

# **Roundtable**

# **Demographics and Transportation**

**23rd Annual Demographic Workshop**

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# Demographics and Transportation

**Welcome to this Roundtable Discussion!**

This discussion is organized by 2 parts:

1. A powerpoint presentation
2. Discussion

# Objective of this Presentation

Is to show you the most updated information on:

- Demographics and travel patterns of SCAG Region,
- How future change in demographic composition might affect travel demand,
- Relation between residential location and daily travel, and
- Assimilation of immigrants' travel behavior

# Travel Characteristics of Southern California

- Generally speaking, lot's of cars and freeways.
- But, SCAG region is also known by diversified demographics:
  - high share of Hispanic population,
  - new immigrants, and
  - aging of baby boomer

# Questions

- Do people with different background, such as age, race/ethnicity, gender, immigration status, will travel differently?
  - Do Hispanic people drive less than others?
  - Is walk or transit a travel choice to the elderly?
  - Do immigrants travel less than the US born?
- Past research has shown the variance of travel pattern by demographic segments.
- The following slides will show you the results by analyzing NHTS data.

# NHTS Data

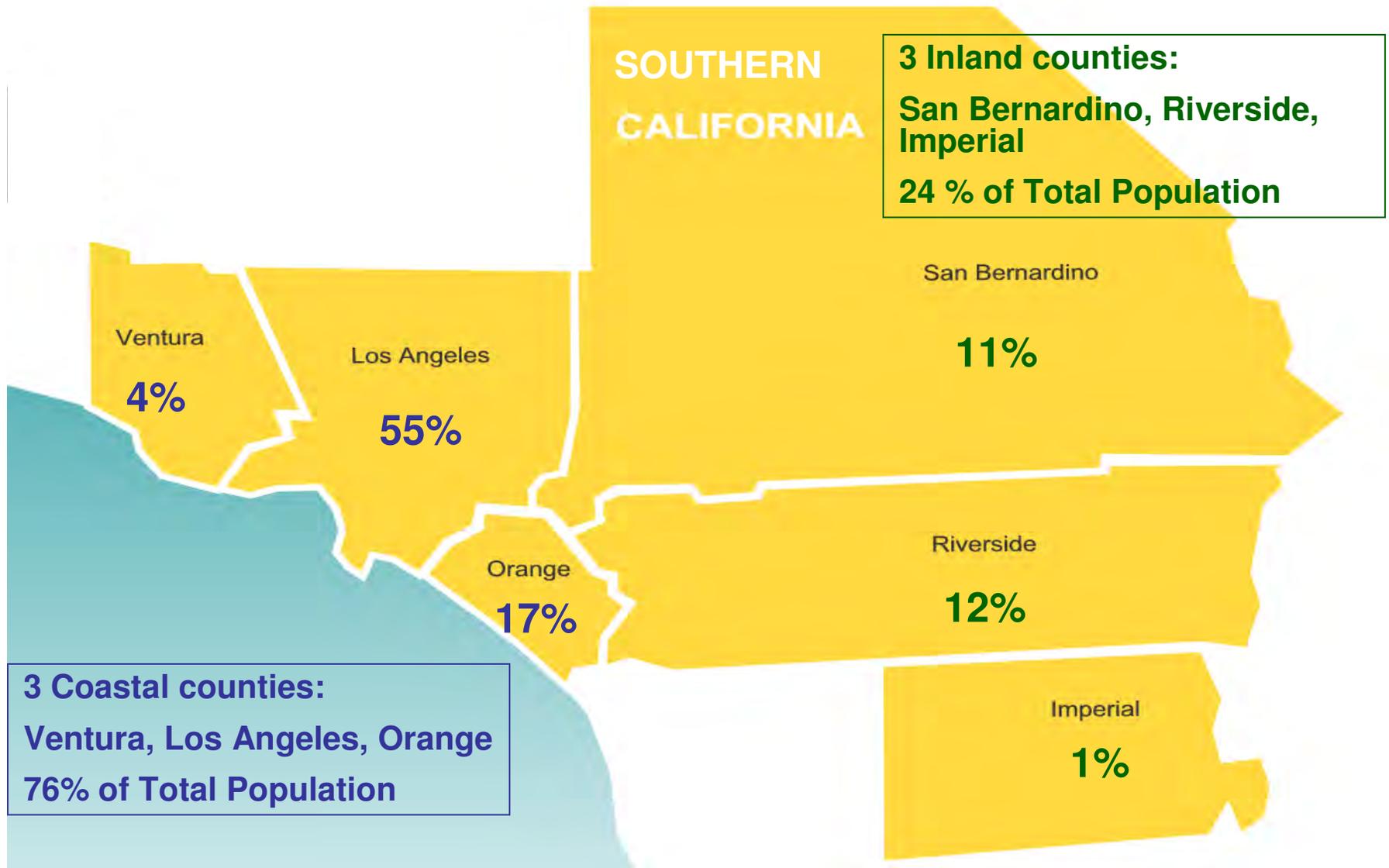
- The 2009 National Household Travel Survey (NHTS) is collected by FHWA. The data serves as the nation's inventory of daily travel.
- Thank Transportation System Information (TSI) of California Department of Transportation (Caltrans) for supporting 2009 NHTS California add-on data.
- With about 6,700 household samples, 2009 NHTS provides valuable data and sufficient observations to analyze travel characteristics of SCAG region.

# **SCAG Demographics & Travel Characteristics**

# About SCAG Region

- SCAG
  - Southern California Association of Governments
  - A MPO in Southern California
- Six counties:
  - Los Angeles, Orange, Riverside, San Bernardino, Ventura, Imperial
- 18 million people, 6 million housing, and 7 million jobs
- About 6% of the US and half of California
- Los Angeles is the largest city

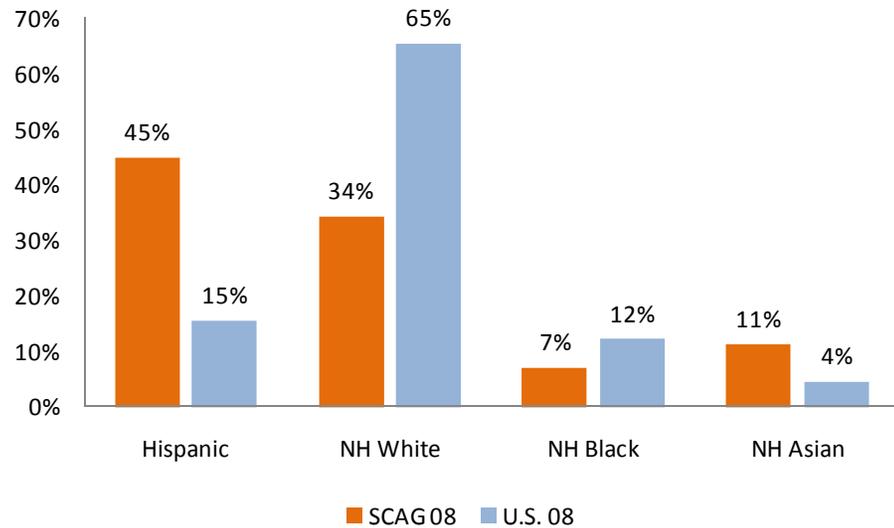
# SCAG Counties & Population Share



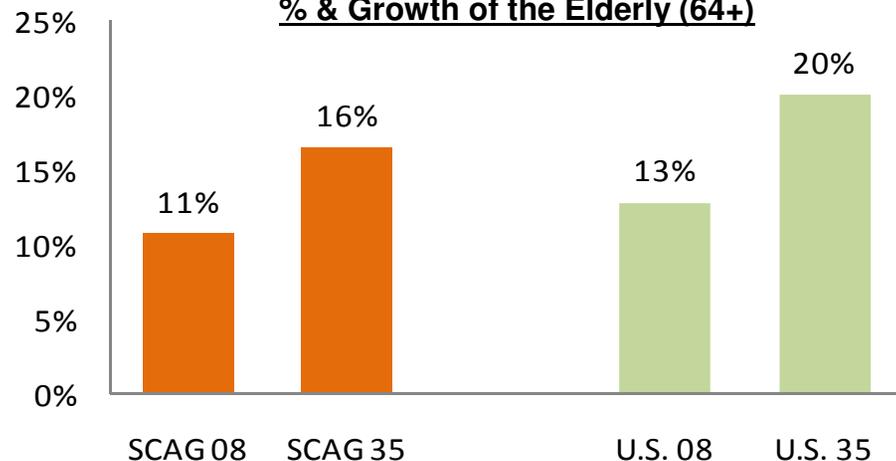
# SCAG Population

- 18 million people in 2008
- 45% is Hispanic
- 24% is NH-White
- Very different to US
- Aging trend of baby boomer is observed in both SCAG and the US.

Race/Ethnicity Distribution - 2008



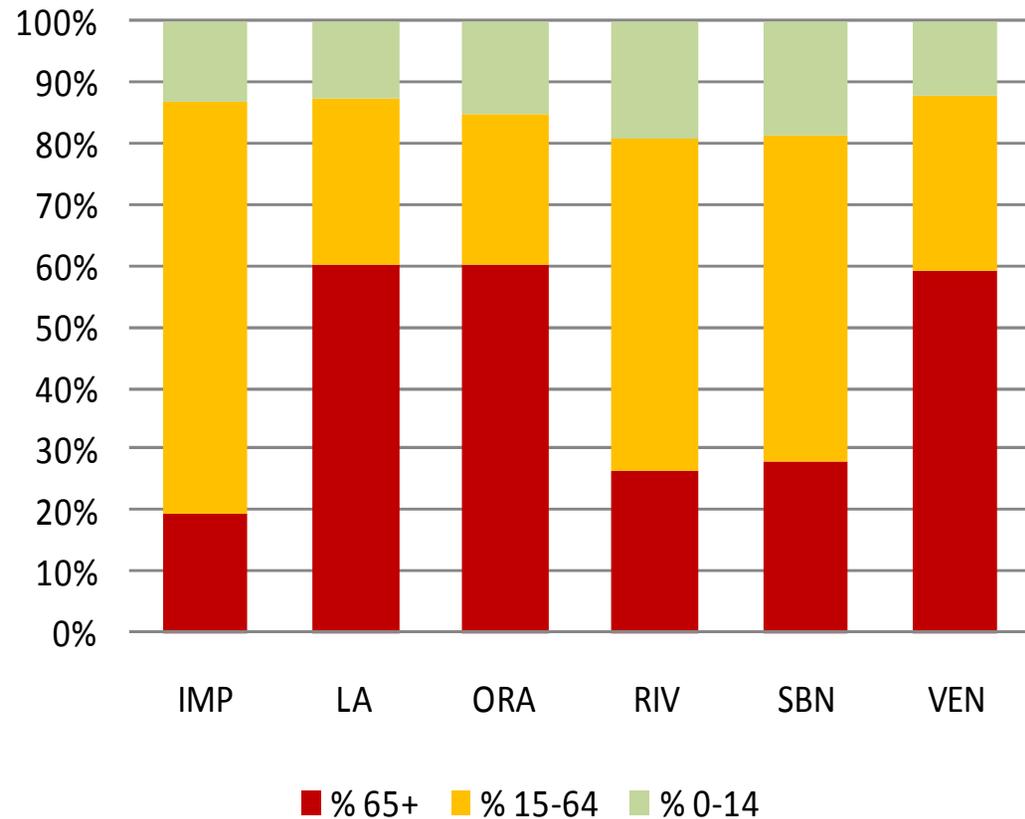
% & Growth of the Elderly (64+)



# Population Growth

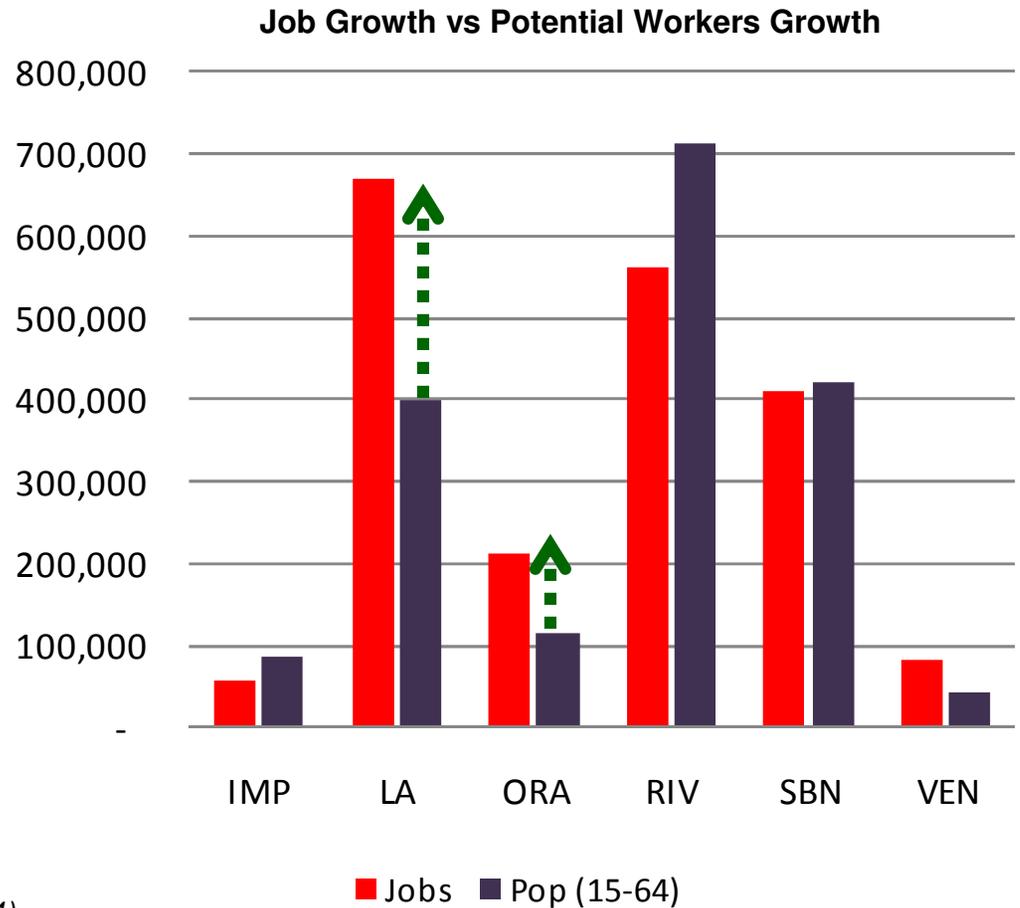
- Population will grow by 4 million between 2008-35.
- 3 coastal counties have higher growth of the elderly.
- 3 Inland counties have higher growth of working-age population.

Population Growth by Age



# Job Growth

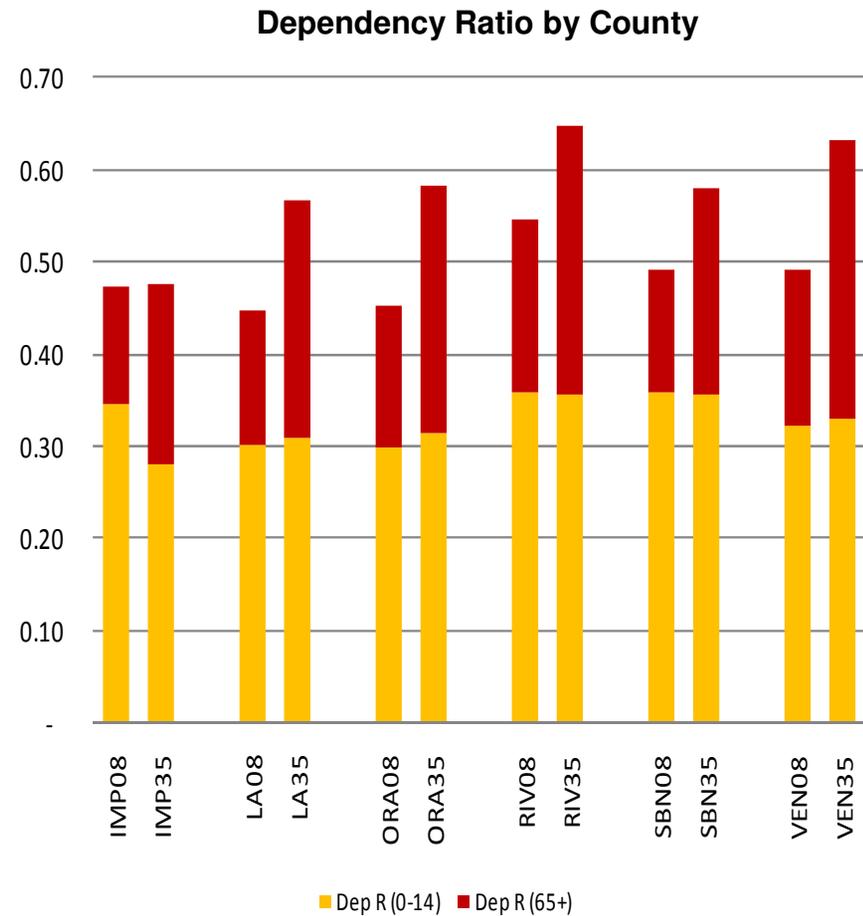
- Jobs will grow by 2 million between 2008-35.
- Growth of jobs is higher than potential workers in 3 coastal counties.
- Will there be more inter-county commuters from Inland counties?



Potential workers: using working age population (15-64)

# Dependency Ratio

- A ratio of dependent population (younger, older) to the productive population (15-64)
- SCAG Dependency Ratio will increase from 0.47 to 0.58 between 2008-35, which shows increasing pressure on productive people
- Will more resources be allocated to social welfare for the elderly?
- How will that influence on transportation finance?



\*\* Dependency Ratio: the number of dependents (aged 0-14 and over the age of 65) to the total population (aged 15-64).

# Weekday Person Travel

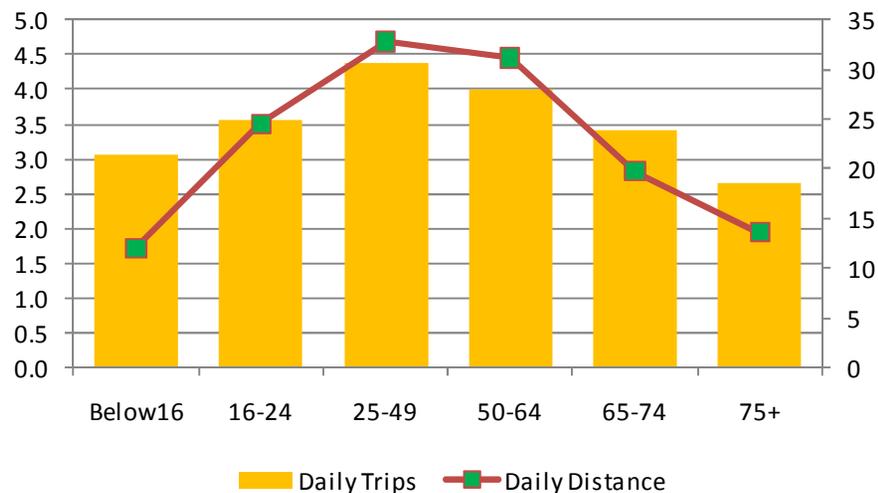
- Compared to the US, SCAG residents drive less, but use more non-motorized modes (walk, bicycle) and transit
- Although Southern California is infamous for its sprawl and auto-oriented urban form, there is less use on vehicle and shorter travel distance than the US.

		SCAG	US
<b>Trips</b>			
	Daily trips	3.8	3.9
	% no trip	11%	11%
<b>Mode Share</b>			
	Driver/Auto	56%	62%
	Passenger/Auto	21%	21%
	Non-motorized	17%	12%
	Transit	4%	2%
<b>Distance</b>			
	Daily distance	26	31
	Daily VMT	18	21

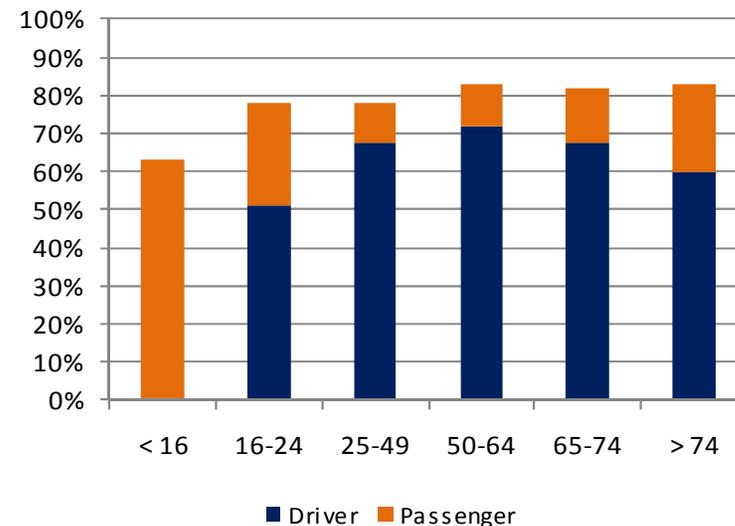
# Travel by Age

- Daily trips and travel distance are the highest for the working age population (25-64).
- The elderly still rely on a car, but drive less.

Daily Trips and Distance by Age



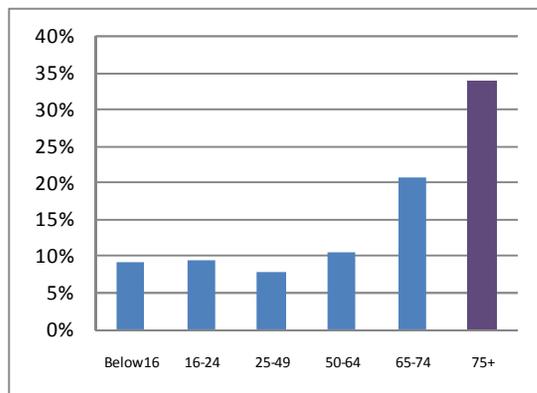
Auto Use by Age



# Travel by Age (Elderly)

- 1/3 of the oldest elderly did not travel on the survey day.
- The elderly wait for more days than the younger counterparts for the next trip. Their travel decision is probably not daily based. However, when they decide to travel, their daily trips are no less than the younger.
- The elderly is active. They need to travel for participating activities and maintain daily needs.

**% of Persons Did Not Travel**



**Travel by Age**

Age	# days since last travel*	If traveled, # trips for	
		All Purpose	Non-work
Below16	3	3.4	3.4
16-24	2	3.9	3.3
25-49	3	4.7	3.9
50-64	3	4.5	3.6
65-74	4	4.3	4.0
75+	7	4.0	3.9

\* Lastday: If the person didn't travel, what is the number of days since last trip

# Travel by Race/Ethnicity

- Compared to other groups, Hispanic population drive less; use more non-motorized and transit modes.
- What transportation policy should be considered due to continuing growth of Hispanic population?

**Daily Travel by Race/Ethnicity**

Race	Trips	Distance	Driver_Auto	Passngr_Auto	NM	Transit	Car/Hhsize
NH_WH	4.0	29	67%	18%	12%	1%	0.93
NH_BK	3.8	22	56%	20%	17%	5%	0.74
NH_AS	3.6	26	59%	23%	13%	2%	0.73
<b>HISP</b>	<b>3.7</b>	<b>24</b>	<b>46%</b>	<b>24%</b>	<b>21%</b>	<b>6%</b>	<b>0.57</b>

# Household Income & Housing Types

- As expected, people with higher income travel more and longer.

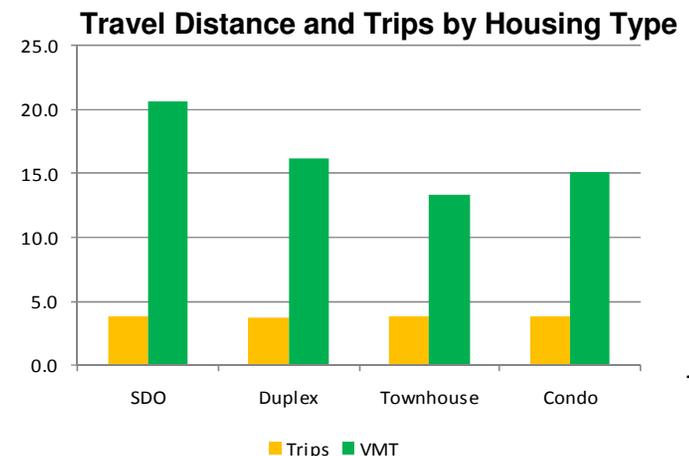
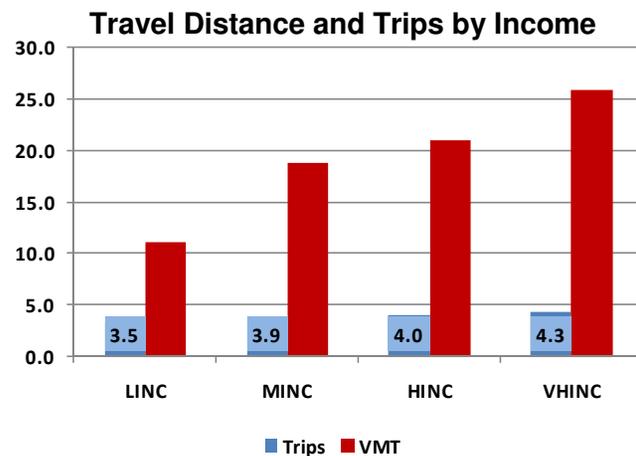
- People living in single-family house tend to drive longer than other types of housing.

Population Distribution by Income

HHINC	Income	% person
Low	<30K	33.4
Medium	30-60K	22.3
High	60-100K	19.1
Very High	100K+	20.8

Population Distribution by Housing Type

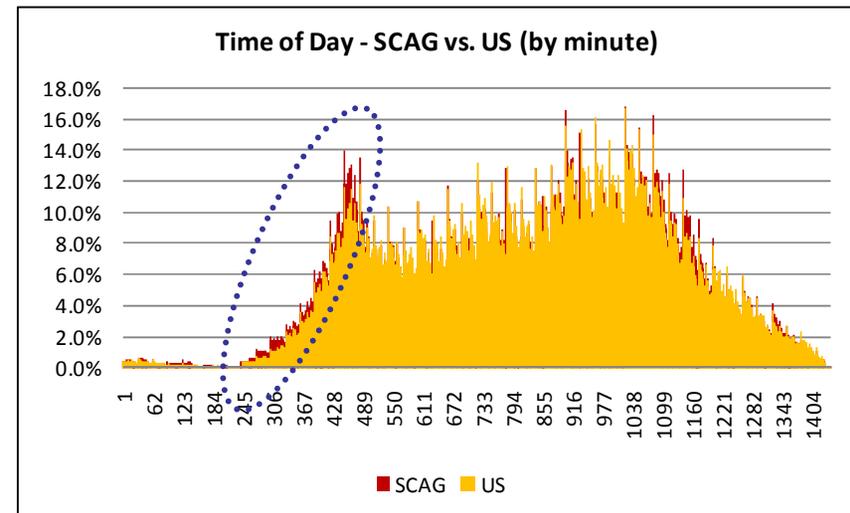
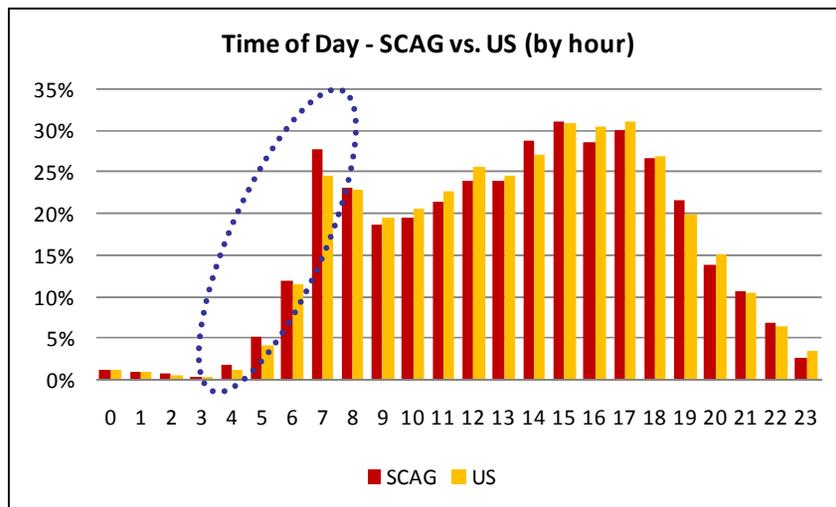
Housing Type	% person
Single, detached	61.2
Duplex	8.7
Rowhouse/townhouse	27.6
Apartment/condo	2.2



# Time of Day

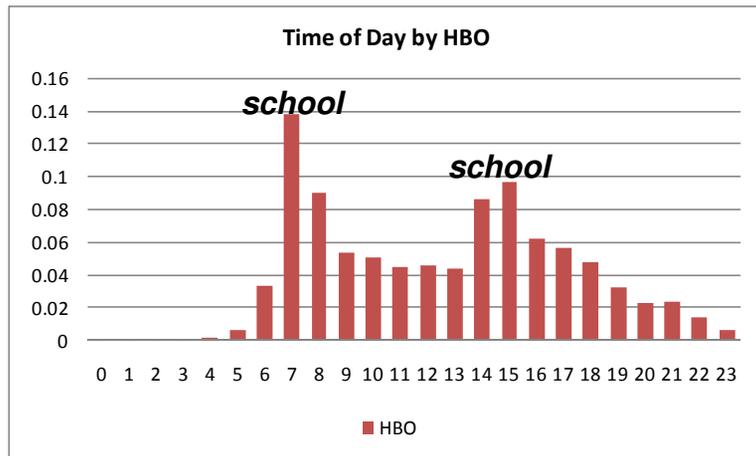
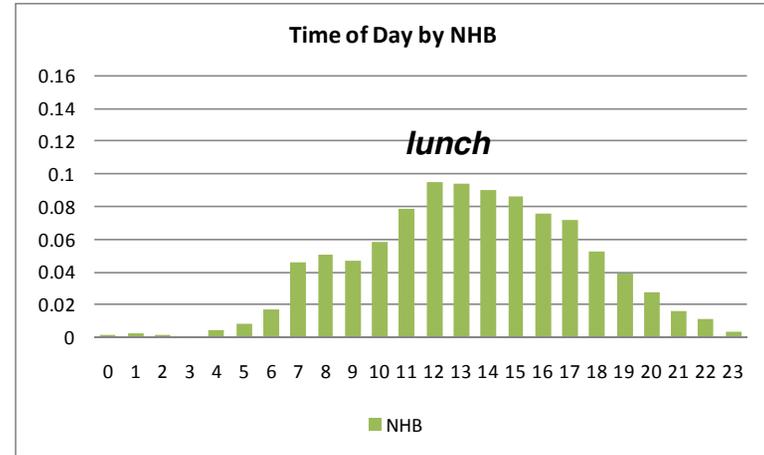
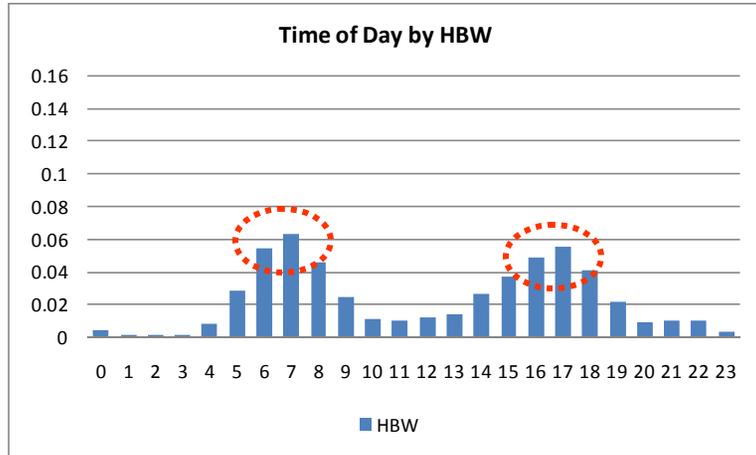
## (% persons are traveling)

- Compared to the US, SCAG region shows higher % of people traveling in the morning (4:00-8:00).



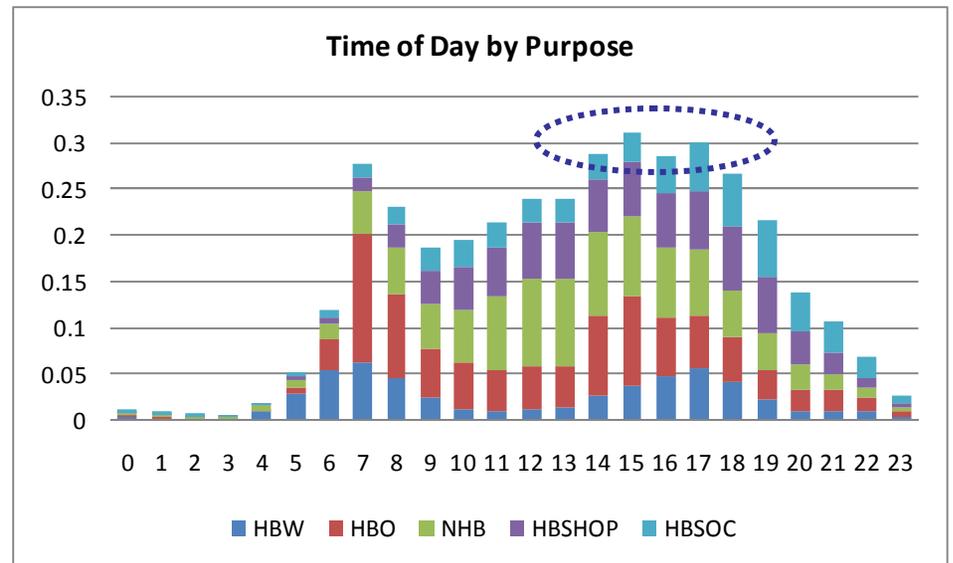
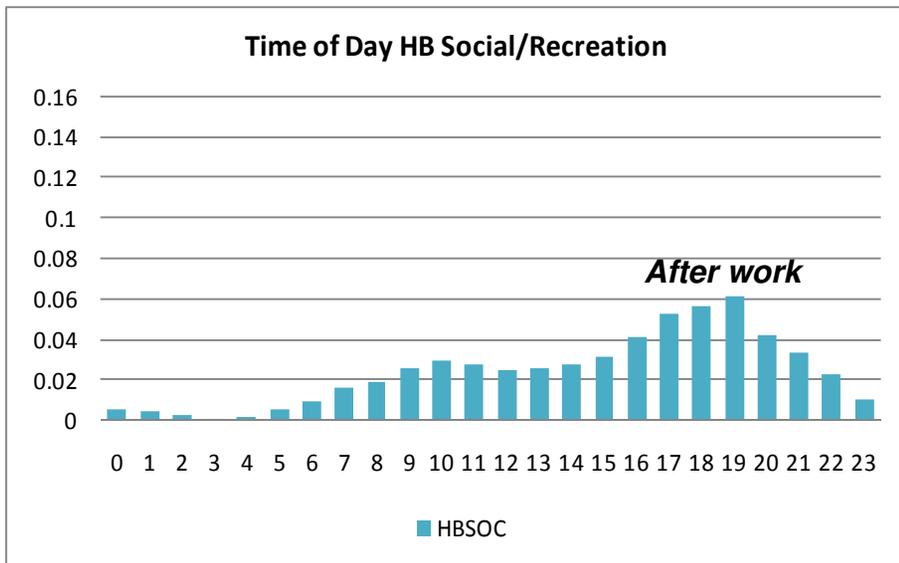
**Note: This chart shows % of persons who traveled within each hourly period. The purpose is to show the difference between US and SCAG, not for estimating travel length**

# Time of Day by Purpose



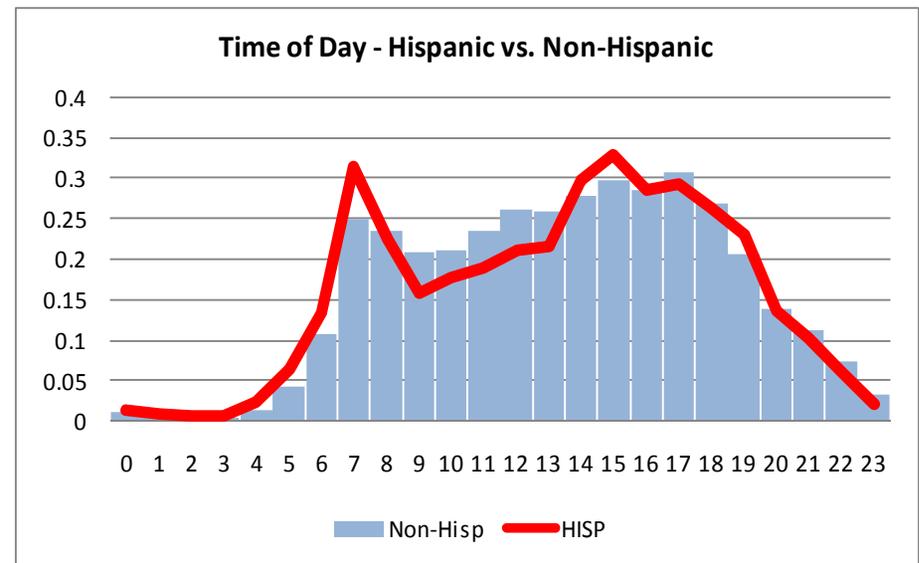
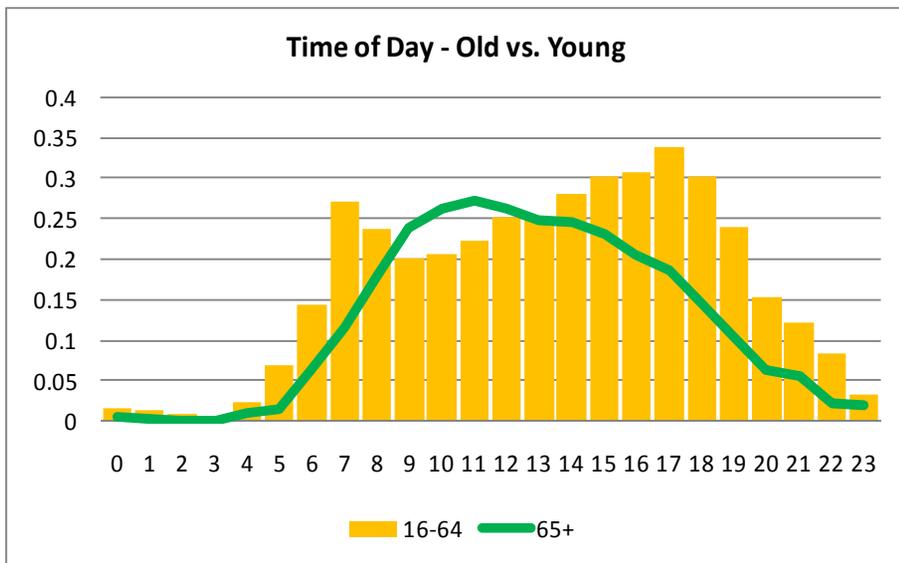
# Time of Day by Purpose

- PM peak appears during 2 pm-6 pm due to travel demand for multiple activities
- PM peak lasts longer than AM peak.



# Time of Day of Elderly & Hispanic

- Peak travel period for the elderly is around noon.
- More significant two peaks to Hispanic (7 am-8 am and 3 pm-4 pm) than non-Hispanic



# Trip Length

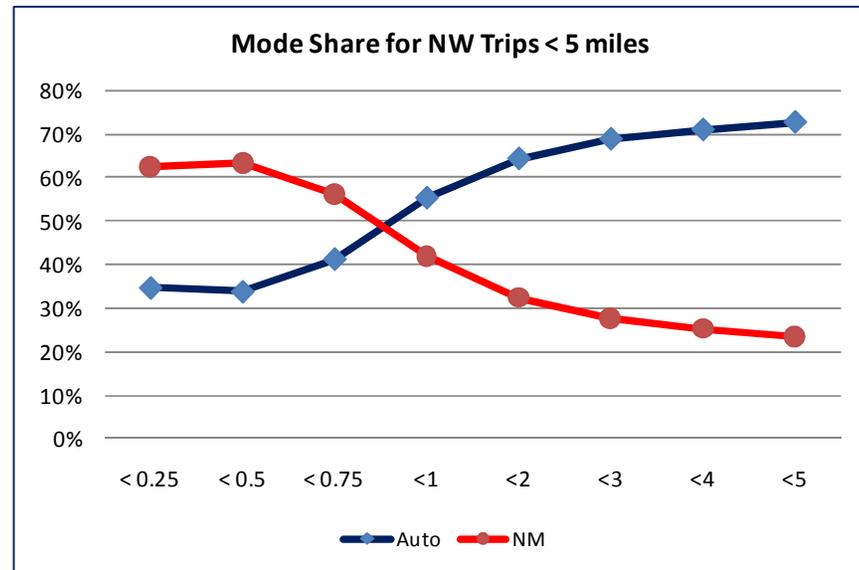
- Trip length is the shortest for shopping (4.5 mi), and the longest for work (12.8 mi).

**Trips Length by Purpose**

TRIPPURP	%	Mean	Median
HBO	25.0	6.1	2
HBSHOP	21.9	4.5	2
HBSOCREC	14.5	8.6	3
HBW	11.3	12.8	8
NHB	27.1	7.5	3
ALL		7.3	3

\* trip length >0 and <=200, all days

- Non-motorized share is the highest for short trip (less than 1 mile).



# **Residential Location and Travel**

# Introduction

- Travel behavior theory recognizes that daily travel choices are related to choices of residential location, housing type, job location, school location, mode for commute and auto ownership.
- For example, people choosing to live in urban areas, work location is more likely to be closer to home, and they are less likely to own a car, drive a car to work and to other daily activities.
- Land use policy, such as SB 375, based on the concept of this residential location - daily travel relation, is suggested to reduce problems caused by auto use, including congestion, air pollution, and GHG emissions.
- Does this residential location - daily travel relation work for SCAG residents??

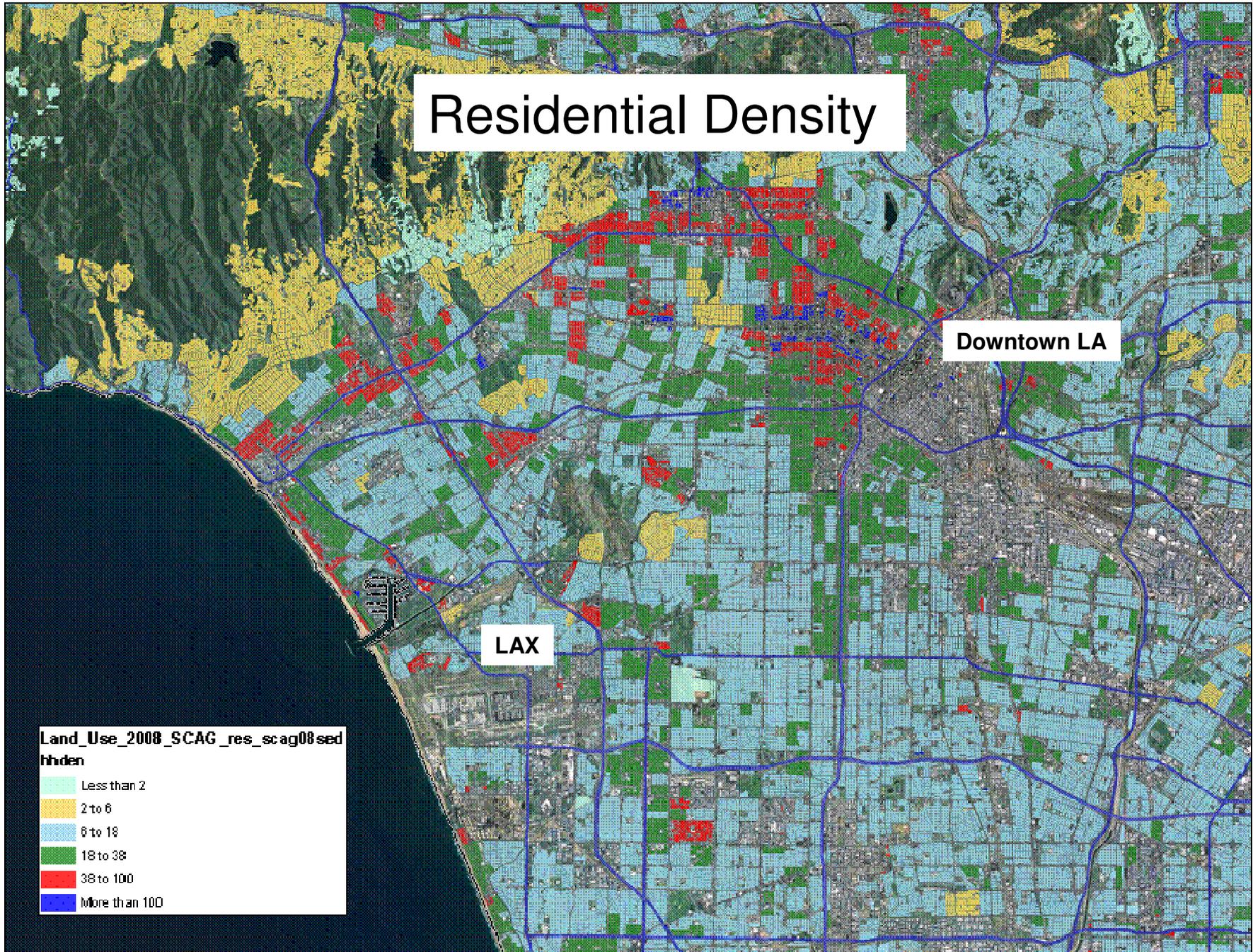
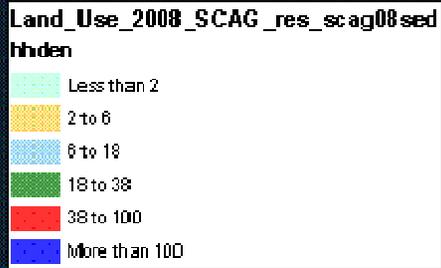
# Residential Land Use

- We use NHTS data to examine the relation between residential land use characteristics, distance to work, and mode for commute
- Residential land use characteristics include:
  - Residential density (housing units per acre)
  - Local service accessibility (employee per acre)
    - local service = retail + other service + business service + finance + accommodation/food
- Use SCAG TAZ zones as neighborhoods
  - 11,268 zones, based on 2000 Census block group

# Residential Density

Downtown LA

LAX



# Local Service Accessibility

Downtown LA

LAX

T2\_SCAG\_D814

<all other values>

ACCL

01 13.0075

02 0.015

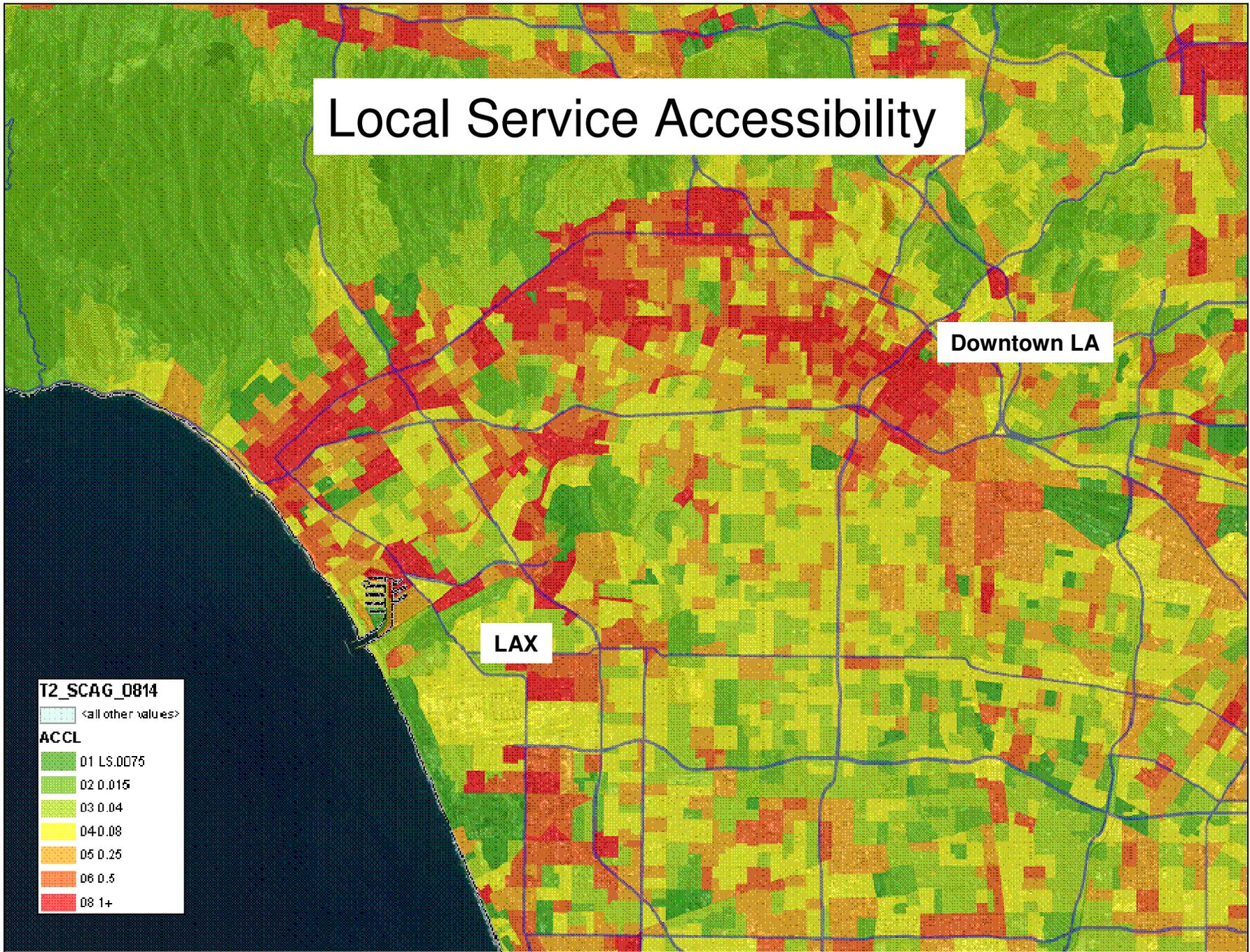
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04 0.08

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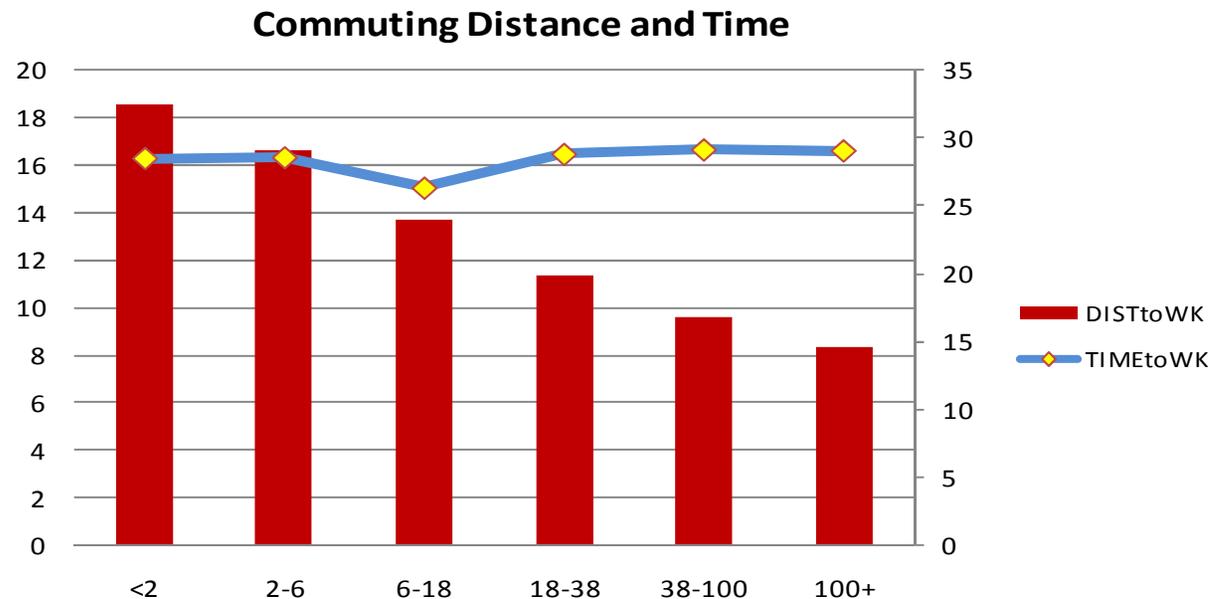
06 0.5

08 1+



# Residential Density & Commuting Distance

- People living in higher density neighborhoods:
  - More living in multi-unit housing
  - Shorter commuting distance.
- Commuting time is about the same for different density.



# Residential Density & Commuting Mode

- Residents of higher density neighborhoods:
  - Cars are less available to household members.
  - Transit services are more available.
  - Workers are less likely to commute by a car; more likely by transit and non-motorized modes.
- Results are expected.

**Commuting Mode by Density**

Residential Density	Car/Hhsize	Transit Density	% Commuting Mode		
			Auto	Transit	NM
<2	0.9	0.0	93	2	1
2-6	0.8	0.0	91	2	2
6-18	0.6	0.1	88	4	3
18-38	0.5	0.3	82	10	5
38-100	0.5	0.5	78	12	6
100+	0.3	1.2	63	19	14

# How about to Hispanic Population?

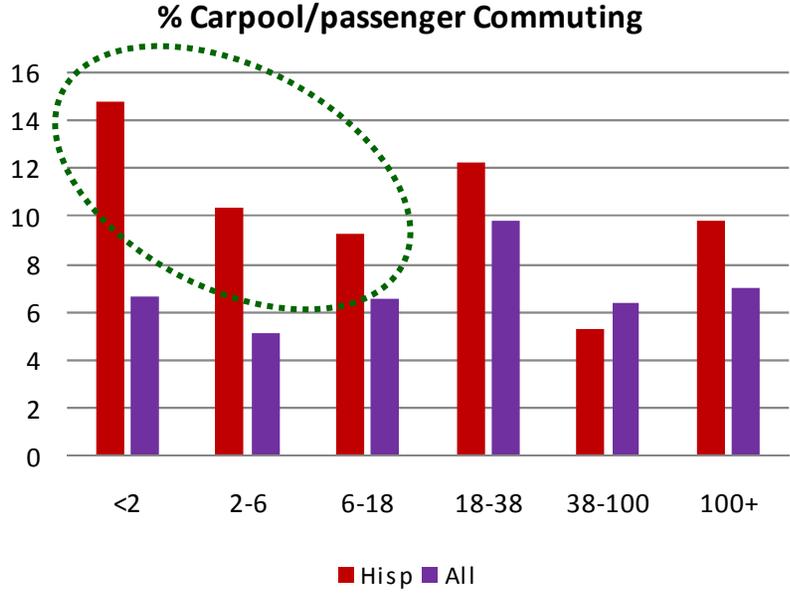
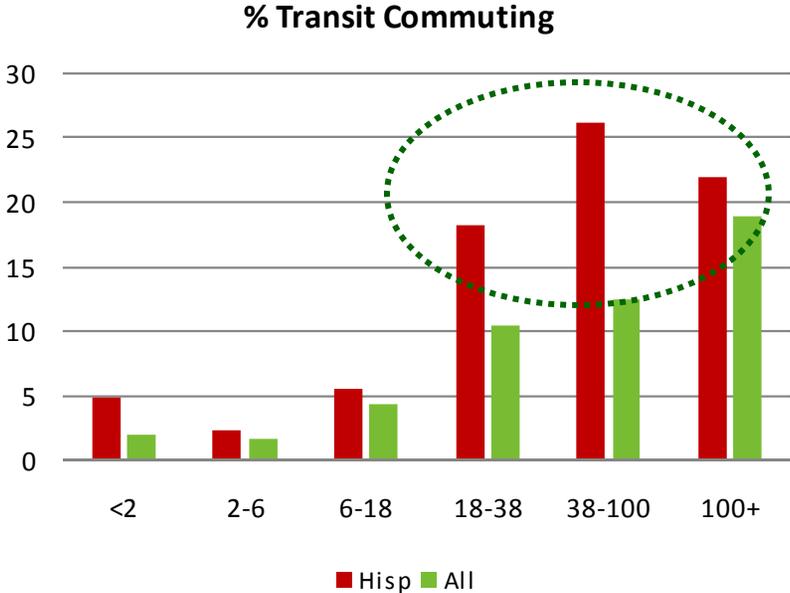
- Similar to total population, the Hispanics living in high-density neighborhoods are:
  - less likely to live in a single-family house,
  - lower car ownership, and
  - shorter commuting distance

**Household Characteristics and Commuting**

	Households				
Res Density	%SDO	Car/Hhsize	% No car	DISTtoWK	TIMEtoWK
<2	75	0.7	5	12	22
2-6	79	0.6	2	19	31
6-18	57	0.5	13	13	27
18-38	23	0.4	18	12	31
38-100	11	0.3	29	10	33
100+	0	0.2	49	7	27

# Hispanic - Commuting Mode

- Compared to total population,
  - Hispanic commuters have higher % of transit use, especially in higher density areas.
  - They also have higher % of carpool use, especially in lower density areas.



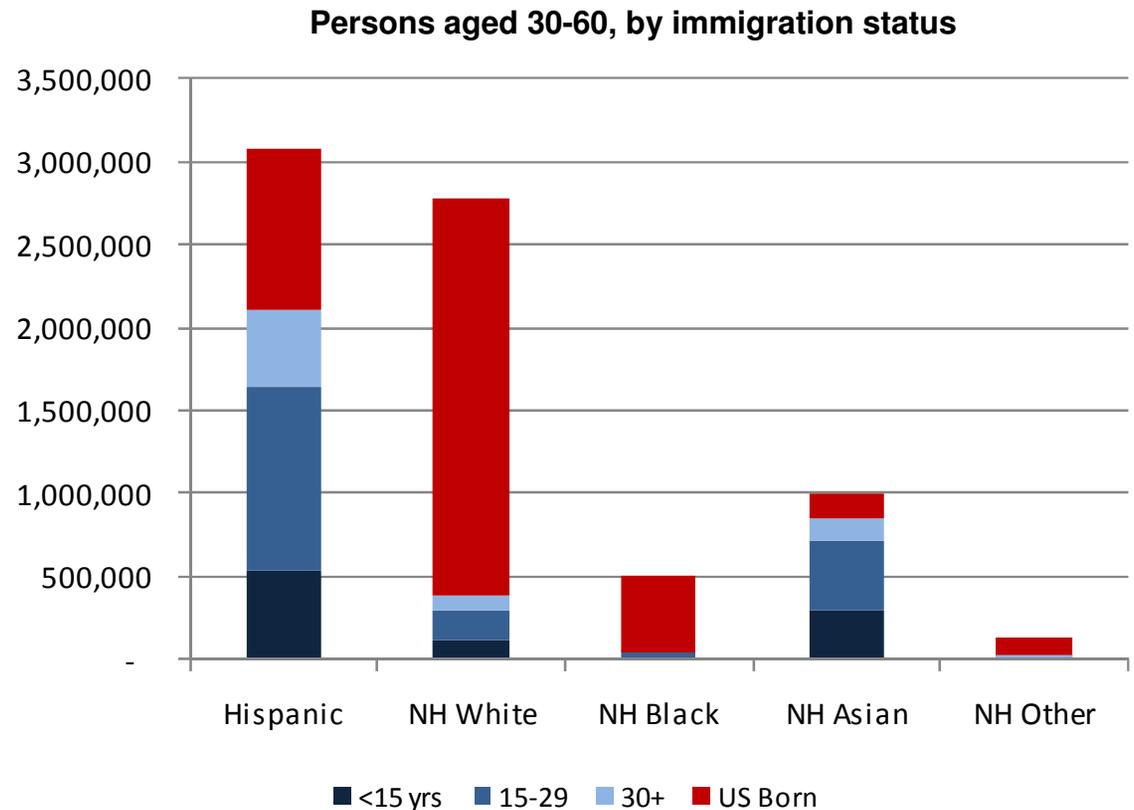
# **Travel Behavior of Immigrants**

# Introduction

- Each year, many immigrants move to Southern California.
- Will immigrants change their behavior after years living in this region? How about their residential location-housing-travel relation.
- The objective is to analyze the difference between newer immigrants, long-term immigrants, and the US born.
- Focus on adults between 30-60 years old – they are primary decision makers of their family.
- By three race/ethnicity groups: Hispanic, Non-Hispanic White, and others. This study focuses on Hispanic population, due to larger share to total population.

# Immigrants Aged 30-60 Years Old (2009 ACS)

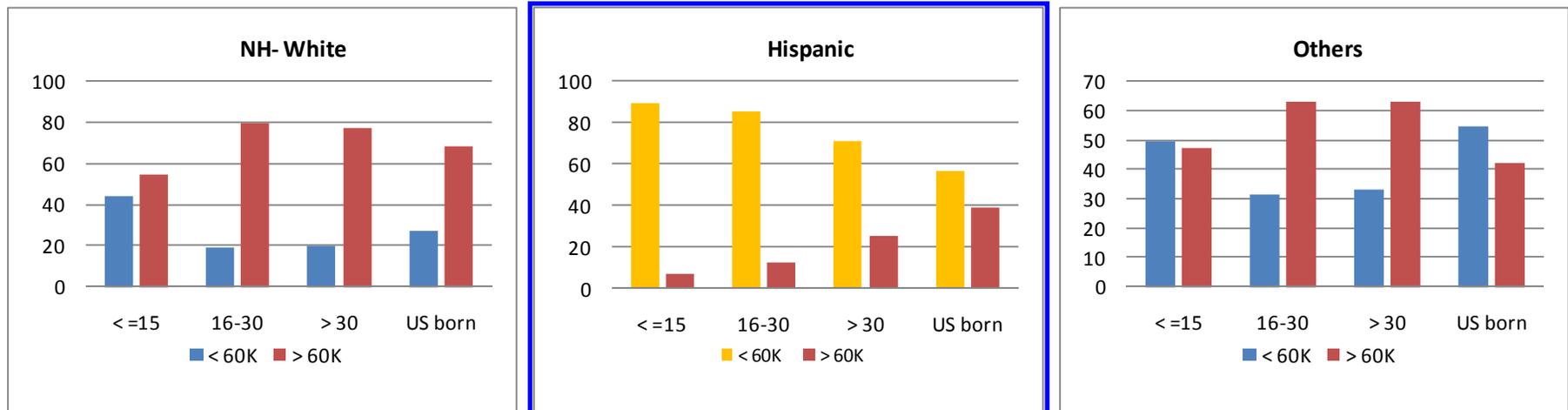
- 45% of total pop, and 2/3 of Hispanic, are immigrants.
- Half of Hispanic are immigrants who entered US < 30 years.



# Household Income

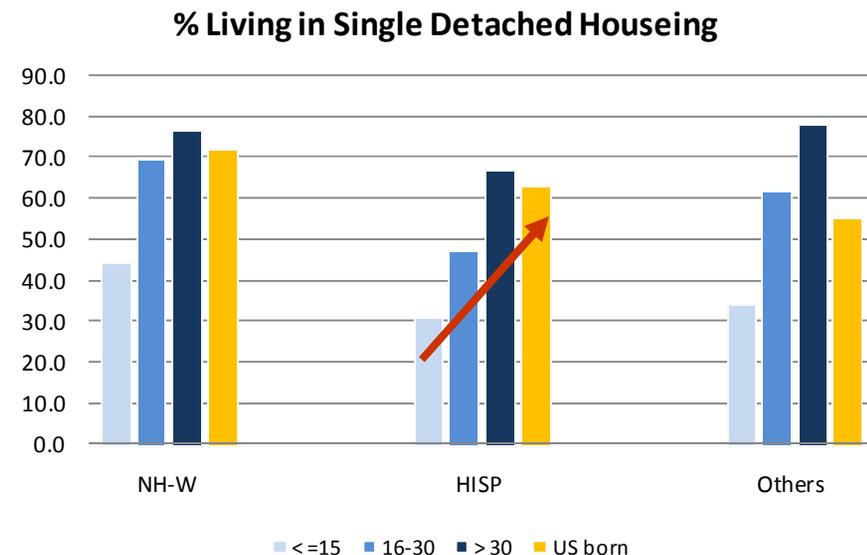
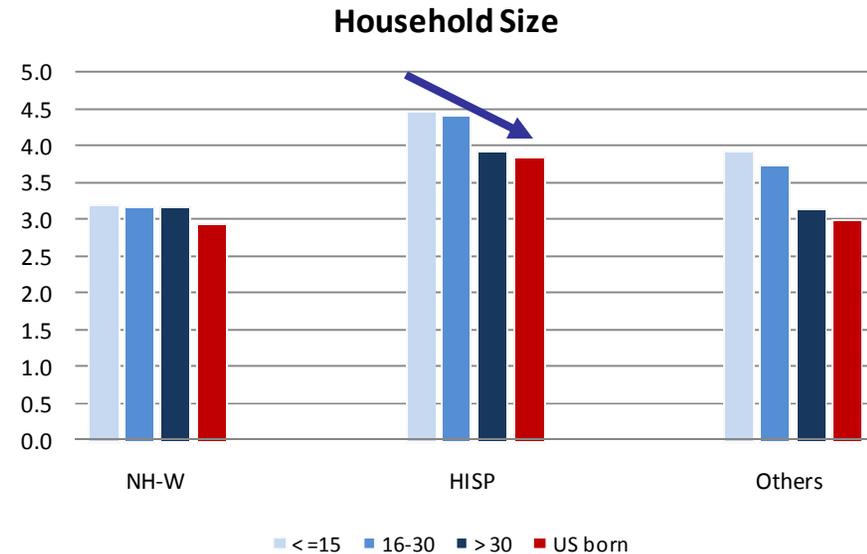
- Income status is improved to Hispanic immigrants as they stay longer in the US.

Household Income by Immigration Status



# Household Size & Housing Type

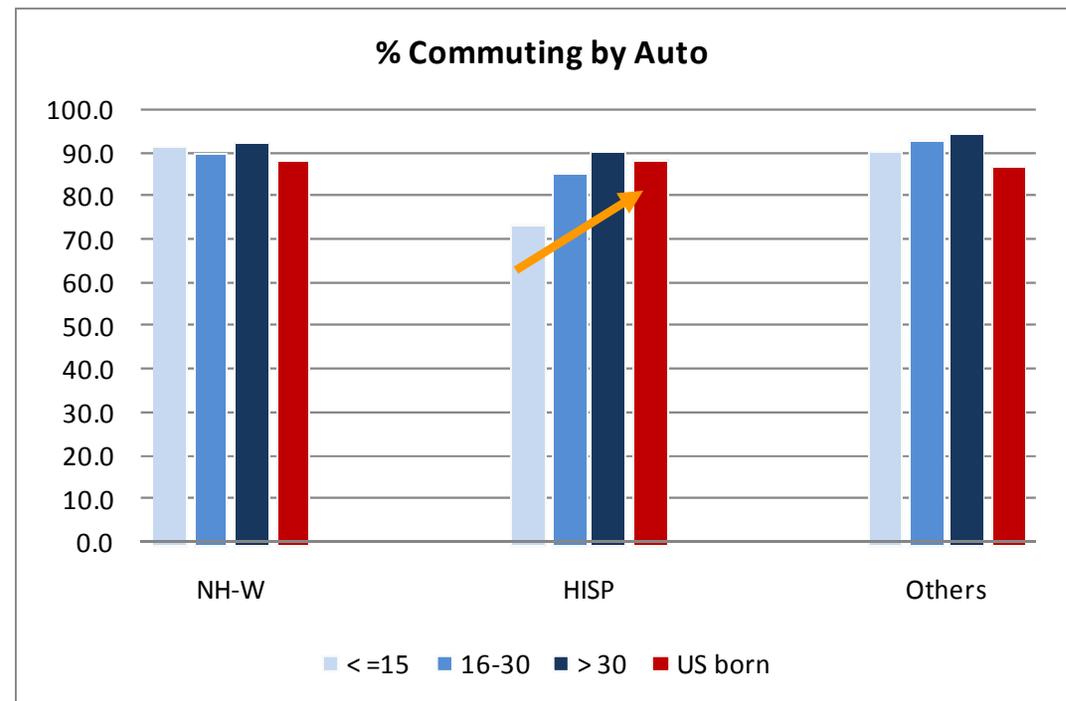
- Longer-term immigrants show reduction of household size.
- Most newer immigrants live in multiple-unit house. As staying longer in the US, more will live in a single-family house, which is similar to the US born.



# Commuting Distance and Mode

- Distance to work is shorter for newer Hispanic immigrants.
- As Hispanic immigrants entered US longer, they are more likely to use a car as commuting mode.
- Immigrants of other ethnic groups show higher auto share than the US born.

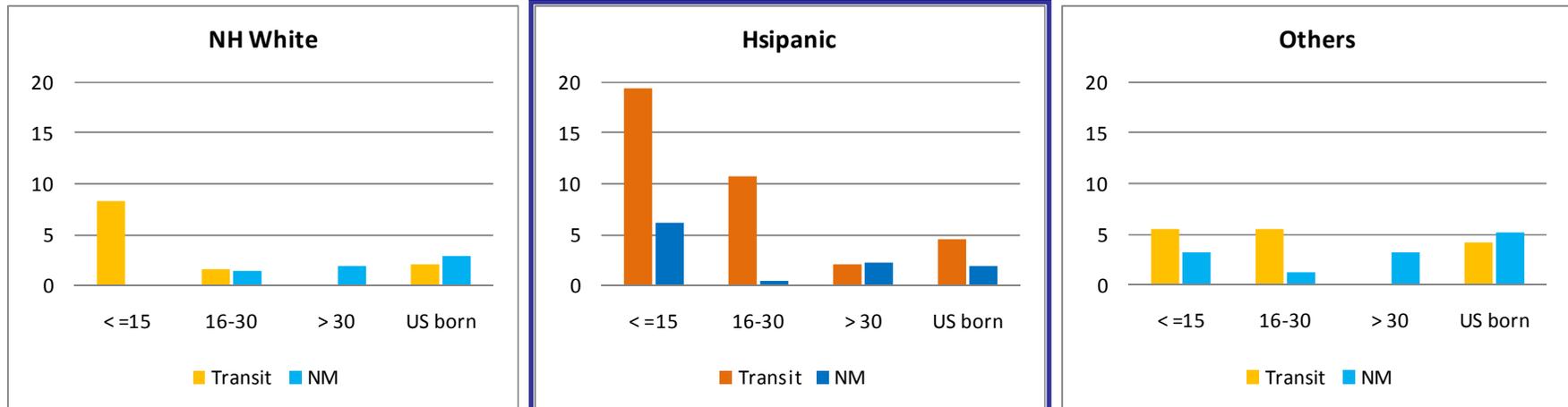
<b>Distance to Work</b>			
Years in US	NH-W	HISP	Others
< =15	14	12	13
16-30	16	14	13
> 30	18	16	15
US born	17	16	14



# Other Commuting Modes

- The use of transit significantly drop as Hispanic immigrants entered US longer.
- The impression of high transit use to Hispanic population is attributed to newer immigrants.

Share of Transit and Non-motorized



## Summary

- As Hispanic immigrants stay longer in the US, their income status is improved, and they tend to live in a single-family house within a lower-density neighborhood, just similar to the US born.
- They also commute longer distance, drive more and use less transit than new Hispanic immigrants.
- This travel behavior assimilation of Hispanic immigrants and the second generation challenges transportation modeling that use race/ethnicity.

**Thank you**

# Discussion