SOUTHERN CALIFORNIA
ASSOCIATION OF GOVERNMENTS
900 Wilshire Blvd., Ste. 1700
Los Angeles, CA 90017
T: (213) 236-1800
www.scag.ca.gov

REGIONAL COUNCIL OFFICERS

President
Bill Jahn, Big Bear Lake

First Vice President
Rex Richardson, Long Beach

Second Vice President
Clint Lorimore, Eastvale

Immediate Past President
Alan D. Wapner, San Bernardino
County Transportation Authority

COMMITTEE CHAIRS

Executive/Administration
Bill Jahn, Big Bear Lake

Community, Economic &
Human Development
Peggy Huang, Transportation
Corridor Agencies

Energy & Environment
Linda Parks, Ventura County

Transportation
Cheryl Viegas-Walker, El Centro

MEETING OF THE

TECHNICAL WORKING GROUP

Thursday, December 19, 2019
10:00 a.m. – 12:00 p.m.

SCAG OFFICES
900 Wilshire Blvd., Ste. 1700
Room Policy B
Los Angeles, CA 90017
(213) 236-1800

HOW TO PARTICIPATE IN MEETING ON NEXT PAGE

If members of the public wish to review the attachments or have any questions on any of the agenda items, please contact John Asuncion at (213) 236-1936 or via email at asuncion@scag.ca.gov. Agendas & Minutes for the Technical Working Group are also available at: www.scag.ca.gov/committees

SCAG, in accordance with the Americans with Disabilities Act (ADA), will accommodate persons who require a modification of accommodation in order to participate in this meeting. SCAG is also committed to helping people with limited proficiency in the English language access the agency's essential public information and services. You can request such assistance by calling (213) 236-1908. We request at least 72 hours (three days) notice to provide reasonable accommodations and will make every effort to arrange for assistance as soon as possible.

How to Participate

In Person

SCAG Downtown Office Policy B
900 Wilshire Blvd., 17th Floor
Los Angeles 90017
213-236-1800

Videoconference

San Bernardino County*
1170 West 3rd Street, Suite 140
San Bernardino, CA 92410
Telephone: (909) 806-3556
***Please contact SCAG to make arrangements to use San Bernardino videoconference

Web Meeting

Join from PC, Mac, Linux, iOS or Android:
https://zoom.us/j/142774637

Teleconference

Telephone:
Dial: 1-669 900 6833
Meeting ID: 142 774 637

Technical Working Group

October 17, 2019

Attendees Los Angeles Office

Mark Yamarone **(Chair)**	LA Metro
Lori Huddleston	LA Metro
Deborah Diep	Center for Demographic Research, California State University Fullerton
Warren Whiteaker	OCTA
Stephanie Cadena	Gateway Cities COG
Miles Mitchell	City of Los Angeles
Gail Shiomoto-Lohr	Mission Viejo
Sean Scully	Redondo Beach
Jae Hill	Big Bear Lake
Margaret Finlay	Duarte
Susan Kim	Anaheim

Attendees Web Meeting/Teleconference

Marnie Primmer	OCCOG
Susan Kim	City of Anaheim
Les Card	LSA
Caitlin Brooks	VCTC
Ezikiel Rubias	Orange County
Nate Farnsworth	Yorba Linda
Elizabeth Hansburg	Orange County People for Housing
Margaret Lin	South Pasadena
Greg Nord	OCTA
Grace Pang	League of Women Voters, Los Angeles County
Thailin Martin	Montclair
J.E. Smith	Riverside
David Mell	Camarillo
Theadora Trindle	City of Los Angeles
Felicia Brown-Smith	San Bernardino
Ruben Villapando	Riverside County
Manuel Alcala	Sunline Transit
Charles Guiam	Anaheim
Cheryl Kitzerow	Menifee

Susan Riegle	City of Ojai
Ann Garcia	San Dimas
Rosemary Lackow	San Bernardino County
Ashley Newman	Fountain Valley
Christney Barilla	San Bernardino County
Ruth Lorentz	Big Bear Lake
Jaime Murillo	Newport Beach
Annie Lao	Rosemead
Joanne Hwang	Anaheim
Travis Clark	Victorville
Meredith Elguira	Rolling Hills
Paul Kuykendall	Lakewood
Cally Hardy	City of Los Angeles
John Signo	Gardena
Jay Eastman	City of Riverside
Claudia Manrique-Miklusek	Moreno Valley
Diana Chang	Culver City Bus
Ilene T. Gallo	Caltrans

Technical Working Group

December 19, 2019

10:00 a.m. – 12:00 p.m.

SCAG Downtown Office – Policy Room B

900 Wilshire Blvd., 17th Floor

Los Angeles 90017

Agenda

Introductions

Discussion Items

1.	Connect SoCal Growth Vision Update	Kimberly Clark Lyle Janicek	15 minutes
2.	Statewide Ridehailing Survey	Marco Anderson	10 minutes
3.	PEIR Status Update	Karen Calderon	5 minutes
4.	RHNA Status Update	Ma'Ayn Johnson	5 minutes

How to Unmute Phone

Press *6 to unmute your phone and speak

To return to mute *6

Technical Working Group

Agenda Item 2

Statewide TNC Data Collection Project

Marco Anderson

December 19, 2019

www.scag.ca.gov

INNOVATING FOR A BETTER TOMORROW

As popular as TNCs are, there is limited quality data available to inform planning, modeling, and policy-making responses

This project is designed to fill gaps by:

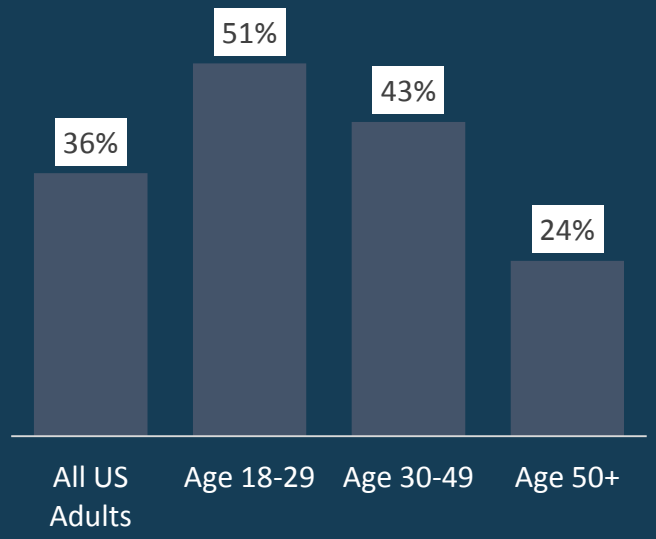
- Using **rigorous methods** (e.g., probability sampling)
- Using **innovative methods** (e.g., 7-day smartphone-based diary)
- Collecting a **sizable quantity of data**. (>50K person-days of data in CA; 10K for SCAG)
- Capturing **comprehensive travel behavior data** (person's entire travel, not just TNC trips)

Analytical use cases informing project's original design:

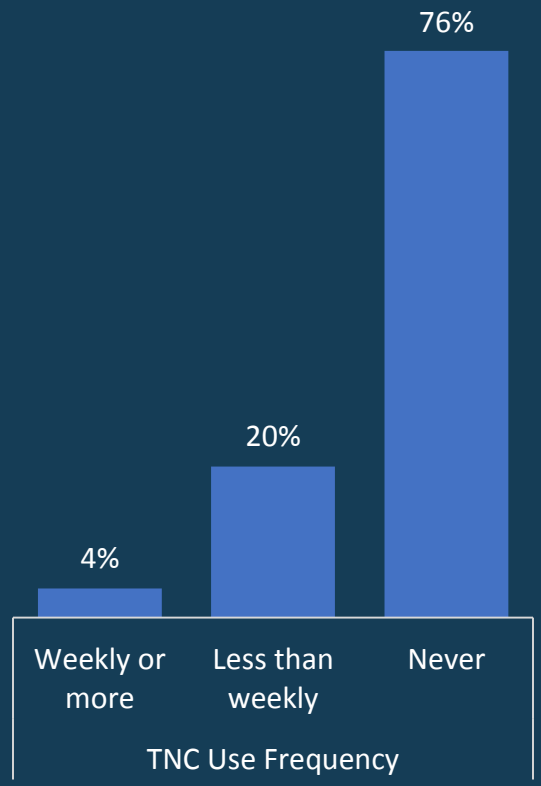
- **Travel demand model estimation** for tour mode, trip mode, and auto ownership
- Expanded TNC tour and trip mode targets for **model calibration**
- Develop **TNC user demographic and trip profiles** for model calibration

TNC use varies by region. 65-75% of US adults have never used TNCs. Weekly TNC users are <5% of US adults.

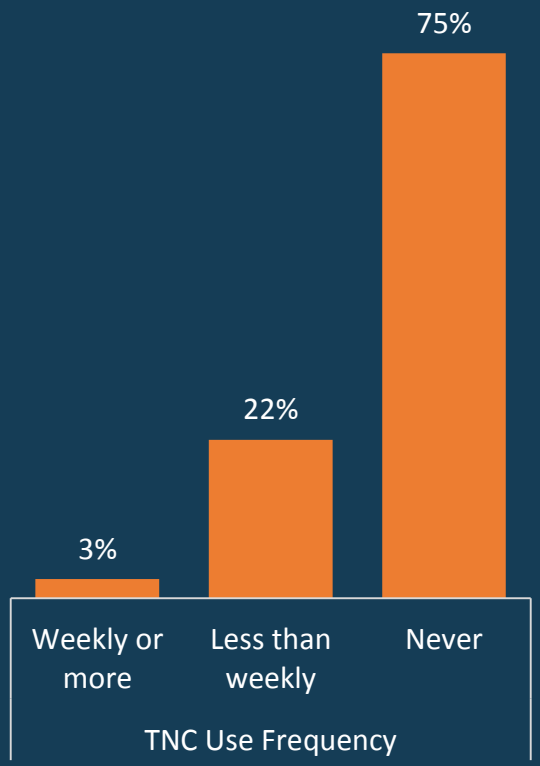
% of **all US adults** have ever used a TNC (2018-Q4, Pew)



% of **San Diego** adults (2016-17 HTS, RSG)



% of **Sacramento** adults (2018-Q2 HTS, RSG)



**Pew data as of October 2018: https://www.pewresearch.org/fact-tank/2019/01/04/more-americans-are-using-ride-hailing-apps/*

Given the concentration and infrequency of TNC use, what are best practices for TNC-focused data collection?

We need to get 3 methods right:

1. Sampling TNC users	Address-based sampling w/heavy TNC-user oversampling Person-based study, but allow all adults in HH to participate Mail letter & postcard to invited households
★ **2. Capturing TNC trips**	rMove/smartphone-based travel diaries 7-day travel periods for each person TNC-tailored questionnaire
3. Weighting & representation	Use weighting methods similar to household travel surveys

Participants are recruited to the study with custom-branded mailed invitations

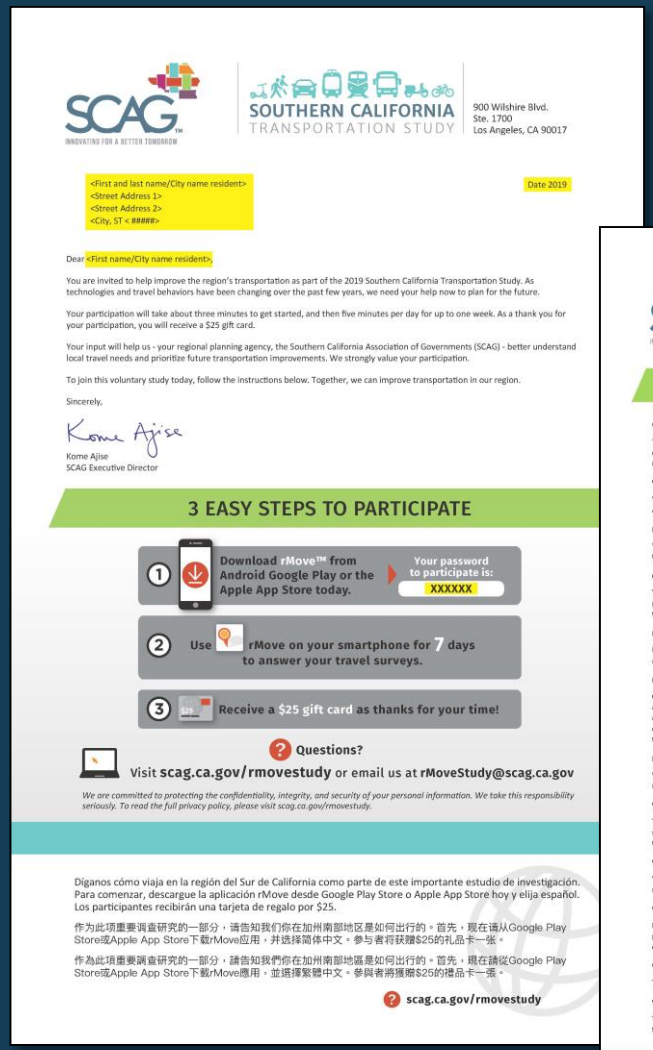
RECRUITMENT

MAILED INVITATION MATERIALS

- Address-based sample
- Invitation **Letter / FAQ** w/foreign language insert
- Reminder **postcard**
- **$25 gift-card incentive**

SCAG
INNOVATING FOR A BETTER TOMORROW

SOUTHERN CALIFORNIA TRANSPORTATION STUDY


SCAG
INNOVATING FOR A BETTER TOMORROW

SOUTHERN CALIFORNIA TRANSPORTATION STUDY

900 Wilshire Blvd.
Ste. 1700
Los Angeles, CA 90017

<First and last name/City name resident>
<Street Address 1>
<Street Address 2>
<City, ST < #####>

Date 2019

Dear <First name/City name resident>,

You are invited to help improve the region's transportation as part of the 2019 Southern California Transportation Study. As technologies and travel behaviors have been changing over the past few years, we need your help now to plan for the future.

Your participation will take about three minutes to get started, and then five minutes per day for up to one week. As a thank you for your participation, you will receive a $25 gift card.

Your input will help us - your regional planning agency, the Southern California Association of Governments (SCAG) - better understand local travel needs and prioritize future transportation improvements. We strongly value your participation.

To join this voluntary study today, follow the instructions below. Together, we can improve transportation in our region.

Sincerely,

Kome Ajise

Kome Ajise
SCAG Executive Director

3 EASY STEPS TO PARTICIPATE

1. Download rMove™ from Android Google Play or the Apple App Store today. Your password to participate is: XXXXXX
2. Use rMove on your smartphone for 7 days to answer your travel surveys.
3. Receive a $25 gift card as thanks for your time!

Questions?
Visit scag.ca.gov/rmovestudy or email us at rMoveStudy@scag.ca.gov

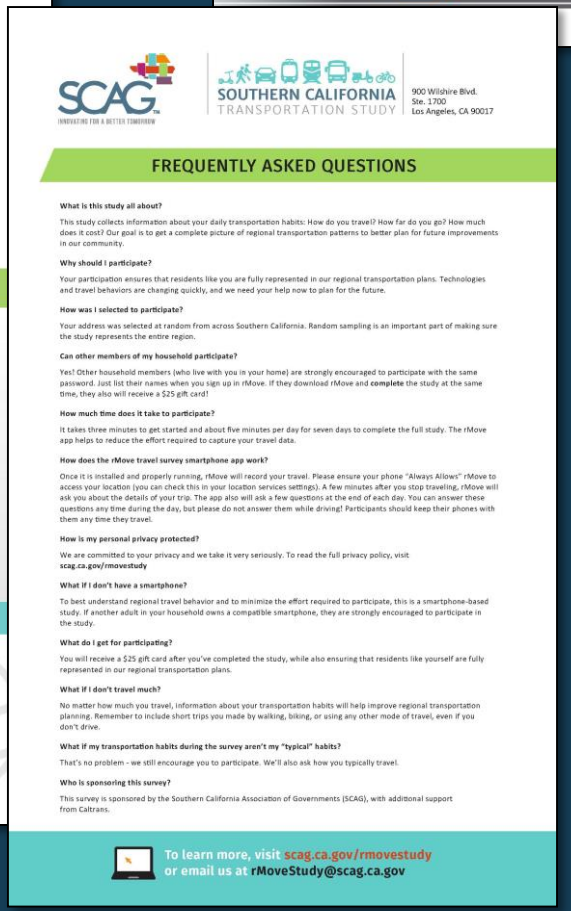
We are committed to protecting the confidentiality, integrity, and security of your personal information. We take this responsibility seriously. To read the full privacy policy, please visit scag.ca.gov/rmovestudy.

Díganos cómo viaja en la región del Sur de California como parte de este importante estudio de investigación. Para comenzar, descargue la aplicación rMove desde Google Play Store o Apple App Store hoy y elija español. Los participantes recibirán una tarjeta de regalo por $25.

作为此项重要调查研究的一部分，请告知我们你在加州南部地区是如何出行的。首先，现在请从Google Play Store或Apple App Store下载rMove应用，并选择简体中文。参与者将获赠$25的礼品卡一张。

作為此項重要調查研究的一部分，請告知我們你在加州南部地區是如何出行的。首先，現在請從Google Play Store或Apple App Store下載rMove應用，並選擇繁體中文。參與者將獲贈$25的禮品卡一張。

scag.ca.gov/rmovestudy


SCAG
INNOVATING FOR A BETTER TOMORROW

SOUTHERN CALIFORNIA TRANSPORTATION STUDY

900 Wilshire Blvd.
Ste. 1700
Los Angeles, CA 90017

FREQUENTLY ASKED QUESTIONS

What is this study all about?

This study collects information about your daily transportation habits: How do you travel? How far do you go? How much does it cost? Our goal is to get a complete picture of regional transportation patterns to better plan for future improvements in our community.

Why should I participate?

Your participation ensures that residents like you are fully represented in our regional transportation plans. Technologies and travel behaviors are changing quickly, and we need your help now to plan for the future.

How was I selected to participate?

Your address was selected at random from across Southern California. Random sampling is an important part of making sure the study represents the entire region.

Can other members of my household participate?

Yes! Other household members (who live with you in your home) are strongly encouraged to participate with the same password. Just list their names when you sign up in rMove. If they download rMove and **complete** the study at the same time, they also will receive a $25 gift card!

How much time does it take to participate?

It takes three minutes to get started and about five minutes per day for seven days to complete the full study. The rMove app helps to reduce the effort required to capture your travel data.

How does the rMove travel survey smartphone app work?

Once it is installed and properly running, rMove will record your travel. Please ensure your phone "Always Allows" rMove to access your location (you can check this in your location services settings). A few minutes after you stop traveling, rMove will ask you about the details of your trip. The app also will ask a few questions at the end of each day. You can answer these questions any time during the day, but please do not answer them while driving! Participants should keep their phones with them any time they travel.

How is my personal privacy protected?

We are committed to your privacy and we take it very seriously. To read the full privacy policy, visit scag.ca.gov/rmovestudy

What if I don't have a smartphone?

To best understand regional travel behavior and to minimize the effort required to participate, this is a smartphone-based study. If another adult in your household owns a compatible smartphone, they are strongly encouraged to participate in the study.

What do I get for participating?

You will receive a $25 gift card after you've completed the study, while also ensuring that residents like yourself are fully represented in our regional transportation plans.

What if I don't travel much?

No matter how much you travel, information about your transportation habits will help improve regional transportation planning. Remember to include short trips you made by walking, biking, or using any other mode of travel, even if you don't drive.

What if my transportation habits during the survey aren't my "typical" habits?

That's no problem - we still encourage you to participate. We'll also ask how you typically travel.

Who is sponsoring this survey?

This survey is sponsored by the Southern California Association of Governments (SCAG), with additional support from Caltrans.

To learn more, visit scag.ca.gov/rmovestudy or email us at rMoveStudy@scag.ca.gov

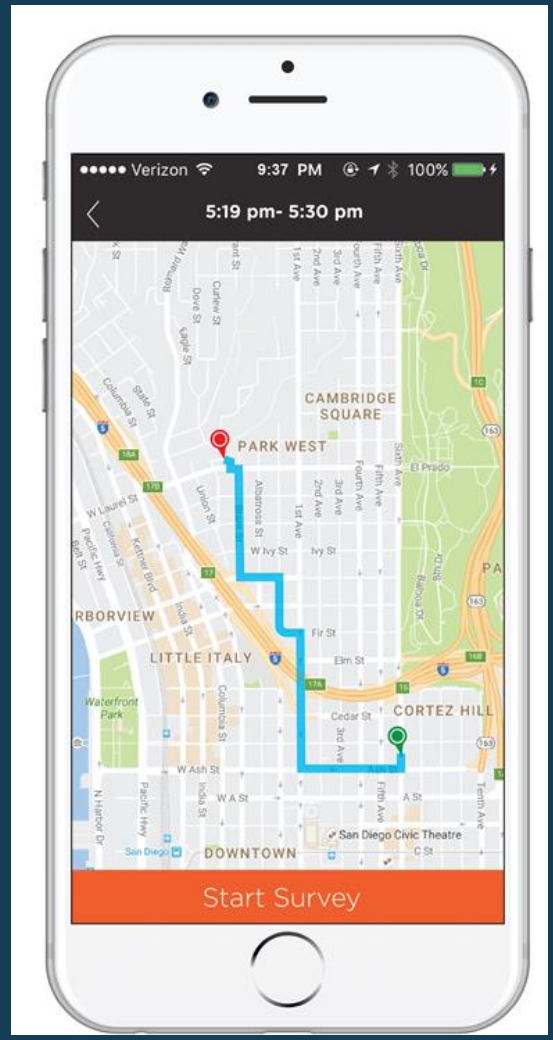
Questionnaire captures comprehensive household, demographic, and travel data over the course of a week

Participants see 3 types of surveys in rMove

1. **Signup survey** upon activating the app (basic HH composition)

2. **Trip surveys** after each trip
   e.g., “How did you travel to this destination?”

3. **Daily ‘end-of-day’ surveys**, covering a unique topic each day.
   Topics include: employment, school, typical travel, land use, personal vehicles, and more.



RSG the science of insight

rMove

TNC (and new mobility) related survey questions include:

Trip-level questions

- **Purpose, mode, travel party size, trip fare cost**, and other 'standard' details.
  - If a shared TNC trip, and occupancy of the shared trip.
- TNC **service type** (UberX, Lyft Shared, etc.)
- **Travel mode substitution**: "If TNC's didn't exist, how would you have made this trip?"
- **Waiting time** for the TNC vehicle to arrive.
- If they **scheduled** the TNC trip in advance.

Person-level questions

- Self-described **frequency of TNC usage**.
  - Also do this for Carshare; Peer-to-peer car rental; Bikeshare; Vanpool; Scooter share; Moped share.
- If they participate in various **'gig economy'** services (e.g., Uber/Lyft driver).
- A stated-preference question on **driverless/autonomous TNCs and impacts to trip costs**.

Recap of the potential uses of this dataset

This study will cover:

- Residents in parts LA and Orange counties (No “visitors”)
- All days of the week during Oct-Nov 2019
- All of that person’s travel behavior, not just TNC trips
- Includes TNC users and non-TNC users

Analysis will allow for:

- Rich socio-demographics for each person
- Rich detail on each day and trip
- Data that is regionally representative
- Comparing TNC and non-TNC travel behaviors
- Use in modeling and non-modeling applications

Bay Area data collection ended in May. San Diego in June. LA/Orange County data collection goes from Oct 1-Nov 15th.

BAY AREA DATA*

SAN DIEGO & LOS ANGELES

- Collect ~10K person-days of travel both SD and LA/Orange
- Continue honing methods
- TNC driver focused data collection effort

COMBINED DATASET

- Weighted dataset for each region, also combinable for the state
  - Est. 8K+ TNC trips
  - Est. 50K+ days of data
  - Est. 200K+ trips
- Reporting, including academic opportunities for analysis

Schedule for the remainder of the project

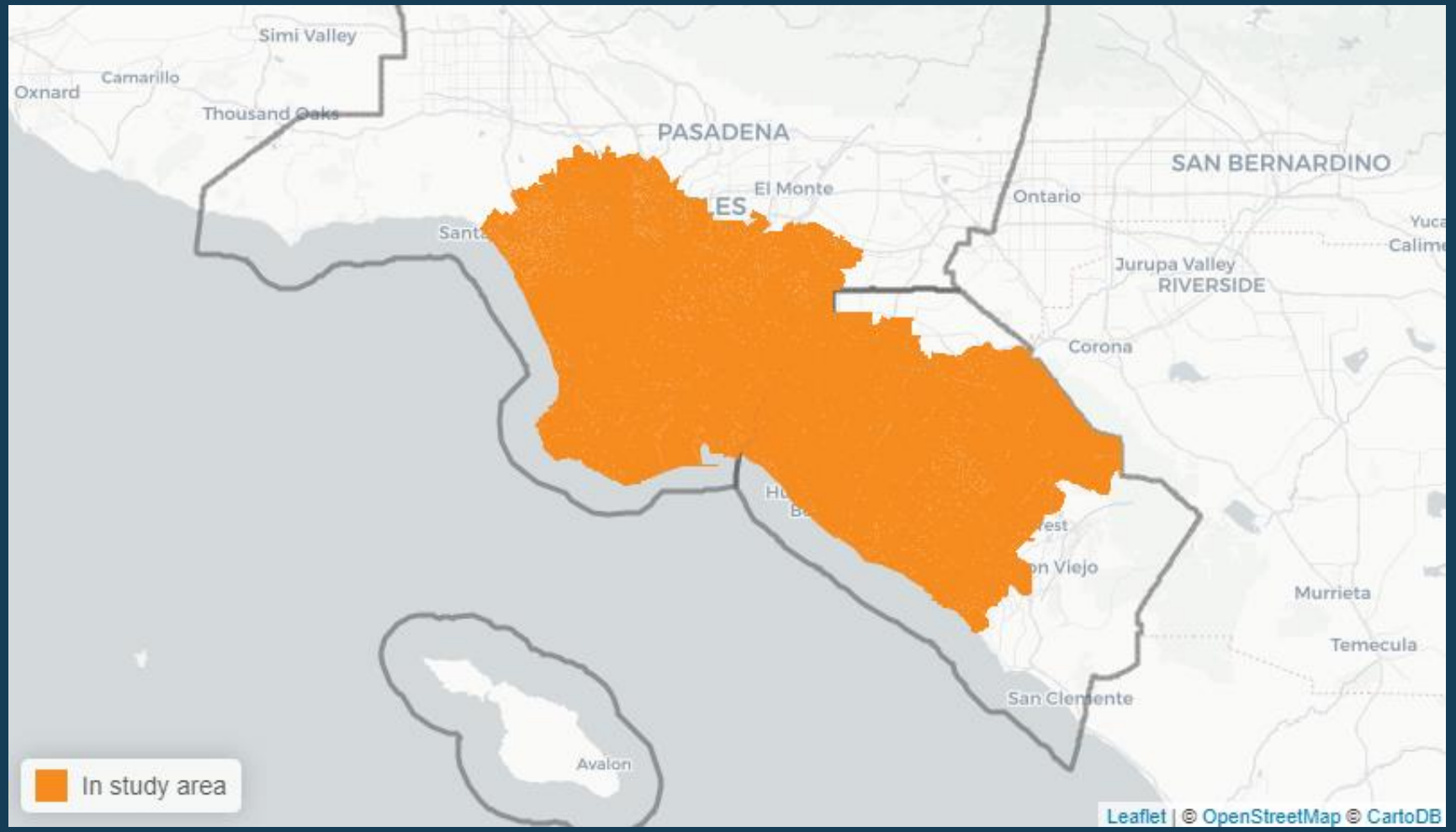
SCAG region survey data collection: Oct 1 – Nov 12th, 2019

Dataset delivery to SCAG: ~January 2020

Reporting and analysis:

- Report for this project (covering all regions) is due Feb/March 2020
- Analysis and reporting will continue beyond this project.

Study Area


Simi Valley
Camarillo
Oxnard
Thousand Oaks
PASADENA
El Monte
SAN BERNARDINO
Ontario
Jurupa Valley
RIVERSIDE
Corona
Murrieta
Temecula
San Clemente
Avalon
In study area
Leaflet | © OpenStreetMap © CartoDB

Thank you

Marco Anderson
anderson@scag.ca.gov

www.scag.ca.gov

INNOVATING FOR A BETTER TOMORROW

MEMO

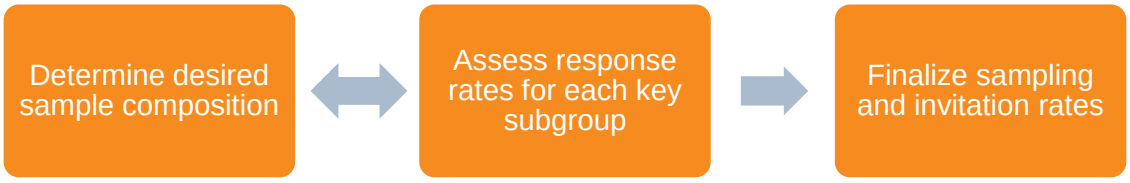
TO: SCAG
FROM: RSG
CC: MTC, SANDAG, Caltrans
DATE: August 30, 2019
SUBJECT: **SCAG SB1-TNC Survey sampling**

Introduction

This memo describes the sample plan development process for the SCAG region for the TNC passenger survey as part of the SB1-funded TNC survey project.

The overall sample plan development process is displayed in Figure 1. After determining the desired sample composition of 10,000 travel days from within selected areas in Los Angeles and Orange Counties, there was an iterative process to determine the response rates for key segments and subgroups before finalizing the number of invited households/persons required to meet those sample targets. In this case, the primary considerations are maximizing the number of TNC trips and capturing more transit users from within the sampling area.

FIGURE 1: BASIC STEPS TO DETERMINE THE SAMPLING PLAN



Sample size targets and desired dataset composition

Total Sample Size

This study is using a person-day based sample target, with a goal of 10,000 or more complete travel days coming from “valid persons,” meaning those who live within the study boundaries in Los Angeles and Orange counties who provide sufficient demographic information to be considered for the data weighting process. (A ‘complete travel day’ has complete surveys for that entire day, including all trip surveys and the daily/end-of-day survey.) This target comes from the project’s scope of work. SCAG has stated that their primary objective of this study is to better understand TNC travel behavior, and in particular, it’s relationship with transit. These factors push for a sample

distribution different from traditional 'population proportional' sampling approaches. As described later, this sample plan is very aggressive in sampling certain parts of Los Angeles and Orange Counties, while leaving some parts of Los Angeles and Orange Counties with less sample (and some parts not sampled at all), in order to optimize our understanding of TNC travel behavior and transit.

The Sample Frame and Study Region

The sample frame for this survey is the list of all households within the study boundary, which covers portions of Los Angeles and Orange Counties in California.

The study area for this boundary started as a custom geography provided by SCAG that contained SCAG's high-quality transit areas (HQTAs), which was further adjusted/aligned with Census PUMAs (which are themselves aligned to Census tracts) to facilitate the sampling and data weighting processes later on. The Channel Islands and unpopulated coastal block groups within those PUMAs were removed from the study area. Figure 2 and Appendix 1 show a map of the study area.

The final study area contains more than half of block groups (57.0%) and households (54.9%) in Los Angeles County and more than three-fourths of block groups (80.0%) and households (79.9%) in Orange County.

Address based sample (ABS) frame and general approach

RSG will use address-based sampling (ABS) to select households for participation. ABS involves drawing a random sample of addresses from all residential addresses in that area. Using this method, all households within each defined sample stratum or segment have an equal chance of selection for the sample. Once the sample plan is finalized, RSG will purchase household mailing addresses from Marketing Systems Group (MSG), which maintains the Computer Delivery Sequence file from the U.S. Postal Service (USPS). ABS frames are considered the highest quality and most comprehensive sample frames for this type of survey project.

RSG plans to stratify the sample using Census block group (BG) data from the 2013–2017 American Community Survey (ACS). The most detailed way to stratify the sample is to use Census BGs, which are the smallest geography for which most Census and ACS tables are publicly available. Each BG generally contains between 600 and 3,000 people. According to this ACS data, the study region contains 2,627,195 households and 7,959,048 persons of all ages.

Even though this is a *person-based* study (and really, an *adult-based* study) and the sample frame is the list of all *households* in the region, this sampling and study approach will allow for broad, representative, and probability-based participation. In practice, roughly 90% of the invited households will be addressed to a specific adult residing at that address. The response rate for "named" invitations is generally much higher (nearly double) than for unnamed invitations, helping to reduce sampling costs and decreasing nonresponse bias. The 10% of invitations for which the sample provider is not able to

append an individual's name are addressed to "[Postal City] Resident" (e.g., "Los Angeles Resident"). The study design allows multiple adults per household to participate, with each adult's data counting towards the sample targets and TNC trip quotas. Additionally, recently published figures from the ACS suggest around 90% of adults in this area own smartphones, which is a requirement to participant in this study.

Because ABS is a type of probability sampling, it comes with a rigorous statistical framework that supports drawing inferences when using the dataset. This means the results can be generalized to represent the entire study region by way of a data weighting and expansion process, a topic beyond the scope of this memo.

Conversely, ABS is limited to residents of the region, and does not capture the travel behavior of visitors to the study region or those living in group quarters in the region. Groups quarters residents are typically 1-2% of a region's population (this includes college students residing in dormitories). TNCs are believed to be commonly used by visitors to a region, so this is a limitation of this approach, however ABS is a very reliable, high-quality sample frame overall.

Sample Stratification

Stratification of the ABS

Based on the study's strong interest in TNC users, the sample plan is designed to oversample areas expected to have higher shares of residents who use TNCs. The stratification below focuses on the interaction of areas where more residents are expected to use TNCs with areas where the residents live close to transit (HTQAs).

The high-quality transit areas make up nearly two-thirds of the study area. Overall, 65.8% of block groups and households in the study area are also in the HQTA. In Los Angeles County, 72.8% of block groups in the study area are in the HQTA, while 74.1 % of households are in the HQTA. In Orange County, 51.6% of study area block groups and 46.6% of households are in the HQTA.

To geographically oversample for TNC users, RSG applied a model based on the 2016-17 San Diego Regional Transportation Survey data that predicts which BGs contain the residents with the most TNC activity. This model has successfully been applied elsewhere in California for the Bay Area TNC Survey in 2018-19 and the SB1 SANDAG Survey in 2019. The model uses ACS data to predict the average TNC trips per household that will be reported by survey respondents in each BG (and assuming a one-week rMove household travel study). The model predicts where TNC users *live*, rather than where they take TNC trips. The SCAG study gets the additional benefit of being able to use partially updated figures for the expected TNC trips per day from the SANDAG TNC survey conducted in June 2019.

The resulting TNC trip estimates were then split into four strata, based upon the expected intensity of TNC use. Overall, 1,328 block groups and 32.5% of all households fell into one of the TNC oversample strata. The "High" block groups have an estimated

0.6 TNC trips per household per week or more, the “Medium” block groups between 0.4 and 0.6 TNC trips per household per week, the “Low” block groups between 0.2 and 0.4 TNC trips per household per week, and the rest of the region is considered “General Population” with very little predicted TNC use per household (but there are many households, so a large share of total TNC trips may happen within this population).

The final sample strata combine the HQTAs and the TNC sampling strata to form eight sampling strata.

TABLE 1 TNC OVERSAMPLE STRATA FOR LOS ANGELES AND ORANGE COUNTIES

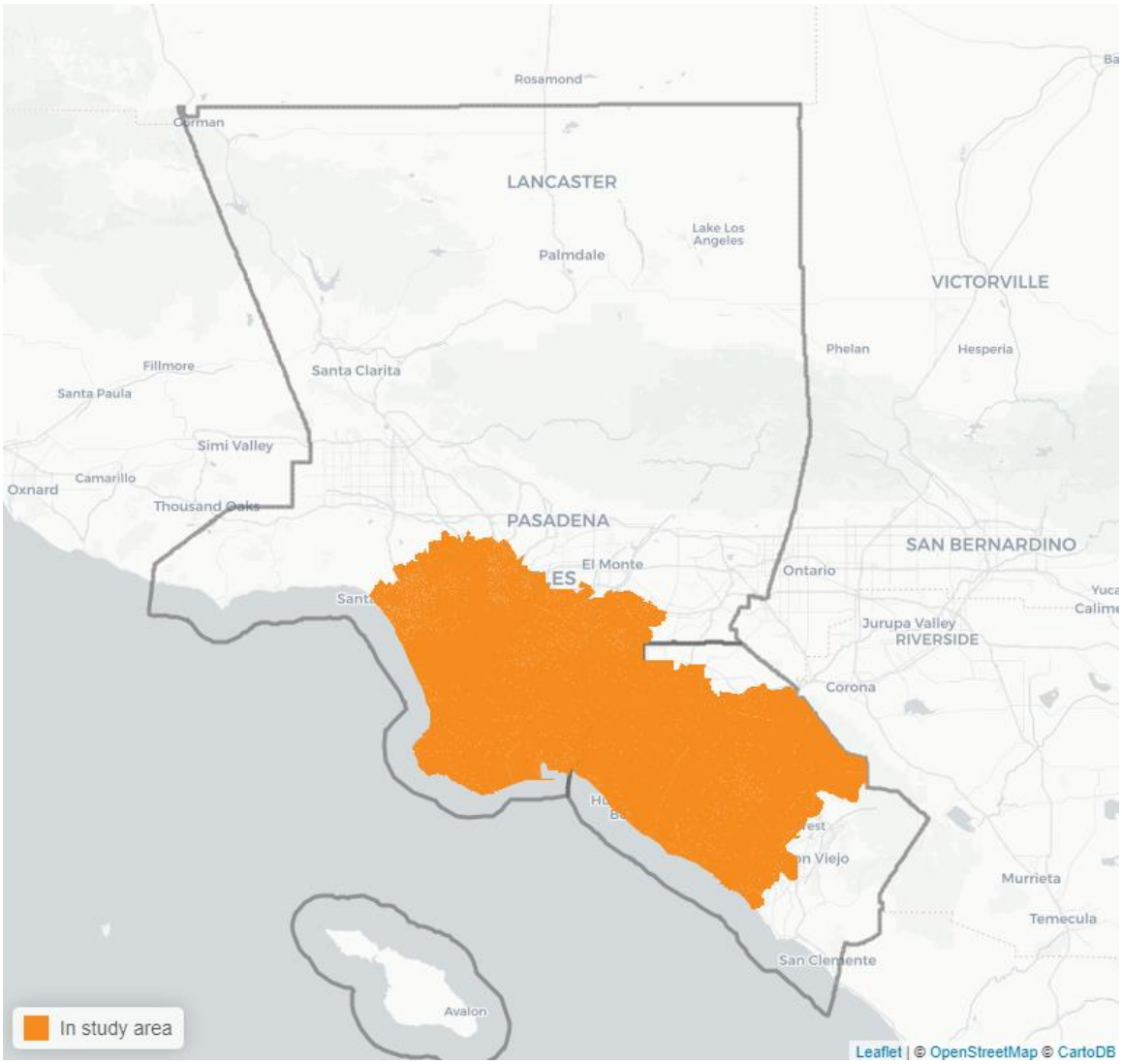
Est. TNC trips per HH per week	Strata description	Number of Block Groups	HHs (2013-17 ACS)	Percent of Total HHs	TNC Trips per HH Day (est.)	TNC Trips per Day, relative to GenPop
0 – 0.2	0-None (GenPop) – not in HQTA	1,417	702,395	26.7%	0.018	1.00
0.2 – 0.4	0.2-Low TNC – not in HQTA	286	168,305	6.4%	0.064	4.10
0.4 – 0.6	0.4-Medium TNC – not in HQTA	44	28,345	1.1%	0.087	7.13
>0.6	0.6-High TNC – not in HQTA	7	5,671	0.2%	0.105	10.63
0 – 0.2	0-None (GenPop) – in HQTA	2,389	1,070,165	40.7%	0.018	1.02
0.2 – 0.4	0.2-Low TNC – in HQTA	631	361,481	13.8%	0.064	4.29
0.4 – 0.6	0.4-Medium TNC – in HQTA	252	194,142	7.4%	0.087	7.15
>0.6	0.6-High TNC – in HQTA	108	96,691	3.7%	0.105	10.61

Among the TNC oversample strata, roughly one-third are “Medium” or “High” TNC use, while the remaining two-thirds are “Low” TNC use. The relative rate of TNC use is shown in the right-hand column of Table 1. The Low TNC strata still has four-times more TNC use than the general population, while the High strata has 10 times the TNC use than the general population. Only about 13% of households in the study region live in “medium” or “high” areas for TNC users.

A snapshot of the separately-provided HTML sample map is shown in Figure 2. Most of the high oversample areas are areas with low vehicle ownership and/or a higher proportion of households earning $200,000 or more, including neighborhoods in downtown Los Angeles, Hollywood, and Santa Monica.

Invitation rates for these strata are covered later in the memo.

FIGURE 2 SNAPSHOT OF THE MAP OF THE STUDY AREA IN LOS ANGELES AND ORANGE COUNTIES



Invitation Rates, Response Rates, and Sample Estimates

With the sample frames stratified, the remainder of the sample plan development process involves estimating the response rates for each segment, determining the number of invitations to meet the sample size targets for each region, and ensuring the resulting costs are within the project budget. RSG's recommended invitation rates are summarized below in **Error! Reference source not found.**.

The sample plan will capture at least 10,000 travel days and should capture more than 700 TNC trips. The number of estimated TNC trips is based upon the results for the San Diego region, assuming this is the most similar region in the rate of TNC activity. RSG has no independent way of knowing the level of TNC activity prior to implementing the survey.

RSG is planning to send 46,555 total invitations. About 50% of invitations will go to Medium or High TNC oversample areas, even though those areas are 12% of households in the region. The other 50% of invitations go to areas with Low or no TNC oversampling. About 86% of invitations will go to households living in HQTAs. This plan is aggressive in oversampling for TNC use and moderately aggressive in oversampling HQTAs (most residents of the study area lives in HQTAs already, not giving as much opportunity for oversampling).

The invitation rates are structured from a low of 0.43% of households being invited in the "Gen Pop non-HQTA" strata, the geography of least interest to this project, to a high of 10.5% of households in the "High TNC oversample - HQTA" strata. Note that two of the eight rows in **Error! Reference source not found.** have an invitation rate of 0.86% and three have an invitation rate of 6.0%. This functionally reduces the sampling strata from eight to five, giving RSG somewhat lower cost in purchasing the address data and greater certainty and flexibility in performing the initial expansion of the survey data.

The current projected budget to implement this plan is $98,000 of direct sampling data, printing, postage, and incentive costs. The SCAG budget for the TNC passenger survey is $99,300, so the entire budget is being used to implement this plan (the small remaining budget will cover incentive costs for going beyond the sample size target). The response rates assumed here are based upon results from the Bay Area and San Diego studies, with only minor assumed variance by strata.

TABLE 2 SAMPLE PLAN INVITATIONS, COMPLETIONS, TRAVEL DAYS, AND TNC TRIPS – ESTIMATED

TNC Oversample Strata Label	Block Groups (BGs)	Number of HHs (ACS 2013-17)	Invite Rate (as % of total HHs)	Invited HHs	Response Rate (est.)	Persons Sampled (est.)	Complete Travel Days (est.)	TNC trips captured, (est.)
0-None – not in HQTA	1,417	702,395	0.43%	3,021	3.70%	112	665	12
0.2-Low – not in HQTA	286	168,305	0.86%	1,448	3.90%	56	336	22
0.4-Medium – not in HQTA	44	28,345	6.00%	1,701	3.90%	66	395	34
0.6-High – not in HQTA	7	5,671	6.00%	341	3.70%	13	75	8
0-None – in HQTA	2,389	1,070,165	0.86%	9,204	3.70%	341	2,026	37
0.2-Low – in HQTA	631	361,481	2.50%	9,038	3.90%	352	2,097	135
0.4-Medium – in HQTA	252	194,142	6.00%	11,649	3.90%	454	2,703	234
0.6-High – in HQTA	108	96,691	10.50%	10,153	3.70%	376	2,235	235
Total	**5,134**	**2,627,195**	**1.8%**	**46,555**	**3.80%**	**1,770**	**10,533**	**716**

TABLE 3 SAMPLE PLAN INVITATIONS, COMPLETIONS, TRAVEL DAYS, AND TNC TRIPS BY COUNTY – ESTIMATED

County	Block Groups (BGs)	Number of HHs (ACS 2013-17)	Invite Rate (as % of total HHs)	Invited HHs	Response Rate (est.)	Persons Sampled (est.)	Complete Travel Days (est.)	TNC trips captured, (est.)
Los Angeles	3,664	1,808,263	2.1%	38,191	3.80%	1,452	8,642	624
Orange	1,470	818,932	1.0%	8,364	3.80%	318	1,891	92
Total	**5,134**	**2,627,195**	**1.8%**	**46,555**	**3.80%**	**1,770**	**10,533**	**716**

Recruitment Approach and Sampling Schedule

At this time, RSG recommends the following sampling and recruitment schedule. RSG may revise this schedule as study planning continues in August. A late September start date is recommended to accommodate university start dates. To stick to this schedule RSG needs the sample plan approved by SCAG by September 13, 2019.

Data collection window:

- RSG will have all data collection systems ready to go by Monday, September 23rd, 2019. RSG will plan to allow new participants to begin the study until Monday, November 5th. Participants recruiting that day will have a travel period from November 6th to November 12th, with November 19th as the final day to answer any survey questions.

- Should the project be ahead of schedule in collecting a sufficient number of persons and travel days, RSG will close down the study recruitment period at an appropriate time to ensure all sample targets are met while not exceeding the sampling and recruitment budget.

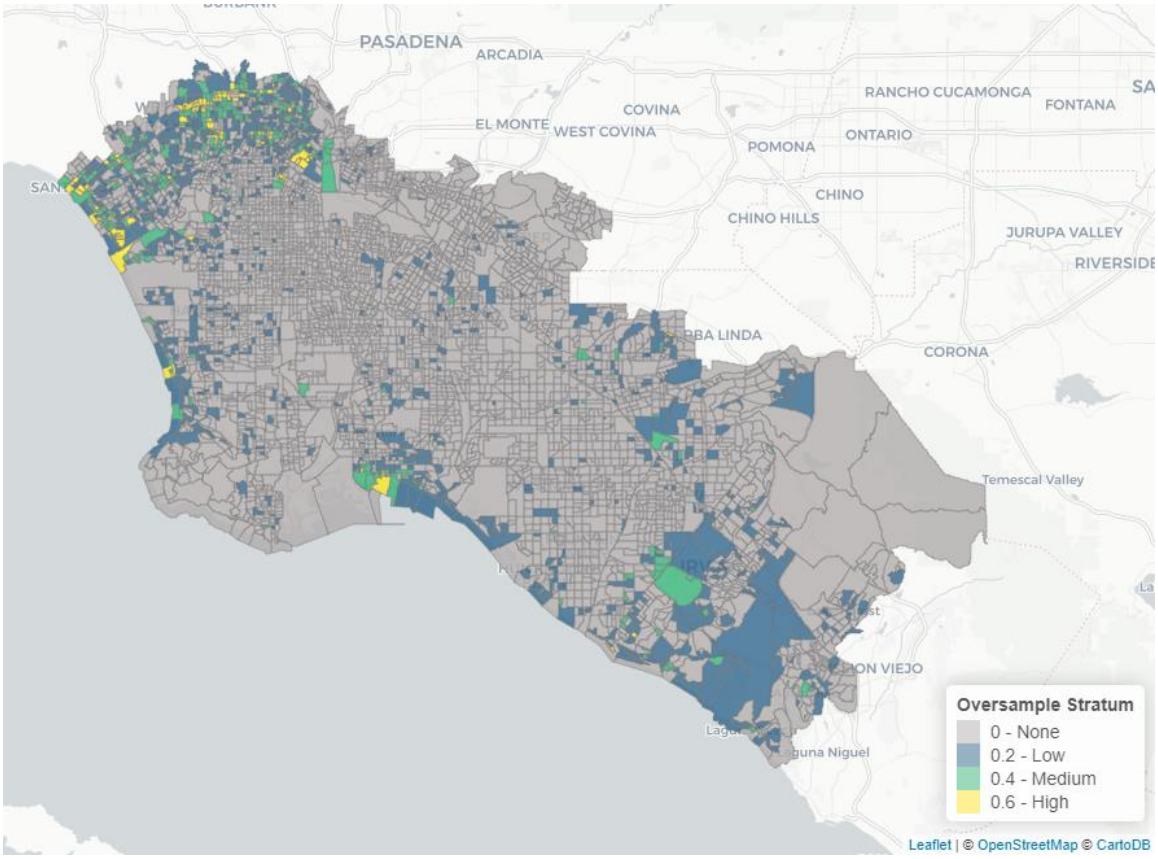
Invitation schedule:

- A single letter/FAQ maildrop will occur during the week of September 30th. The reminder postcard will be mailed one week later during the week of October 7th. RSG is currently planning for the maildrop on Tuesday of each week, and both pieces of mail will likely begin to be delivered 2-4 days after (e.g., Thursday - Saturday). Participants will have roughly 32 days to recruit until Monday November 5th, which RSG's experience suggests will be a sufficient time period.

Incentive approach:

- All invited participants will be offered $25 per person electronic gift card incentives from Amazon and Starbucks. To receive the gift card, participants are told they must complete all surveys for their travel week in rMove (in reality, RSG provides gift cards based upon a slightly lower completion threshold to avoid user support issues).

    - The MTC region survey primarily used $15 incentives and conducted a random A/B test in February 2019 for $15, $20, and $25 incentive amounts. The results for each incentive amount were fairly close in terms of cost-effectiveness, with $15 coming out slightly better. For a number of reasons, the SANDAG survey in June 2019 used a $25 per person incentive, which, in hindsight, was viewed as very cost-effective at increasing the response rate. Given the evidence available at this time (which is imperfect), RSG recommends a $25 incentive for the SCAG study as the most cost-effective option for achieving the sample targets.

APPENDIX A. TNC OVERSAMPLE MAP

An interactive HTML map of the TNC oversample areas has been provided separately. This map contains the block groups that will be sampled for this study.