (2002). Childhood Asthma Hospitalization and Residential Exposure to State Route Traffic. *Environmental Research*, 88(2), pp. 73-81.

¹⁹⁴ Hoffmann, B., et. al. (2006). Residence Close to High Traffic and Prevalence of Coronary Heart Disease. *European Heart Journal*, 27(22), pp. 2696-2702.

¹⁹⁵ Simkhovich, B.Z., Kleinman, M.T., and Kloner, R.A. (2008). Air Pollution and Cardiovascular Injury: Epidemiology, Toxicology, and Mechanisms. *Journal of the American College of Cardiology*, 52(9), pp. 719-26.

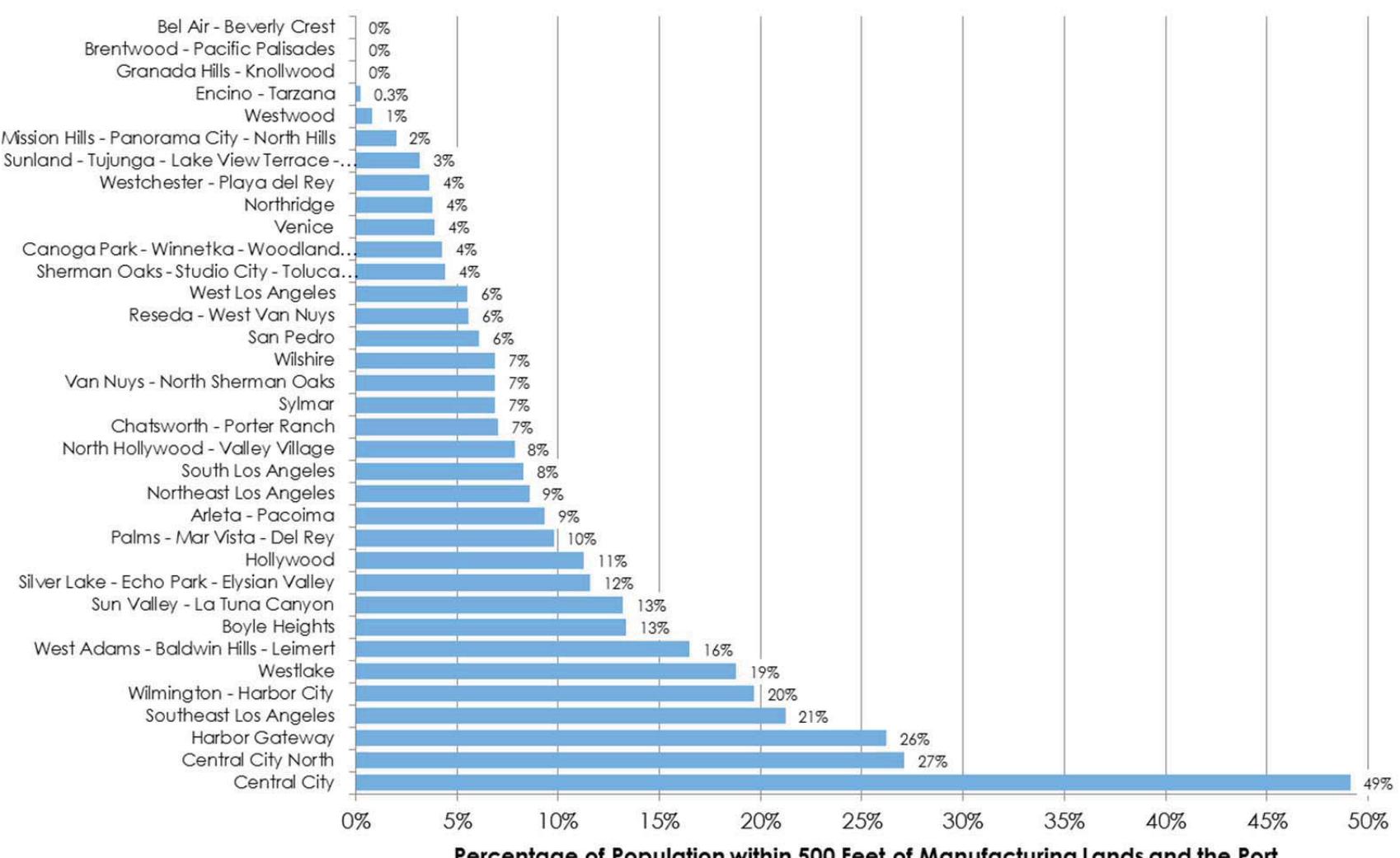
Figure 61: Population within 500 Feet of Truck Routes by Community Plan Area in 2010



Source: 2010 Census population data. Accessed from American FactFinder.

Over 360,000 residents of the City also lived within 500 feet of the port, manufacturing, warehousing and distribution, and refinery and chemical plants (Map 110). Figure 62 shows the number of people and the percentage of the population with each CPA that live within 500 feet of manufacturing and the port. Approximately 59,000 residents in the Southeast Los Angeles CPA lived adjacent to noxious land uses (21% of the CPA's population). The next closest CPAs in terms of total population were the West Adams-Baldwin Hills-Leimert, South Los Angeles, Hollywood, Westlake, and Northeast Los Angeles CPAs (all above 20,000 residents), but these CPAs had fewer than half the residents adjacent to these lands. The percentage of population within 500 feet of port, manufacturing, warehousing and distribution, and refinery and chemical plants was highest in the Central City (49%), Harbor Gateway (26%), Central City North (27%), and Wilmington-Harbor City (20%) CPAs.

Figure 62: Population within 500 Feet of Manufacturing Lands and the Port by Community Plan Areas in 2010



Source: Los Angeles County Office of the Assessor parcel database (2012). 2010 Census population data.

Several CPAs had high percentages (greater than 10%) of the population living near major truck routes and port, manufacturing, warehousing and distribution, and refinery and chemical plants. These CPAs included Harbor Gateway, Boyle Heights, Silver Lake-Echo Park-Elysian Valley, Wilmington-Harbor City, Central City, Central City North, and Palms-Mar Vista-Del Rey.

POLLUTION BURDEN

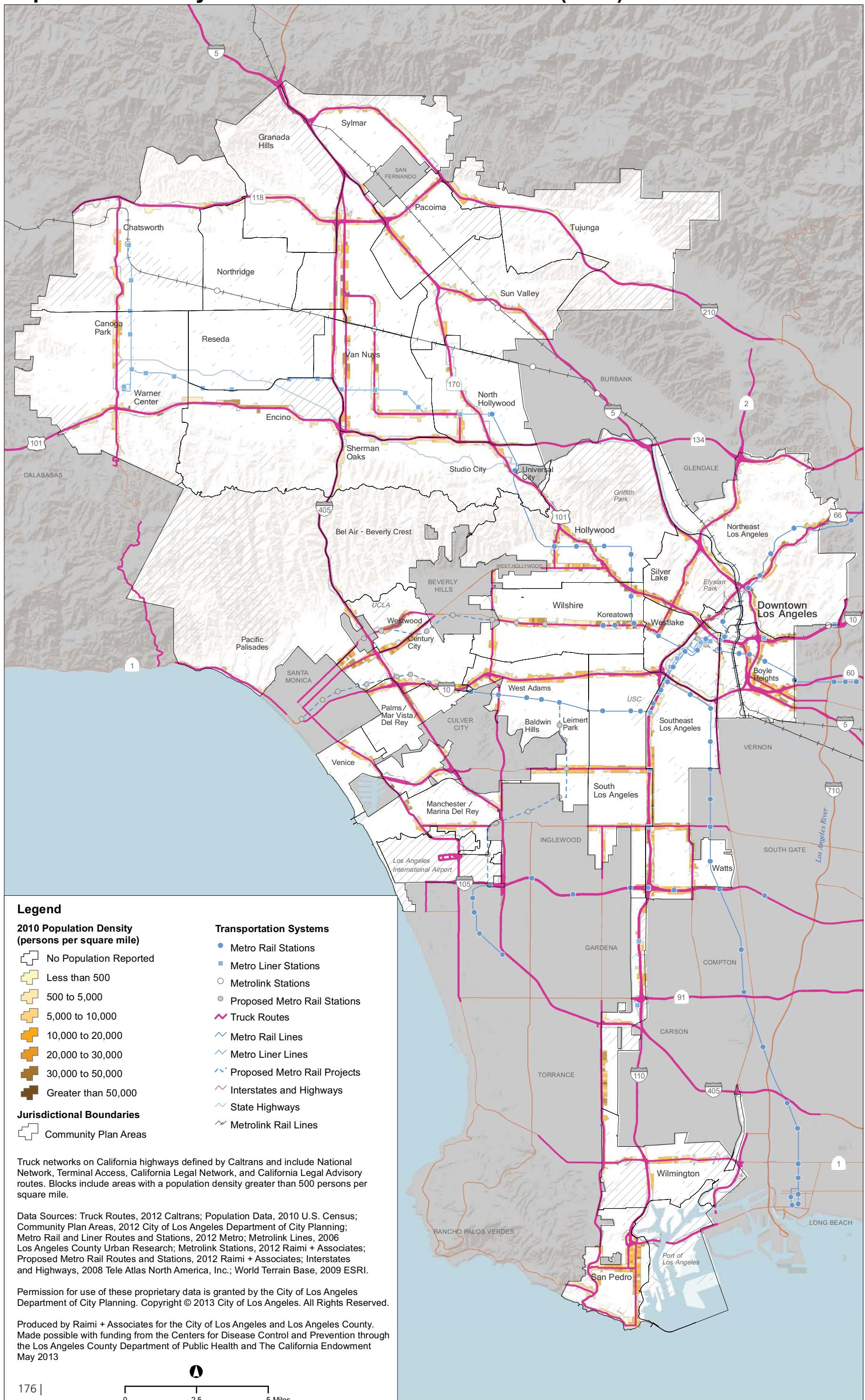
To understand the burden of pollution on communities across California, CalEPA and Office of Environmental Health Hazard Assessment developed a tool to evaluate the relative exposure of residents to environmental pollutants. The CalEnviroScreen Tool includes two components that represent “pollution burden:” “exposures” to pollutants and “environmental effects.” Each component combines multiple indicators to create a composite score of exposures and environmental effects. The tool combines six exposure indicators: ozone and PM_{2.5} concentrations, diesel PM concentrations, pesticide use, toxic releases from facilities, and traffic density. Map 111 shows the pollution exposure score for each zip code in Los Angeles. It also includes four environmental effects indicators: cleanup sites; impaired water bodies; groundwater threats; and solid waste sites and facilities and hazardous waste facilities. Map 112 shows the composite score of environmental effects for Los Angeles. These two components are then combined into a single composite figure described as pollution burden. Pollution burden scores are calculated for each census tract and range from 0 (low burden) to 10 (high burden).¹⁹⁶

Map 113 shows the pollution burden score for zip codes in Los Angeles. Zip code 90745 (near the City of Carson) has the highest pollution burden score (7.7) for zip codes that intersect with the City. This score places the 90745 zip code in the highest 1% of scores for the state. The 90023 (Boyle Heights), 91406 (Van Nuys), 90248 (Gardena), 90810 (near Long Beach and Carson), and 90039 (along the LA River near Atwater Village and Silver Lake) zip codes fall within the highest 2.5% of scores for the state, while an additional 20 zip codes are in the top 10% for the state. The zip codes within the top 10% of the state’s pollution burden scores are located in the Port of Los Angeles, Wilmington-Harbor City, Harbor Gateway, Central City, Central City North, Boyle Heights, Silver Lake-Echo Park-Elysian Valley, Northeast Los Angeles, Hollywood, Arleta-Pacoima, Reseda-West Van Nuys, Sunland-Tujunga-Shadow Hills-Lake View Terrace-East La Tuna Canyon, Chatsworth-Porter Ranch, and Sylmar CPAs.

¹⁹⁶California Environmental Protection Agency and Office of Environmental Health Hazard Assessment. (2013, January). Draft California Communities Environmental Health Screening Tool (CalEnviroScreen). Retrieved from <http://www.oehha.ca.gov/ej/pdf/CalEnviroScreen2ndPublicReviewDraft010313.pdf>

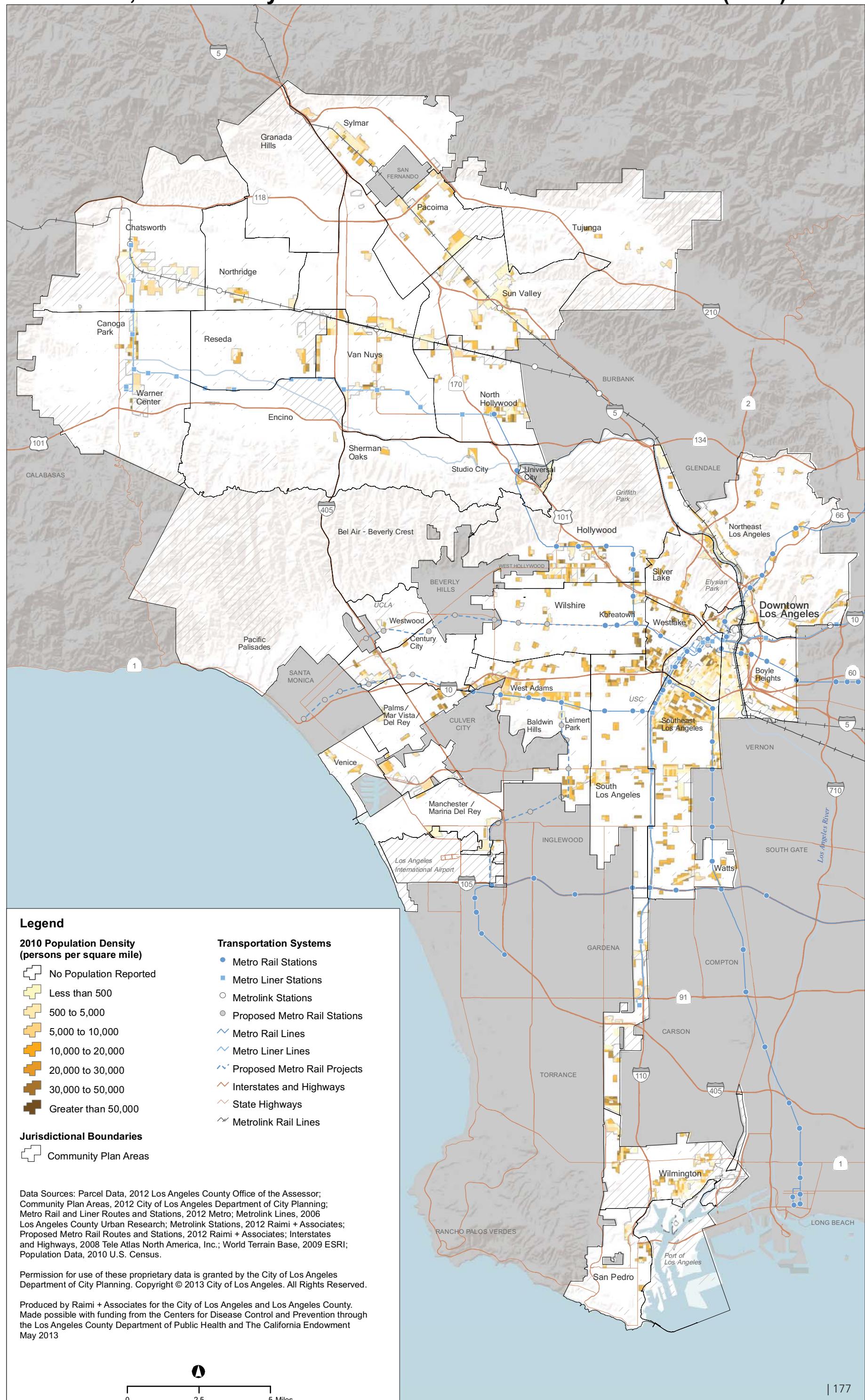
Map 109

Population Density within 500 Feet of Truck Routes (2010)



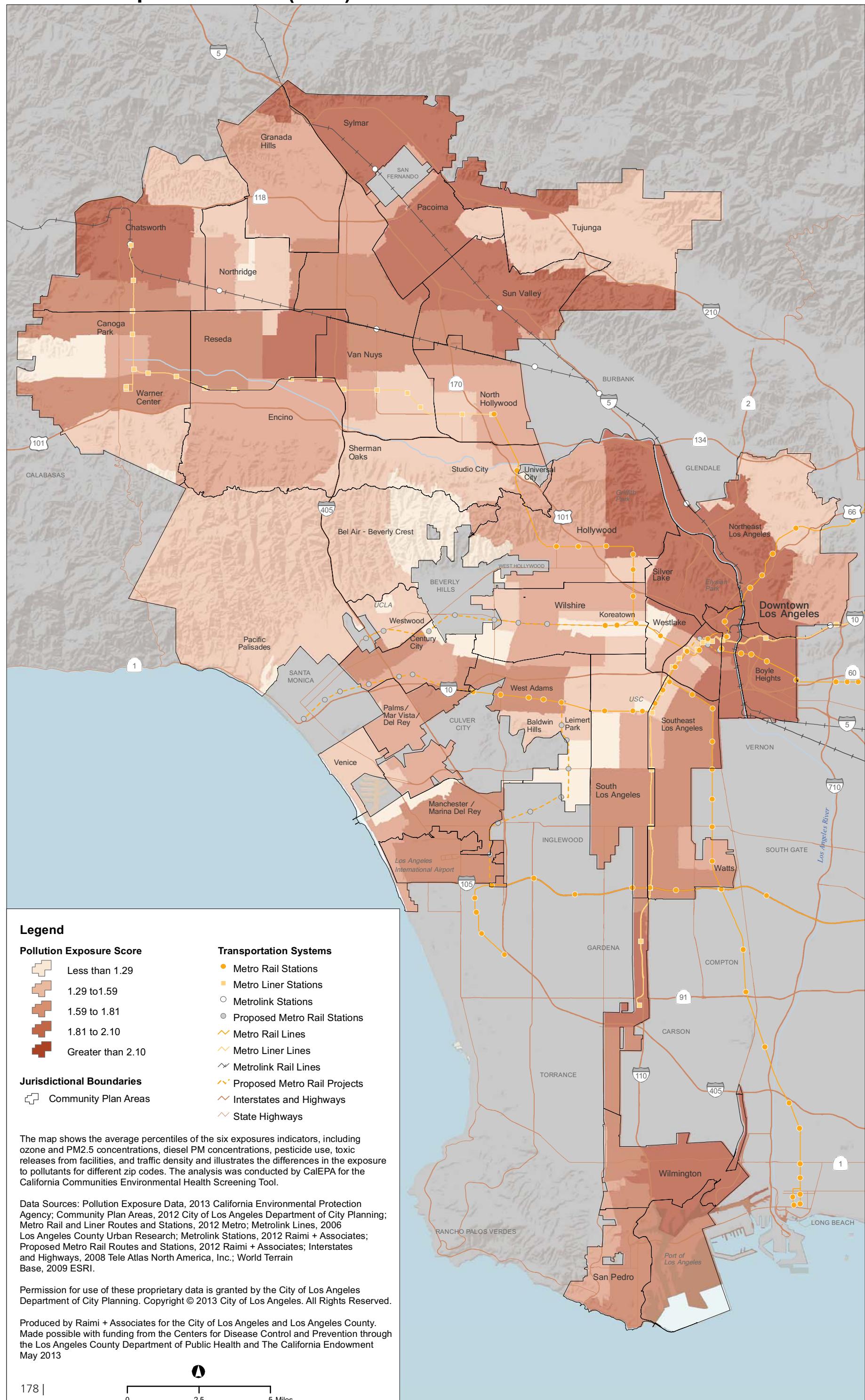
Map 110

Population Density within 500 Feet of Manufacturing, Warehousing and Distribution, and Refinery and Chemical Plants Lands and the Port (2010)



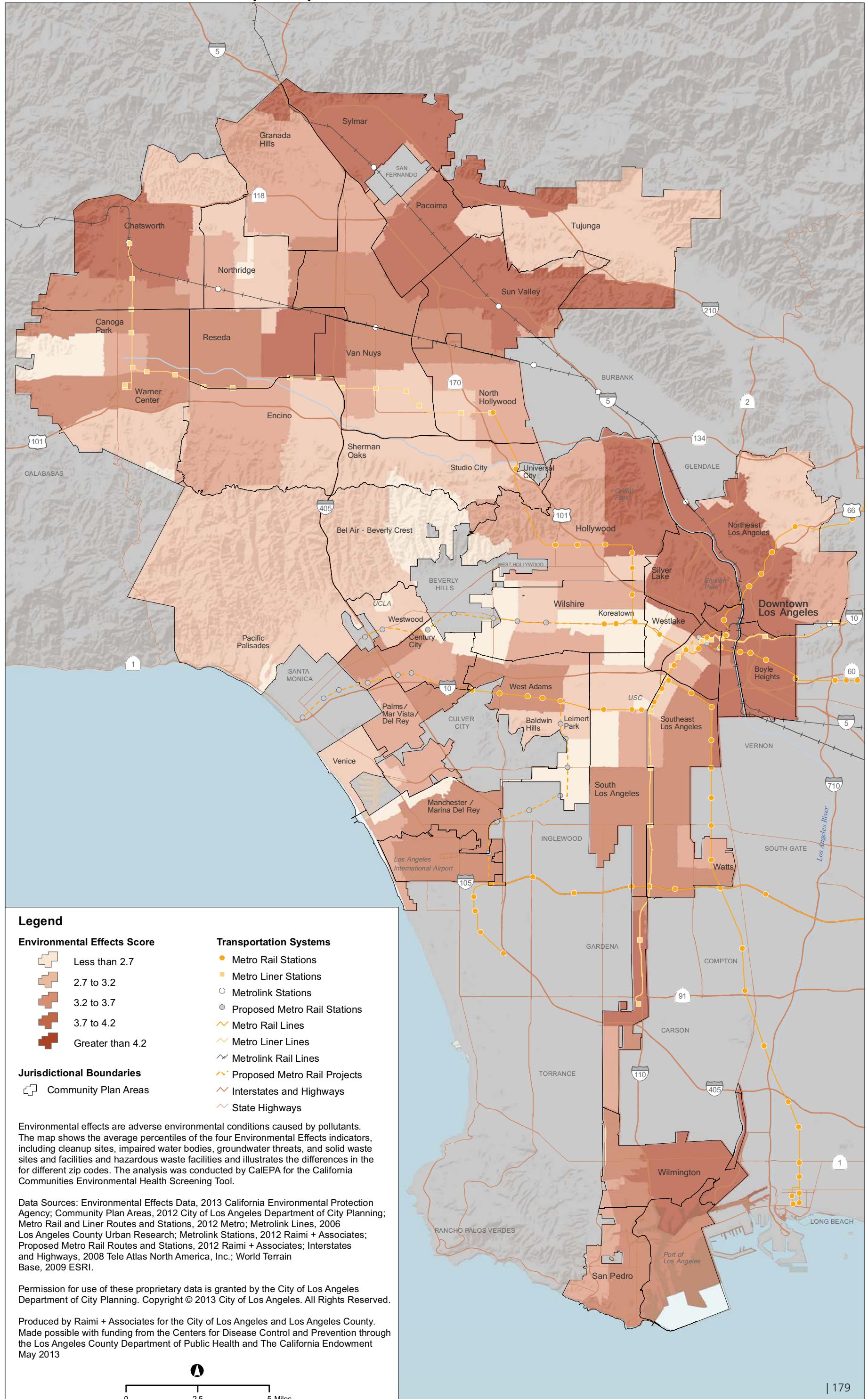
Map 111

Pollution Exposure Score (2013)



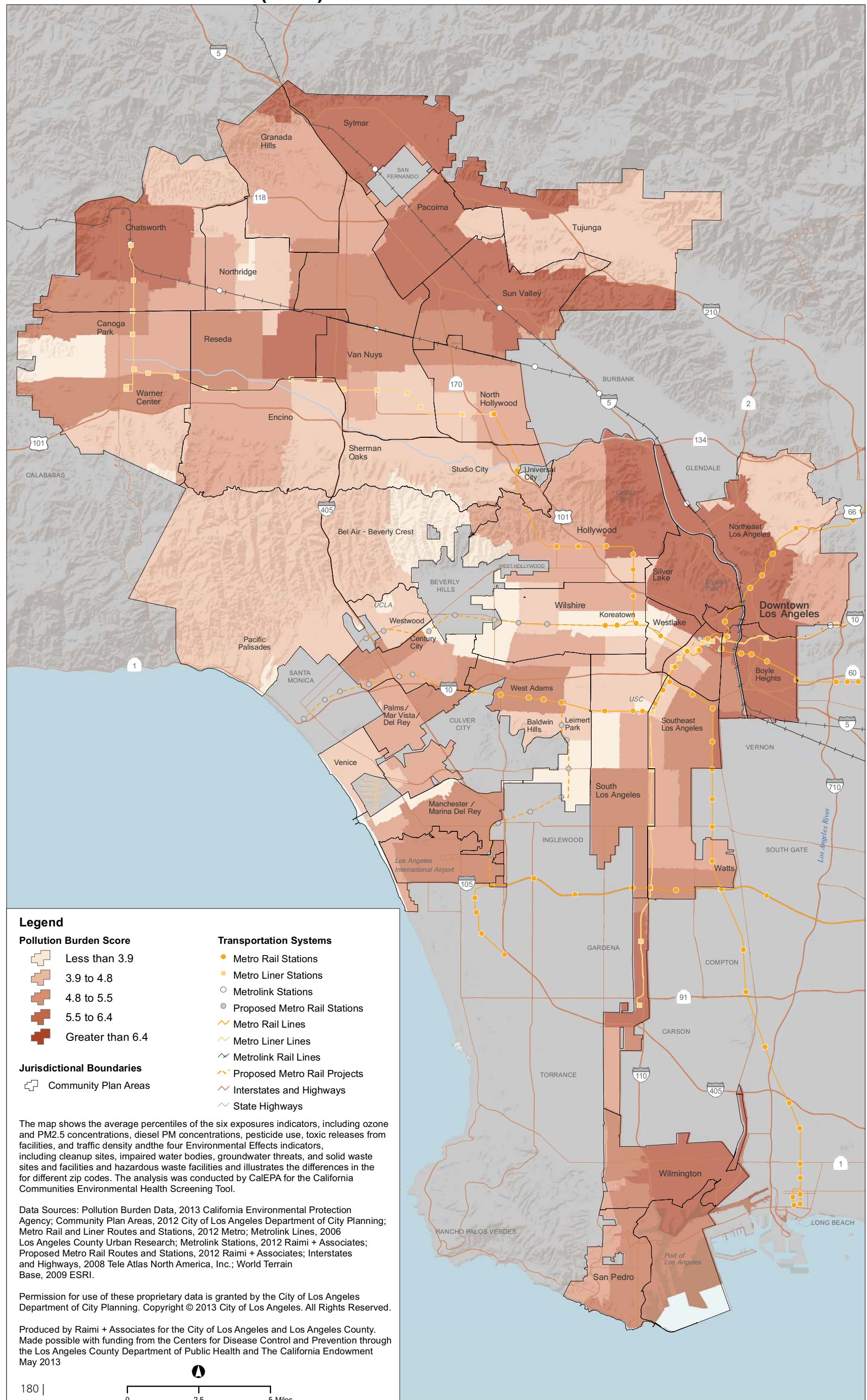
Map 112

Environmental Effects (2013)



Map 113

Pollution Burden Index (2013)



13 | Community Health and Equity Index

A community's health and well-being is influenced by a wide variety of complex and inter-related factors, including the social, lifestyle, and genetic characteristics of individuals; the land use patterns and transportation systems that make up the physical environment; and the governmental policies and cultural norms of the social and economic environment. Together, all of these factors help shape the individual choices and behaviors that can influence health.

To compare and better understand the intersection of multiple health factors and health outcomes in Los Angeles, the Community Health and Equity Index was developed to examine the spatial relationship between vulnerable populations, social and economic factors, mortality, morbidity, the physical environment, pollution, and crime, and to identify the areas of the City burdened with the most adverse conditions. The Index ranks and scores these variables for neighborhoods across Los Angeles. The Community Health and Equity Index applies weights to each set of variables and then averages the variables together. The result is a composite map that can be used to understand the areas of the City with the highest vulnerabilities and cumulative burdens as compared to other portions of the City.

The Community Health and Equity Index uses a normative approach to set the variable weights in the Index, using value judgments about the trade-offs between individual variables to identify the areas with the most adverse health conditions. The relative weight of each index or variable is shown in Table 2 along with a sub-total of the weights by sector. Health outcomes were given the relative rank of 25, one quarter of the Index total. Health outcomes include a selection of variables for mortality (life expectancy at birth) and morbidity (childhood obesity, low birth weight, and asthma).

Health outcomes are shaped by health factors, such as a community's physical environment, social and economic factors, access to health care, and health behaviors. Social and economic factors are the largest driver of health outcomes.¹⁹⁷ Since social and economic factors play an important role in health outcomes, the Economic Hardship Index was given the highest weight (35) and crime was assigned a value of 7.5. Health behaviors – including what we eat, whether we are physically active, and how often we see a doctor – also affect our health. Access to healthy and unhealthy foods, represented by the modified Retail Food Environment Index, was given the fourth highest rank (10) as it relates to health behaviors as well as the physical environment. Land use patterns, urban design, transportation systems, housing, parks, and exposure to pollution strongly impact a community's health behaviors and health status. As such, land use, transportation, and environmental pollution factors were all given equal weights (7.5).

Table 2: Community Health and Equity Index Components

INDEX OR VARIABLE	Topic	Weight
Hardship Index (Standardized Index Score for Overcrowding, Poverty, Employment Status, Educational Attainment, Age Dependency, and Income)	Demographic, Economic, Housing, and Education	35
Life Expectancy at Birth	Health	15
Health Variables (Childhood Obesity, Respiratory Disease, Heart Disease, Heart Attacks, Asthma, Low Birth Weight)	Health	10
Walkability Index (Standardized Index Score for Housing Density, Retail Density, Street Connectivity, and Land Use Mix)	Land Use	5
Complete Communities Index (Index Score of the Diversity of Amenities and Establishments)	Land Use	2.5
Multi-Modal Transportation Index (Walk and Bike Commuting, Transit Ridership, Street Connectivity, Bicycle Facilities, High-Frequency Transit Service, Collisions with Bicyclists and Pedestrians)	Transportation	7.5
Modified Retail Food Environment Index (Index Score of the Ratio of Healthy to Unhealthy Food Retailers)	Food	10
Crime Rate Index (Rate of Violent and Property Crime per 10,000 Residents)	Crime	7.5
Pollution Burden Index (Index Score for Pollution Exposure and Environmental Effects)	Environmental Health	7.5
Total		100
Subtotal: Demographic, Economic, Housing, and Education Indicators		35
Subtotal: Health		25
Subtotal: Land Use		7.5
Subtotal: Transportation		7.5
Subtotal: Food		10
Subtotal: Crime		7.5
Subtotal: Environmental Health		7.5

¹⁹⁷ Los Angeles County Public Health Department. (2013). Social Determinants of Health: How Social and Economic Factors Affect Health.

The Community Health and Equity Index illustrate the areas of the City in need of the most assistance. The Index could provide guidance on the areas of the City to concentrate outreach for the Health and Wellness Chapter, to focus staff time, resources, and programs, and to highlight where policy interventions are most necessary.

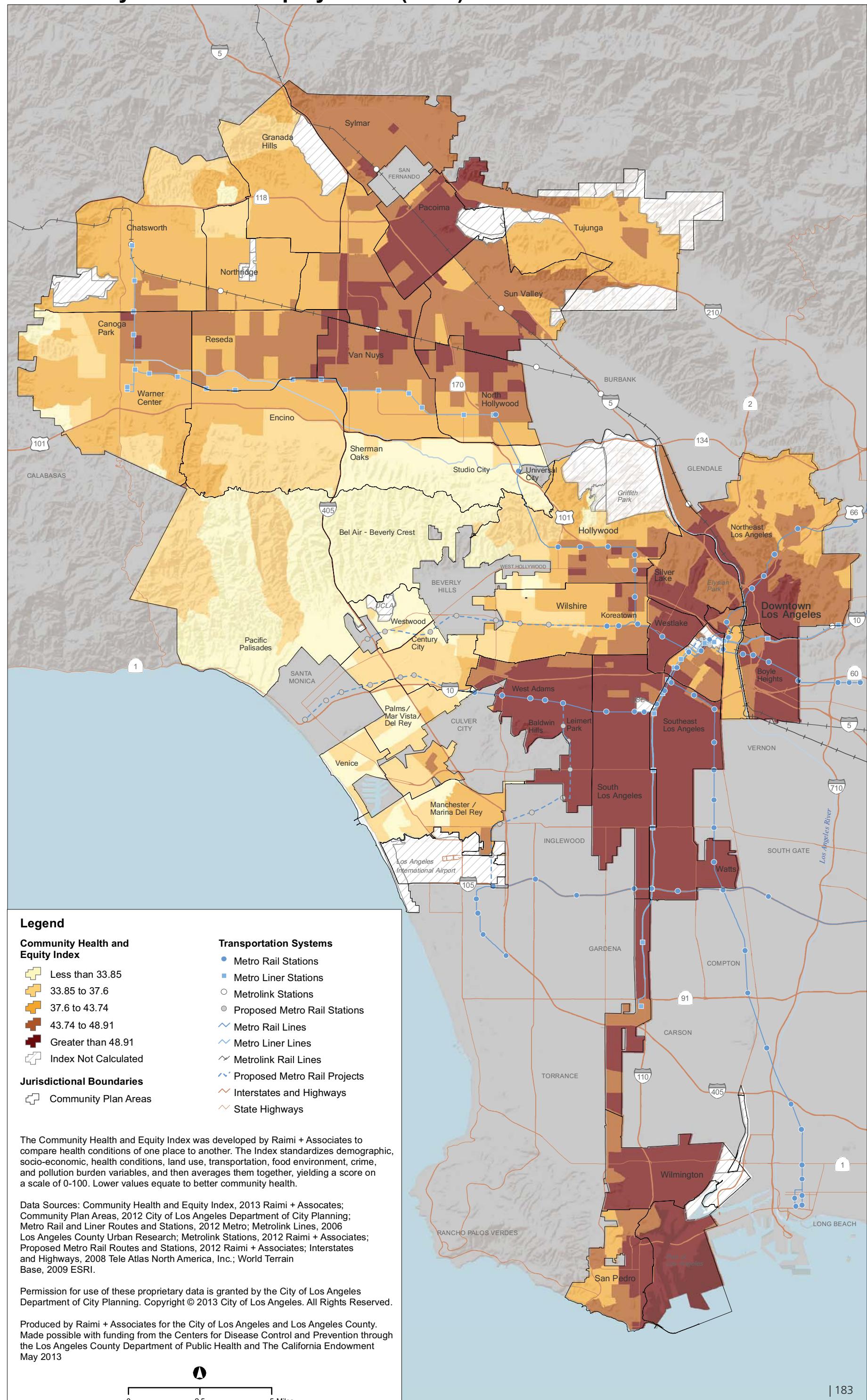
The Community Health and Equity Index provides a broad illustration of the vulnerable communities, other health factors, and health outcomes different areas of Los Angeles face. The Index combines demographic, socio-economic, health conditions, land use, transportation, food environment, crime, and pollution burden variables, standardizing the variables on a scale of 0 to 100. Lower values indicate better community health and more equitable conditions. The following table lists the indicator or index used and the weight applied to each. For more information on a specific index or indicator, please visit the earlier sections.

Map 114 shows the areas of the City with the best Community Health and Equity Index scores (lowest values) including the Westside of Los Angeles, the Santa Monica Mountains, and the western San Fernando Valley. Large portions of the Bel Air-Beverly Crest, Brentwood-Palisades, Palms-Mar Vista-Del Rey, Venice, Manchester-Marina Del Rey, and Sherman Oaks-Studio City-Toluca Lake-Cahuenga Pass CPAs had Index scores in the bottom 5% of areas within the City, meaning that these areas had the best health conditions.

As shown on Map 115, the areas with the worst health and equity scores (Index scores in the top quintile, 80% to 100%) were concentrated in the South Los Angeles, Southeast Los Angeles, Wilmington-Harbor City, San Pedro, West Adams-Baldwin Hills-Leimert, Boyle Heights, Westlake, North Hollywood-Valley Village, Arleta-Pacoima, and Van Nuys-North Sherman Oaks CPAs. The areas with the highest scores (97.5% to 100%) tended to be in Southeast Los Angeles and South Los Angeles. In particular, three Neighborhood Council Districts (Community and Neighbors for Ninth District Unit (CANADU), the Empowerment Congress Southeast Area and Watts) all had Index scores between 97.5% and 100%

Map 114

Community Health and Equity Index (2013)



Map 115

Community Health and Equity Index - Areas in the Top Quintile (2013)

