Appendix A: Site Selection & Development of Place Types

Following the guidance of our last Technical Advisory Committee call on May 25th, 2017, we analyzed the place types of affordable housing developments across California for the purposes of our site selection. Below is a summary of place type categories, the analysis of CA affordable housing developments using two place type categories, a proposed site selection strategy, and concluding with a proposed list of sites for this study and next steps. Based on the analysis, we recommend a mix of Alameda, Contra Costa, and Santa Clara county sites to adequately capture the range of place types where affordable housing is located in TOD and non-TOD areas, with the addition of a couple of sites in Sacramento County, pending ARB's ability to collect data there.

Background on Place Type Analysis

A number of transportation studies have begun to categorize places based on features of their built environment into "place types." One early iteration of these place types was developed by the Center for Transit Oriented Development's to guide MTC's investments in station area planning in 2007. These types were focused on transit neighborhoods only, and were divided into 7 categories based on a place's land use mix, densities, transit service, and provided a set of development guidelines for each place type. In 2013, Deborah Salon developed a series of neighborhood place types for her ARB-funded study "Quantifying the Effects of Local Government Action on VMT." Salon used a variety of data to characterize a census tract's density, job access, restaurant access, road density, transit access, and characteristics of the housing stock. She combined this data into 8 neighborhood types, as summarized in Table 1.

Table 1 Neighborhood Types as Classified by Salon (2013)

Urban Low Transit Use (n=1759)	Good accessibility, low vacancy, middle-aged housing stock (San Jose, Orange County, San Diego, LA outside downtown area)
Suburb With Multifamily Housing (n=1777)	Average on most indicators for the state, low single-family homes and low housing values
Central City Urban (n=82)	Very high density, excellent accessibility, high public transit access, low single-family homes, older high-value housing stock (mostly downtown SF)
Rural (n=626)	Very low access, high vacancy, high newer single-family homes with lower housing values (mainly outside population centers of any kind)
Suburb With Single-Family Homes (n=1701)	Low density and accessibility, low vacancy, high newer single-family homes and high housing values

| Urban High Transit Use (n=712)	High density, good accessibility, high public transit access, low single-family homes, middle-aged and older housing stock (downtown LA, Berkeley, Oakland, San Francisco outside downtown area):
Rural-In-Urban (n=312)	These tracts have slightly better accessibility than the truly "rural" tracts, and are more likely to have multifamily housing (select tracts within urbanized areas that had been classified as "Rural")
Preserved Land (n=42)	Preserved Land

For the purposes of the study, "Affordable Housing Trip Generation Strategies and Rates," funded by Caltrans, Kelly Clifton and team sought to capture the location efficiency of Census Block Groups, or the fit between the physical environment and transportation system. Based on the analysis of four community design measures (population, job and intersection density and % single family homes) and 2 regional accessibility measures (% jobs within access of fixed transit, # jobs within 35 min car travel) they developed 5 place types as described in Figure 1.
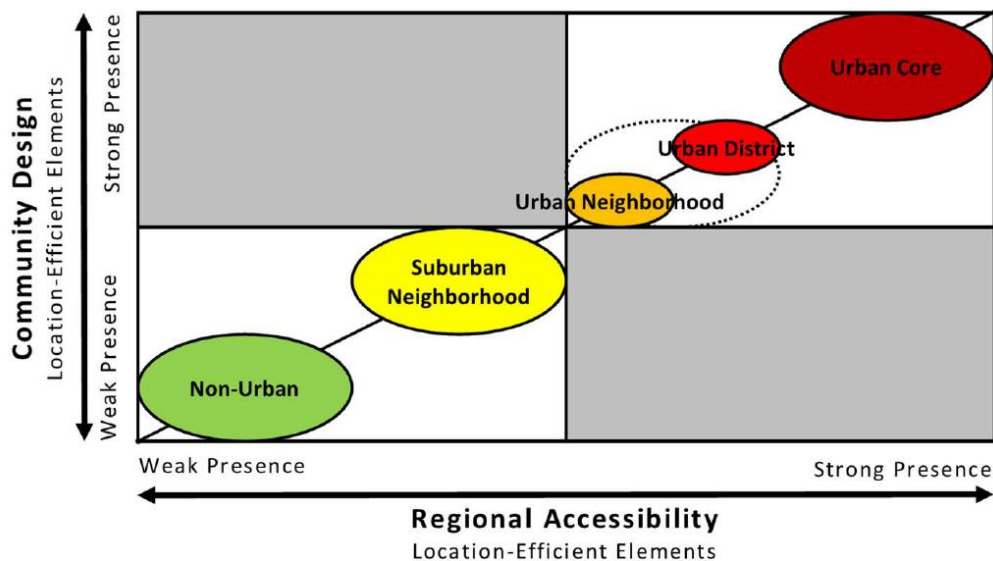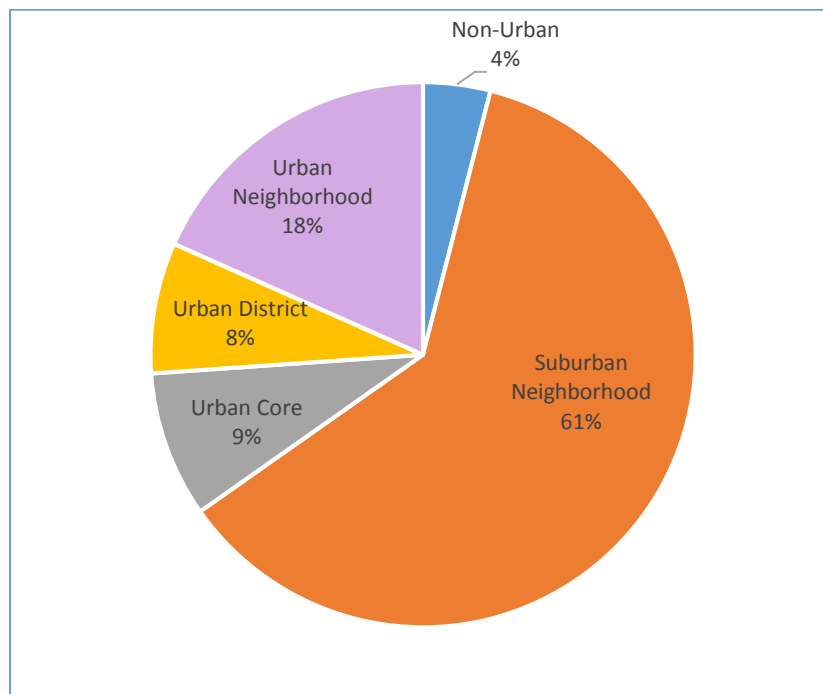

Figure 1 Place Typology by Clifton (2016)

Subsidized Housing in California by Place Type

When analyzing the 5,844 subsidized housing developments aggregated for the purposes of this project against the Salon and Clifton place types, we find that the majority of subsidized units are located in suburban areas, approximately 10 % are in high density, central city (urban core) areas, whereas another ~30% are in moderate accessibility neighborhoods (Figures 2 and 3). Tables 2 and 3 summarize the distribution of subsidized housing developments by place type, county and proximity to high quality transit (labeled TOD if less than ½ mile and non-TOD if more than ½ mile from high quality transit as defined by the current AHSC program guidelines).
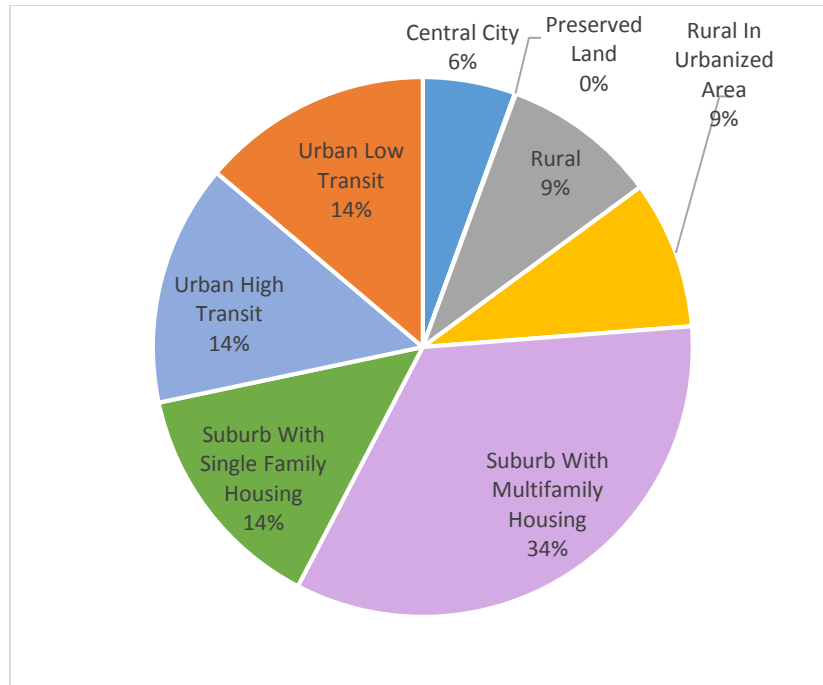
Figure 2 Distribution of California Subsidized Units by Salon (2013) Place Types

Figure 3 Distribution of California Subsidized Units by Clifton (2016) Place Types

Table 2 Subsidized Developments by County, Proximity to Transit, and Salon (2013) Place Type

Place type	Statewide Total	TOD	non-TOD	Alameda Total	TOD	non-TOD	Contra Costa Total	TOD	non-TOD	Santa Clara Total	TOD	non-TOD	Los Angeles Total	TOD	non-TOD	Sacramento Total	TOD	non-TOD
Central City	25,615 (6%)	26%	0%	2,715 (11%)	33%	-	-	-	-	473 (1%)	5%	-	3,254 (3%)	8%	0%	440 (2%)	10%	0%
Preserved Land	320 (0%)	-	1%	-	-	-	-	-	-	-	-	-	150 (0%)	-	0%	-	-	-
Rural	42,943 (9%)	0%	12%	421 (2%)	1%	2%	591 (4%)		5%	44 (0%)	-	0%	1,087 (1%)	0%	1%	1,203 (5%)	2%	5%
Rural In Urbanized Area	40,982 (9%)	3%	10%	1,039 (4%)	2%	5%	454 (3%)	3%	3%	509 (2%)	4%	1%	2,312 (2%)	1%	3%	1,201 (5%)	6%	5%
Suburb With Multifamily Housing	156,590 (34%)	17%	38%	6,700 (28%)	21%	31%	9,951 (66%)	83%	63%	15,493 (49%)	41%	53%	30,872 (28%)	10%	38%	12,666 (50%)	41%	51%
Suburb With Single Family Housing	64,841 (14%)	2%	17%	3,090 (13%)	3%	18%	3,335 (22%)	7%	25%	4,375 (14%)	15%	14%	2,531 (2%)	1%	3%	7,488 (29%)	4%	33%
Urban High Transit	66,898 (14%)	36%	9%	9,055 (37%)	36%	38%	693 (5%)	7%	4%	1,611 (5%)	14%	1%	39,878 (36%)	57%	24%	1,370 (5%)	26%	2%
Urban Low Transit	6,3922 (14%)	15%	14%	1,209 (5%)	3%	6%	100 (1%)		1%	9,029 (29%)	22%	32%	31,234 (28%)	23%	31%	1,194 (5%)	12%	4%
Total units				24,229	8,216	16,013	15,124	2,118	13,006	31,534	9,368	22,166	111,318	39,772	71,546	25,562	3,496	22,067
"Non-targeted" Buildings over 50 units					32	85		11	68		41	110					12	107

Place type	Statewide Total	TOD	non-TOD	Alameda Total	TOD	non-TOD	Contra Costa Total	TOD	non-TOD	Santa Clara Total	TOD	non-TOD	Los Angeles Total	TOD	non-TOD	Sacramento Total	TOD	non-TOD
Non-Urban	18,240 (4%)		5%	147 (1%)	-	1%	-	-	-	135 (0%)	-	1%	354 (0%)	-	1%	502 (2%)	-	3%
Suburban Neighborhood	283,070 (61%)	12%	74%	11,203 (46%)	7%	66%	13,426 (89%)	29%	99%	19,921 (63%)	35%	75%	29,663 (27%)	7%	38%	21,886 (86%)	35%	94%
Urban Core	40,024 (9%)	41%	0%	2,466 (11%)	31%	-		-	-	381 (1%)	4%	-	20,567 (18%)	50%	1%	343 (1%)	10%	-
Urban District	35,885 (8%)	22%	4%	2,491 (10%)	19%	6%	151 (1%)	2%	1%	1,776 (6%)	12%	3%	20,394 (18%)	27%	13%	1,362 (5%)	29%	2%
Urban Neighborhood	84,712 (18%)	24%	17%	7,822 (32%)	43%	27%	1,547 (10%)	69%	1%	9,321 (30%)	48%	22%	40,340 (36%)	15%	48%	1,369 (5%)	26%	2%
Total units				24,229	8,216	16,013	15,124	2,118	13,006	31,534	9,368	22,166	111,318	39,772	71,546	25,562	3,496	22,067
"Non-targeted" Buildings over 50 units					32	85		11	68		41	110					12	107

Proposed Sampling Strategy

Based on these findings, we recommend an initial stratification of our site selection by the Clifton place types, proportional to the statewide distribution with a mixture of Santa Clara, Alameda and Contra Costa counties. We recommend including Alameda county, as Santa Clara and Contra Costa counties contain few eligible TOD sites (> 50 units and non-targeted) in urban core neighborhoods, which are prevalent statewide.

Table 4 Stratified Sampling Proposal

	Santa Clara		Alameda / Contra Costa		Sacramento	
	TOD	non-TOD	TOD	non-TOD	TOD	non-TOD
Suburban	1	4		2	1	2
Urban Core			3			
Urban District	1		1			
Urban Neighborhood	1	2	2	1	1	

Based on sampling strategy, and excluding small (<50 units) and targeted properties, we have identified the list of potential sites summarized in Table 5.

Next steps

We invite our TAC members to please provide us with feedback on this strategy and proposed list by next Wednesday (7/19). Following approval we will begin to reach out to each site to determine their willingness to participate in the study. If members of the TAC have a relationship with any of sites and can assist in their recruitment, please let us know. If sites are unwilling to participate, we will continue down our randomized list, which is sorted by place type, until we find a property that is willing to participate. It is important to note, however, that all of the eligible "urban core" sites are currently on our list, as many of the sites in Alameda and Santa Clara are either too small or are targeted to seniors or at risk population. Therefore, if we are unable to recruit these three sites, we may need to substitute with a property in either a different place type or different county (i.e. San Francisco).

Table 5 Proposed Sites for Data Collection

Property Name	City	Units with Assistance	Management Company	< 1/2 mi HQT?	PDX Place Type
Blossom River	San Jose	143	The John Stewart Company (TJSC)	Y	Urban Neighborhood
Riverwood Grove	Santa Clara	70	MidPen	Y	Urban District
Almaden Family Apartments	San Jose	224	ConAm Management	Y	Suburban
Story Plaza	San Jose	129	EAH	N	Suburban
Villa Solera	San Jose	99	CA Real Estate Management	N	Suburban
Opportunity Center of the Midpeninsula	Palo Alto	88	Charities Housing	N	Urban Neighborhood
Don De Dios	San Jose	67	EAH	N	Suburban
Wheeler Manor	Gilroy	109	South County Property Mgmt	N	Suburban
Summer Breeze aka Fallen Leaves	San Jose	159	FPI Management	N	Urban Neighborhood
Belmont	Pittsburg	219	Fairfield Properties, LP	N	Suburban
Baycliff	Richmond	340	Fairfield Properties, LP	N	Suburban
Keller Plaza	Oakland	167	Christian Church Homes	N	Urban Neighborhood
Uptown	Oakland	135	Forest City Residential Mgmt	Y	Urban Core
Fox Courts	Oakland	79	TJSC	Y	Urban Core
Frank G. Mar	Oakland	119	EBALDC	Y	Urban District
Mandela Gateway	Oakland	166	TJSC	Y	Urban Neighborhood
Copperstone Village I	Sacramento	102	USA Multifamily Management Inc	Y	Suburban
Olive Wood	Sacramento	67	TJSC	Y	Urban Neighborhood
Greenbriar	Sacramento	136	VOA Northern CA	N	Suburban
Rancho Cordova	Rancho Cordova	91	US Residential Group LLC	N	Suburban
Oxford Plaza	Berkeley	96	TJSC	Y	Urban Core
Lakeside	Concord	122	TJSC	Y	Urban Neighborhood

	Comment	Response
	Summary of comments and responses to TAC feedback on the Site Selection and Place Type Analysis Memo (7/26/17)	
1	I would strongly recommend that you develop some kind of parity between the place-type terminologies that you use with what is circulating in the literature. Please provide some context or comparable terms of the specific dynamics, rather than just type name.	We will add more context on the place type designation in reports. In the meantime, we have added the Caltrans Smart Mobility Framework type equivalent to the potential site list.
2	Will questions and data about parking be included in the study?	Yes, we will be asking questions about parking to both the site managers as well as the participants
3	In buildings that have both market rate and BMR units, how will the study target the low-income households only? This applies to the Uptown site (and maybe others).	Good point. If mixed income developments don't separate out subsidized units by floor or building, it will be too challenging to recruit from those sites. I called the Uptown and the manager says the units are scattered throughout. I think targeting at such sites, which could reveal potentially private information like a tenant's income, would violate our IRB requirements, so we are removing the Uptown from our potential site list. This leaves us with only 2 urban core sites in our list, meaning we will need to recruit from either SF or LA sites, as the vast majority of urban core, non-targeted developments are in those two counties. We are exploring the potential to sample from LA sites with ARB.
4	Despite describing the Clifton work, the definitions of the different types of neighborhoods is not at all transparent to me. The vertical axis on the diagram is confusing. What does it mean?	We will add more explanation into subsequent report drafts. In short, the typology developed by Clifton et al. combines built environment indicators (job, residential and intersection density, % single family homes) which capture a neighborhood's community design characteristics and regional accessibility measures (proportion of jobs within 0.5 miles of fixed rail transit, and number of jobs within 45 min auto commute) all at the block group level.
5	Are there really no urban core projects in San Jose?	There are two urban core sites in San Jose, but they are both senior apartments.
6	Are you going to contact the developers as well as the management company?	Yes. We will be contacting both for recruitment and will be surveying the property manager as well.
7	I assume you've gone through the human subjects clearance process by now on the research, is that right?	Yes, we received approval in the spring.
8	Why 2 Oakland Urban Core sites, but none in SF?	During a previous TAC call we discussed the un-representativeness of SF sites in relationship to the rest of the state and had decided not to sample from SF. Given the lack of urban core sites, however, we will need to consider sampling in either SF or LA.
9	It would be desirable to include more than 2 mixed income developments … most are 100% AH	See response 3 above – we do not believe it will be feasible to survey low-income residents only in mixed-income developments. In addition, we would not expect the travel patterns of low income residents of 100%

Summary of comments and responses to TAC feedback on the Site Selection and Place Type Analysis Memo (7/26/17)		
		affordable units to be different from those in mixed-income developments unless there are other systematic differences between the populations in such developments.
10	The environment for the Lakeside development is not pedestrian friendly for access to the BART station, and other transit likely not high quality… so while it met distance and transit criteria, it may not be a desirable example (see below)	We have replace Lakeside with another "urban neighborhood" development that is proximate to high quality transit.
11	It will be important to survey about transit passes and other TDMs available at each site	We have included these questions in both the building manager survey and the participant survey
12	As you are likely aware, several of the developments (Keller, Uptown, Mandela, Oxford Plaza) have already participated in surveys by TRANSFORM	Yes, Transform is on our TAC. Cynthia Kroll from ABAG, who is also on our TAC, also noted that they surveyed Fox Courts and Oxford Plaza.

Appendix B: Survey and Focus Group Recruitment Materials

Research on travel patterns at [Insert property name here]

SURVEY & TRAVEL DATA COLLECTION

Administered by:

Study conducted by Professor Karen Chapple at the University of California, Berkeley, Department of City and Regional Planning

Where: [[insert location of community room at affordable housing site]

When: [[insert date]]

Who: Residents of the [[property name]] who are 18+ years old

What: Fill out survey and travel log that asks about travel behavior and health and economic benefits of moving to [[property name]]. Record travel behavior for four days using smartphone application.

A $50 gift card to Walmart, Target, or Safeway will be provided as compensation for participation in the survey, completing a travel log, and collecting GPS travel data for a period of 4 days.

For more information please contact:
Miriam Zuk. (763) 486-7238 or mzuk@berkeley.edu

SURVEY Miriam Zuk. (763) 486-7238 mzuk@berkeley.edu

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Research on the benefits of living near transit
at [Insert property name here]

FOCUS GROUP

Study conducted by Professor Karen Chapple at the University of California, Berkeley, Department of City and Regional Planning

Come share your experiences living in this property and in this neighborhood.

Where: [[insert location of community room at affordable housing site]

When: [[insert date]]

Who: Residents of the [[property name]] who are 18+ years old

What: Focus group to discuss travel behavior changes and health and economic benefits of moving to [[property name]]. The discussion is anticipated to last about one hour.

A $20 gift card to Target, Walmart, or Safeway will be provided for participation in this focus group.

Light refreshments and childcare will be provided.

For more information please contact:

FOCUS GROUP Miriam Zuk, (763) 486-7238 mzuk@berkeley.edu

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Appendix C: Survey and Focus Group Consent Forms
Consent to Participate in Research

Assessing the Travel Demand and Co-Benefit Impacts of Affordable Transit-Oriented Development

Introduction and Purpose:
My name is Miriam Zuk. I am a researcher at the University of California, Berkeley. I would like to invite you to take part in my research study about travel demands of affordable transit-oriented development. The principal investigator of this project is Professor Karen Chapple. This study evaluates the benefits of living in affordable housing near transit.

Procedures:
If you agree to participate, we will ask you to answer questions about your travel patterns, modes of travel, common destinations, employment, income, and other factors. You will also be asked to fill out a travel log for a period of 1 day of everywhere you go and how you got there. In total, filling out the survey and travel log should last a maximum of 1.5 hours. In addition to the travel log and survey, we will ask you to download a GPS app onto your smartphone. The GPS app will collect your location for a period of seven continuous days for the purposes of better understanding information collected in the survey and travel log. You are free not to participate in the study.

Benefits:
There is no direct benefit to you from taking part in this study. It is hoped that the research will help us to better understand the impacts of living in affordable housing near transit on greenhouse gas emissions as well as other benefits. This knowledge will help to better inform future policy and planning efforts locally and at the State regarding the location of affordable housing and access to transportation options.

Risks/Discomforts:
Some of the questions may make you uncomfortable or upset. If you agree to participate in the study and feel uncomfortable at any time, you can decline to answer a question or stop your participation at any point. Your answers and information will be handled as confidentially as possible; however, there is a chance that confidentiality could be compromised.

Confidentiality:
All identifiable information will be either eliminated or, where necessary for future interpretation, will be coded with a key that will be kept in a separate encrypted and locked file on the password-protected computer. Your confidentiality will be maintained in any publication from research results or discussions with persons outside of the research team. Names, addresses, employment information, etc. will not be published or shared with anyone outside of the research team. However, we will save your information in locked files on our computers and will retain the information for 5 years.

Compensation:
To thank you for participating in this study, you will receive a $50 gift card to Safeway, Target, or Walmart. I will deliver it in person to you after you complete the survey, travel log, and the GPS data collection period has ended. If you choose to end your participation early, we will send you a $20 gift card.

Rights:
Participation in this research is completely voluntary. You are free to decline to take part in the project. You can decline to answer any questions and are free to stop taking part in the project at any time. Whether or not you choose to participate in the research and whether or not you choose to answer a question or continue participating in the project, there will be no penalty to you or loss of benefits to which you are otherwise entitled.

Questions:
If you have any questions about this research, please feel free to contact me. I can be reached at 510-643-9103 (office), 763-486-7238 (cell) or by email at mzuk@berkeley.edu. If you have any questions about your rights or treatment as a research participant in this study, please contact the University of California at Berkeley's Committee for Protection of Human Subjects at 510-642-7461, or e-mail subjects@berkeley.edu.

<div align="center">

CONSENT

</div>

You will be given a copy of this consent form to keep for your own records.

If you wish to participate in this study, please sign and date below.

_____

Participant's Name (please print)

_____ _____

Participant's Signature   Date

_____ _____

Researcher's Signature   Date

Consent to Participate in Research

Assessing the Travel Demand and Co-Benefit Impacts of Affordable Transit-Oriented Development

Introduction and Purpose:
My name is Miriam Zuk. I am a researcher at the University of California, Berkeley. I would like to invite you to take part in my research study about travel demands of affordable transit-oriented development. The principal investigator of this project is Professor Karen Chapple. This study evaluates the benefits of living in affordable housing near transit.

Procedures:
If you agree to participate in this focus group, we will be gathering information on your travel patterns and discussing health, economic, and social benefits of living in affordable housing located near transit. The focus group should last approximately one hour. With your permission, I will audiotape and take notes during the focus group. The recording is to accurately record the information you provide, and will be used for transcription purposes only. If you choose not to be audiotaped, I will take notes instead. If you agree to participate, but feel uncomfortable at any time during the focus group you can decline to answer a question. If you don't wish to continue, you can stop your participation in the focus group at any time.

Benefits:
There is no direct benefit to you from taking part in this study. It is hoped that the research will help us to better understand the impacts of living in affordable housing near transit on greenhouse gas emissions as well as other benefits. This knowledge will help to better inform future policy and planning efforts locally and at the State regarding housing and transportation collaboration.

Risks/Discomfort:
Some of the research questions may make you uncomfortable or upset. You are free to decline to answer any questions you don't wish to, or to end your participation in the focus group at any time. As with all research, there is a chance that confidentiality could be compromised; however, we are taking precautions to minimize this risk. Although we will be taking all the precautions possible to maintain your confidentiality for the purposes of this research, there is the risk that other participants in the room will not do the same. We will ask all participants keep the information shared by other participants in the room to themselves. Additionally, audio recordings of the focus groups might introduce the possible risk of voice recognition.

Confidentiality:
Your study data will be handled as confidentially as possible. To minimize the risks to confidentiality, we will encrypt and store all notes in password-protected files on the password-protected computer in my locked office. All identifiable information will be either eliminated or, where necessary for future interpretation, will be coded with a key that will be kept in a separate

encrypted and locked file on the password protected computer. Your confidentiality will be maintained in any publication from research results or discussions with persons outside of the research team. When the research is completed, I may save the focus group notes for use in future research done by myself or Karen Chapple for a 5 year period. The same measures described above will be taken to protect confidentiality of this study data.

Compensation:
To thank you for participating in this study, you will receive a $20 gift card to Safeway, Target, or Walmart. The gift card will be provided to you in person after we complete the focus group.

Rights:
Participation in research is completely voluntary. You are free to decline to take part in the project. You can decline to answer any questions and are free to stop taking part in the project at any time. Whether or not you choose to participate in the research and whether or not you choose to answer a question or continue participating in the project, there will be no penalty to you or loss of benefits to which you are otherwise entitled.

Questions:
If you have any questions about this research, please feel free to contact me. I can be reached at 510-643-9103 (office), 763-486-7238 (cell) or by email at mzuk@berkeley.edu. If you have any questions about your rights or treatment as a research participant in this study, please contact the University of California at Berkeley's Committee for Protection of Human Subjects at 510-642-7461, or e-mail subjects@berkeley.edu.

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CONSENT

</div>

You will be given a copy of this consent form to keep for your own records. If you wish to participate in this study, please sign and date below.

_____
Participant's Name (please print)

_____ _____
Participant's Signature   Date

_____ _____
Researcher's Signature   Date

If you agree, I would like to record our conversation. We will not share this recording with anyone and will only use the recording to check the accuracy of our data and take down any additional information not captured in our notes. You can tell me to stop recording at any time. Would it be okay for me to record our conversation?

_____ Yes   _____ No

Appendix D: Travel Log

Berkeley
UNIVERSITY OF CALIFORNIA

TRAVEL LOG - FILL OUT FOR <u>ONE DAY</u> ONLY

Instructions: Please use this travel log to document each place that you visit during a **single day.** Tip: bring this chart with you during your day and fill it out as you go through your day. OR you can use your E-Mission app to help jog your memory afterwards!

Travel Date:_____/_____/_____

Where did you go?	What did you do?		How did you get there?		
Please provide: ☐ Place/Destination name ☐ Address/Intersection ☐ City	What did you do at this location? (Check all that apply.)	What time did you arrive at your destination?	How did you get to your destination? (Check all that apply.)	How many people (not including you) traveled with you to your destination?	What time did you leave this location?
Where did you start your day at 4:00 AM? Place name: Address/Intersection: City:	☐ Home ☐ Work ☐ Education ☐ Shopping ☐ Meal ☐ Personal/Medical ☐ Social/Recreational ☐ Pick-up/Drop-off ☐ Other:_____	N/A	N/A	N/A	___ : ___ ☐ AM ☐ PM ☐ Did not leave
Where did you go next? Destination name: Address/Intersection: City:	☐ Home ☐ Work ☐ Education ☐ Shopping ☐ Meal ☐ Personal/Medical ☐ Social/Recreational ☐ Pick-up/Drop-off ☐ Other:	___ : ___ ☐ AM ☐ PM ☐ Did not leave	☐ Walk ☐ Bike ☐ Drove alone ☐ Shared ride ☐ Taxi/Uber/Lyft ☐ Bus ☐ Train ☐ Free shuttle ☐ Other:	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5+	___ : ___ ☐ AM ☐ PM ☐ Did not leave

Where did you go?	What did you do?		How did you get there?		
Please provide: ☐ Place/Destination name ☐ Address/Intersection ☐ City	What did you do at this location? (Check all that apply.)	What time did you arrive at your destination?	How did you get to your destination? (Check all that apply.)	How many people (not including you) traveled with you to your destination?	What time did you leave this location?
Where did you go next? Place name: Address/Intersection: City:	☐ Home ☐ Work ☐ Education ☐ Shopping ☐ Meal ☐ Personal/Medical ☐ Social/Recreational ☐ Pick-up/Drop-off ☐ Other:_____	___:___ ☐ AM ☐ PM Did not leave	☐ Walk ☐ Bike ☐ Drove alone ☐ Shared ride ☐ Taxi/Uber/Lyft ☐ Bus ☐ Train ☐ Free shuttle ☐ Other:	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5+	___:___ ☐ AM ☐ PM ☐ Did not leave
Where did you go next? Destination name: Address/Intersection: City:	☐ Home ☐ Work ☐ Education ☐ Shopping ☐ Meal ☐ Personal/Medical ☐ Social/Recreational ☐ Pick-up/Drop-off ☐ Other:	___:___ ☐ AM ☐ PM ☐ Did not leave	☐ Walk ☐ Bike ☐ Drove alone ☐ Shared ride ☐ Taxi/Uber/Lyft ☐ Bus ☐ Train ☐ Free shuttle ☐ Other:	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5+	___:___ ☐ AM ☐ PM ☐ Did not leave

Where did you go?	What did you do?		How did you get there?		
Please provide: ☐ Place/Destination name ☐ Address/Intersection ☐ City	What did you do at this location? (Check all that apply.)	What time did you arrive at your destination?	How did you get to your destination? (Check all that apply.)	How many people (not including you) traveled with you to your destination?	What time did you leave this location?
Where did you go next? Place name: Address/Intersection: City:	☐ Home ☐ Work ☐ Education ☐ Shopping ☐ Meal ☐ Personal/Medical ☐ Social/Recreational ☐ Pick-up/Drop-off ☐ Other:_____	___:___ ☐ AM ☐ PM Did not leave	☐ Walk ☐ Bike ☐ Drove alone ☐ Shared ride ☐ Taxi/Uber/Lyft ☐ Bus ☐ Train ☐ Free shuttle ☐ Other:	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5+	___:___ ☐ AM ☐ PM ☐ Did not leave
Where did you go next? Destination name: Address/Intersection: City:	☐ Home ☐ Work ☐ Education ☐ Shopping ☐ Meal ☐ Personal/Medical ☐ Social/Recreational ☐ Pick-up/Drop-off ☐ Other:	___:___ ☐ AM ☐ PM ☐ Did not leave	☐ Walk ☐ Bike ☐ Drove alone ☐ Shared ride ☐ Taxi/Uber/Lyft ☐ Bus ☐ Train ☐ Free shuttle ☐ Other:	☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5+	___:___ ☐ AM ☐ PM ☐ Did not leave

Appendix E: Description of GPS Application (E-Mission)

Description of GPS Application:

We will use a GPS application developed by K. Shankari, called "E-Mission" to collect individual locational data for a period of four continuous days. The locational data will be used to verify the travel logs filled out by participants and to further analyze travel patterns of residents. The application has been published on Google Play for android phones and on Apple Store for Apple phones. Participants will be able to download the appropriate application for the device that they own, or for the device that is being lent to them. In addition to the consent form signed by the participants, the application will show the consent form for the E-Mission application. While a separate consent form is not required since K. Shankari will not be able to access our participant's data, we feel that applicants should have the opportunity to review the consent form for the application (Figure 1). The app will prompt the participant to decide whether or not to allow the application access to his/her device's locational service (Figure 4). The participant has rights to reject collecting individual locational data by denying the service. The same is true for motion and fitness data and notifications (Figure 2 and 3). The participant will be asked to log-in with a Gmail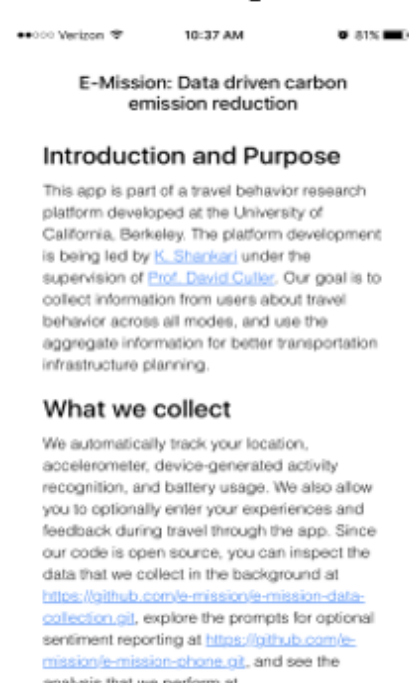 account, but we will generate participant Gmail accounts and passwords so that participants are not using their personal email accounts for this study. Once a participant has downloaded the application, a researcher will assist them in changing the User Interface (UI) to the UI for this study. Once the participant has joined the UI for this study, the locational data for each participant from the individual devices will be automatically transferred to the research team's private, protected server when the participant is connected to Wifi. The data will be encrypted at rest and in motion, and all identifiable data will be eliminated completely or coded, the key to which will be kept in a separate encrypted and password protected file on the password protected computer in the locked office of Karen Chapple. Only Miriam Zuk and Karen Chapple will have access to the passwords to unlock these files. The application will be deleted from the participant's phone at the second meeting with the research team, unless the participant wishes for the application to remain on their phone.

●●○○○ Verizon 🤖 10:37 AM 🔋 81% ▬▬▭

E-Mission: Data driven carbon emission reduction

Introduction and Purpose

This app is part of a travel behavior research platform developed at the University of California, Berkeley. The platform development is being led by K. Shankari under the supervision of Prof. David Culler. Our goal is to collect information from users about travel behavior across all modes, and use the aggregate information for better transportation infrastructure planning.

What we collect

We automatically track your location, accelerometer, device-generated activity recognition, and battery usage. We also allow you to optionally enter your experiences and feedback during travel through the app. Since our code is open source, you can inspect the data that we collect in the background at https://github.com/e-mission/e-mission-data-collection.git, explore the prompts for optional sentiment reporting at https://github.com/e-mission/e-mission-phone.git, and see the analysis that we perform at
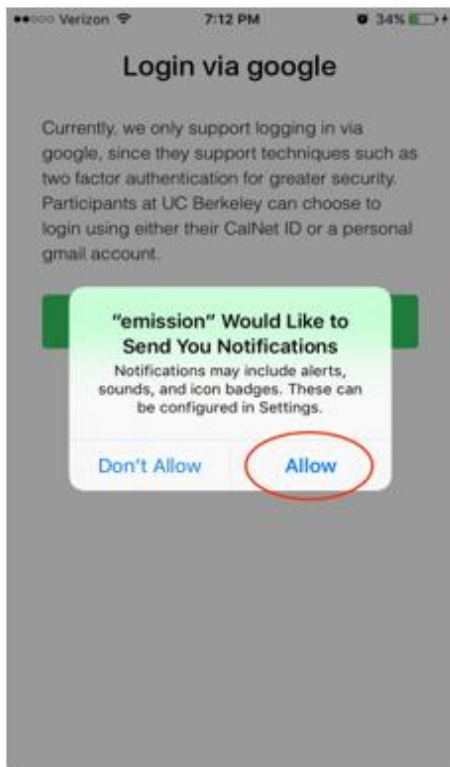
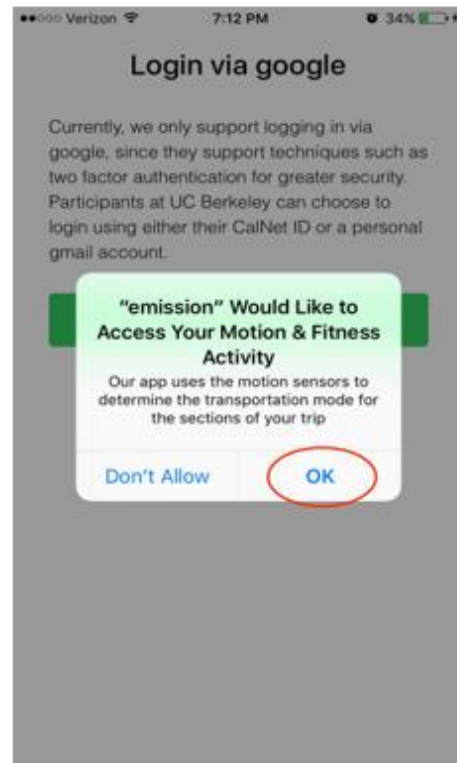*Figure 1: E-Mission Consent*

Figure 3: Notification Permissions

Figure 2: Motion and Fitness Permissions
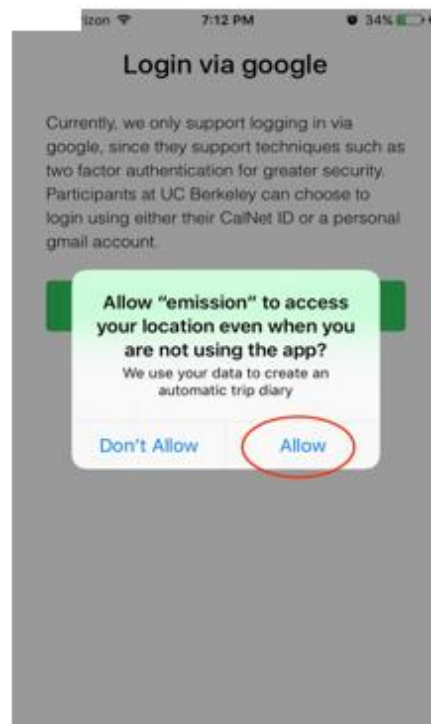
Figure 4: Location Permissions

Appendix F: Survey Instrument

Household Demographic Survey

English (US) ▼

Intro

Thank you for agreeing to participate in our study. We will be asking you a series of questions about your household, your travel behavior, and changes in your travel behavior since moving to this property.

The results of the study will be published, but your answers and information will be maintained completely confidential. Also, please remember that you have the right to refuse to answer any or all of the questions. Do you have any questions about the study or confidentiality before we begin?

Participant ID #

[   ]

What is the name of the property that you live in?

[   ]

Surveyor

[▼]

Household and Housing Unit Information

This first set of questions ask about your housing history and your current housing unit.

First, we are going to talk about your current housing unit. What year did you move into your current unit? [For interviewer: enter as 4 digit number in YYYY format]

[   ]

How much do you pay to live in your current unit per month? [For interviewer: Please calculate monthly payments if the respondent does not give the amount per month. Do not enter a dollar sign or commas. If a range is provided, please enter the average in the field.]

[   ]   Amount:

                              Don't pay anything

How many bedrooms is your current unit? I'll read off some options, and please let me know which best describes your current housing unit.

[▼]

Now, we are going to shift to talking about your previous housing unit. Where did you live before you moved into your current unit? Please identify the nearest intersection, city, and state of the building that you lived in:

Street Address or Cross Streets	[ ]
City	[ ]
State	[ ]
Zip-Code	[ ]
Country	[ ]

How much did your household pay to live in that housing unit per month? (rent, mortgage, etc.) [For interviewer: Please calculate monthly payments if the respondent does not give the amount per month. If a range is provided, please enter the average in the field.]

[   ]   Amount:

                              Didn't pay anything:

Did you receive any kind of rental or mortgage assistance in your previous housing unit? I'm going to read off a few options, and please let me know if any of these sound like your previous housing situation.

I received a housing voucher (e.g. Section 8 voucher)

I lived in a subsidized housing unit (e.g. a building owned and operated by an affordable housing developer)

I lived in public housing

I did not receive any rental or mortgage assistance in my previous housing unit

Other:

How many bedrooms was your previous housing unit? [For interviewer: if the previous housing unit was shared with another family/household, only enter the number of bedrooms the respondent's family/household occupied.]

Household Travel Information

This next set of questions ask about some travel patterns for your household as a whole before we start talking about individual household members.

How many motor vehicles are owned, leased, or available for regular use by you and the people who live in your household? We are defining "household" as one or more people living in the same unit, either related or not related to each other. Be sure to include motorcycles, mopeds, and RVs. Please say "0" if your household has no motor vehicles.

0

1

2

3

4

5

6

Do you have access to a parking space at this property?

Yes, I have a parking space at this property.

No, parking is unavailable

How many parking spots do you have access to at this property?

[▼]

Does your household pay for parking at this property?

Yes

No

How much does your household for parking per space per month? [For interviewer: enter as number with no commas or dollar sign]

[   ]

Now I'm going to ask you a few questions that compare your previous home to your current home. How does the location of this property compare with your previous home when traveling to services and other common destinations? I am going to read off a series of services and destinations, and please respond with whether you think these destinations are "easier to reach," "harder to reach," "about the same," or "not applicable" for your household.

	Easier to reach	Harder to reach	About the same	N/A
Employment services & training	○	○	○	○
Groceries	○	○	○	○
Medical care	○	○	○	○
Library	○	○	○	○
Parks, recreation, and open space	○	○	○	○
Entertainment (theater, cafe)	○	○	○	○
Place of worship	○	○	○	○

	Easier to reach	Harder to reach	About the same	N/A
Childcare (if there are no children in the household, mark N/A)	○	○	○	○
Children's schools (if there are no children in the household, mark N/A)	○	○	○	○
After-school activities (if there are no children in the household, mark N/A)	○	○	○	○
Family members' homes (e.g., sister or brother's home, mother or father's home, childrens' homes)	○	○	○	○
Friends' homes	○	○	○	○
Other: _____	○	○	○	○

Are travel costs for you and your family different living at this property than they were in your previous housing unit? We are defining travel costs as any expenses you have from being temporarily away from home to get to work, school, do errands, visit the doctor, visit friends, or any other personal reasons. Travel costs could include gas money, money you spend on a bus or train ticket, money for a shuttle, etc. I'll read some options, and please let me know which you think best describes any changes in your travel costs.

Travel costs have increased since moving to this property

Travel costs have decreased since moving to this property

Travel costs have not changed since moving to this property

I don't know

Why have travel costs changed since moving to this property?

_____

Respondent Travel Behavior

The next section focuses on understanding your common travel destinations, such as school and/or work, and your common modes of transportation to and from these places.

To help us understand your travel patterns, first I will ask you about your employment status. Are you employed full-time, part-time, or not employed?

Employed full-time

Employed part-time

Not currently employed

Retired

Do you have more than one job?

Yes

No

How many jobs do you have? [For interviewer: please enter as a number]

How many jobs do you have? [For interviewer: please enter as a number]

In a typical week for work, do you:

Work at home

Work at the same location each day of work

Split your time between more than one location, depending on the day of work (e.g. one place per day, work at one location Mon/Wed/Fri and another location Tues/Thurs)

Travel between multiple locations during the workday (e.g. housekeeping, landscaping, etc.)

Now I am going to read to you a set of common ways that people get to and from work, and I'd like you to tell me how often you use each method of travel to and from work. Please answer with "daily," "a few times a week," "a few times a month," "a few times a year," or "never."

	Daily	A few times a week	A few times a month	A few times a year	Never
Walk	O	O	O	O	O
Bike	O	O	O	O	O

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	Daily	A few times a week	A few times a month	A few times a year	Never
Drive alone in personal vehicle (Car/Truck/SUV)	O	O	O	O	O
Carpool/ Shared ride	O	O	O	O	O
Taxi service or ride share such as Uber or Lyft	O	O	O	O	O
Bus	O	O	O	O	O
Train/Subway	O	O	O	O	O
Paratransit	O	O	O	O	O
Other _____	O	O	O	O	O

What is the address or nearest cross streets of the job or business where you work? If you work at more than one location, please share the location at which you work most frequently. Note to interviewer: if the respondent visits many locations in one day, please fill in the below with the address of the most recent place of work the respondent has visited.

Street Address or Cross Streets: _____

City: _____

State: _____

Zip-Code: _____

Country: _____

I'd like you to think back to your commute in your previous home. Do you think it is easier, harder, or is it about the same getting to your job now versus in your previous home? [For interviewer: if this person's job has changed since moving to this property, that is fine]

Easier to reach

Harder to reach

About the same

Now, I will ask you about your student status to continue understand common travel destinations. Are you currently a student?

Yes

No

Now I am going to read to you a set of common ways that people get to and from school, and I'd like you to tell me how often you use each method of travel to get to and from school. Please answer with "daily," "a few times a week," "a few times a month," "a few times a year," or "never."

	Daily	A few times a Week	A few times a month	A few times a year	Never
Walk	○	○	○	○	○
Bike	○	○	○	○	○
Personal Vehicle (Car/Truck/SUV)	○	○	○	○	○
Taxi service or ride share such as uber or lyft	○	○	○	○	○
Bus	○	○	○	○	○
Train/Subway	○	○	○	○	○
Paratransit	○	○	○	○	○
Carpool/ shared ride	○	○	○	○	○
Other:	○	○	○	○	○

What is the address or nearest cross streets of the of the school or college that you attend?

Street Address or Cross Streets:

City:

State:

Zip-Code

I'd like you to think back for a brief moment about the modes of transportation that you used at your previous home. Since moving to this property, do you use certain modes of transportation more or less frequently than you did at your previous home? I am going to read you a few common travel modes, and please tell me if you think you use that mode more, less, or about the same as before.

Do you **bike** to common destinations, such as school, work, errands, etc. more than before, less than before, or about the same as before?

More than before

Less than before

About the same as before

N/A (didn't bike before)

What are the reasons for this change?

[   ]

Do you **walk** to common destinations, such as school, work, errands, etc. more than before, less than before, or about the same as before?

More than before

Less than before

About the same as before

N/A (didn't walk before)

What are the reasons for this change?

[   ]

Do you take the **bus** to common destinations, such as school, work, errands, etc. more than before, less than before, or about the same as before?

More than before

Less than before

About the same as before

N/A (didn't take the bus before)

What are the reasons for this change?

[   ]

Do you take the **train** to common destinations, such as school, work, errands, etc. more than before, less than before, or about the same as before?

    More than before
    Less than before
    About the same as before
    N/A (didn't take the train before)

What are the reasons for this change?

[   ]

Do you take a **private vehicle** to common destinations, such as school, work, errands, etc. more than before, less than before, or about the same as before?

    More than before
    Less than before
    About the same as before
    N/A (didn't drive before)

What are the reasons for this change?

[   ]

Do you **carpool** to common destinations, such as school, work, errands, etc. more than before, less than before, or about the same as before?

    More than before
    Less than before
    About the same as before
    N/A (didn't carpool before)

What are the reasons for this change?

[   ]

Do you receive discounted transit passes through the city/transportation agency? (e.g. discounted transit passes for seniors, students, or disabled persons)

Yes (please describe):

[   ]

No

Do you receive discounted transit passes through work or school?

Yes (please describe):

[   ]

No

Do you receive discounted transit passes as a resident of this property?

Yes

No

Whether or not your have a driver's license, would you meet eligibility requirements for getting a driver's license? (E.g. vision, age, etc.)

Yes

No

Do you have a driver's license?

Yes

No

Person 2

Thank you, that concludes the questions that I have about your travel behavior. Now I would like to ask about additional household members. Is there a second person in the household that lives with you (of any age)?

Yes

No

100

Does this person live with you full-time or for part of the time?

Full-time

[   ]   Part-time (please explain):

What is their relationship to you?

Husband/Wife/Spouse/Partner

Child (your own or others)

Parent or in-law parent

Housemate/roommate

Other relative or non-relative (adult)

How old is this person? [For interviewer: please enter as a number]

Years   [   ]

During a typical workweek, does this person stay under your care or go to daycare? Please exclude school, as we will ask you about school later.

Stay under your care for part of the day

Stay under your care for the full day

Get dropped off at daycare for the full day

Get dropped off at daycare for part of the day

Other

[   ]

Whether they have a driver's license or not, would this person meet eligibility requirements for getting a driver's license? (E.g. age, vision, etc.)

Yes

No

Does this person have a driver's license?

Yes

No

Is this person employed part-time, full time, or currently not employed?

Employed part-time

Employed full-time

Not employed

Retired

During a typical work week, does this person:

Work at home

Work at the same location each day of work

Split their time between a few locations, depending on the work day (e.g. one place per day, work at one location Mon/Wed/Fri and another location Tues/Thurs)

Travel between multiple locations during the work day (e.g. housekeeping, landscaping, etc.)

I'm going to read off some modes of transportation that people commonly use to get to and from work, and I would like you to tell me how this person usually gets to work. If they use more than one mode, please tell me which you think they use most frequently.

Walk

Bike

Personal Vehicle (Car/Truck/SUV)

Taxi services or rideshare, such as Uber or Lyft

Bus

Train/Subway

Paratransit, i.e. a shuttle for people with disabilities

Not sure

Not applicable

Other:

I'd like you to think back to this person's commute in their previous home. Do you think it is easier, harder, or about the same for this person to get to their job at your current home compared with your previous home? [Note to interviewer: if this person's job has changed since moving to this property, that is fine]

Easier to get to their job

Harder to get to their job

About the same

I'm not sure

Unknown because this person was not previously part of the same household as the primary survey respondent

Why is this person's job easier to get to?

[   ]

Why is this person's job harder to get to?

[   ]

Is this person a student?

Yes

No

I'm going to read off some modes of transportation that people commonly use to get to and from school, and I would like you to tell me how this person usually gets to school. If they use more than one mode, please tell me which you think they use most frequently.

Walk

Bike

Personal Vehicle (Car/Truck/SUV

Taxi services or rideshare, such as Uber or Lyft

Bus

Train/Subway

Paratransit, i.e. a shuttle for people with disabilities

Not sure

Not applicable

Other:

[   ]

I'd like you to think back to this person's commute in their previous home. Do you think it is easier, harder, or about the same for this person to get to school in your current home compared with your previous home?

Easier to get to school

Harder to get to school

About the same

I'm not sure

Unknown because this person was not previously part of the same household as the primary survey respondent

Why is this person's school easier to get to?

[   ]

Why is this person's school more difficult to get to?

[   ]

Person 3

Thank you, that concludes the questions about person 2. Is there a third person that lives in the household with you (of any age)?

Yes

No

Does this person live with you full-time or part of the time?

Full-time

[   ]   Part-time (please explain):

What is their relationship to you?

Husband/Wife/Spouse/Partner

Child (your own or others)

Parent or in-law parent

Housemate/roommate

Other relative or non-relative (adult)

How old is this person? [For interviewer: please enter as a number]

Years

During a typical workweek, does this person stay under your care or go to daycare? Please exclude school, as we will ask you about school later.

Stay under your care for part of the day

Stay under your care for the full day

Get dropped off at day care for part of the day

Get dropped off at day care for the full day

Go to school

Other:

Whether they have a driver's license or not, would this person meet eligibility requirements for getting a driver's license? (E.g. age, vision, etc.)

Yes

No

Does this person have a driver's license?

Yes

No

Is this person employed part-time, full time, or not currently employed?

Employed part-time

Employed full-time

Not employed

Retired

During the typical work week, does this person:

Work at home

Work at the same location each day of work

Split their time between more than one location, depending on the day of work (e.g. one place per day, work at one location Mon/Wed/Fri and another location Tues/Thurs)

Travel between multiple locations during the work day (e.g. housekeeping, landscaping, etc.)

I'm going to read off some modes of transportation that people commonly use to get to and from work, and I would like you to tell me how this person usually gets to work. If they use more than one mode, please tell me which you think they use most frequently.

Walk

Bike

Personal Vehicle (Car/Truck/SUV)

Taxi services or rideshare, such as Uber or Lyft

Bus

Train/Subway

Paratransit, i.e. a shuttle for people with disabilities

Not sure

Not applicable

Other:

I'd like you to think back to this person's commute in their previous home. Do you think it is easier, harder, or about the same for this person to get to their job at your current home compared with your previous home? [Note to interviewer: if this person's job has changed since moving to this property, that is fine]

Easier to get to

Harder to get to

About the same

I'm not sure

Unknown because this person was not previously part of the same household as the primary survey respondent

Why is this person's job easier to reach?

[   ]

Why is this person's job harder to reach?

[   ]

Is this person a student?

Yes

No

I'm going to read off some modes of transportation that people commonly use to get to and from school, and I would like you to tell me how this person usually gets to school. If they use more than one mode, please tell me which you think they use most frequently.

Walk

Bike

Personal Vehicle (Car/Truck/SUV

Taxi services or rideshare, such as Uber or Lyft

Bus

Train/Subway

Paratransit, i.e. a shuttle for people with disabilities

Not sure

Not applicable

[   ]   Other:

I'd like you to think back to this person's commute in their previous home. Do you think it is easier, harder, or about the same for this person to get to school in your current home

compared with your previous home?

Easier to get to

Harder to get to

About the same

I'm not sure

Unknown because this person was not previously part of the same household as the primary survey respondent

Why is this person's school easier to get to?

[   ]

Why is this person's school more difficult to get to?

[   ]

Person 4

Thank you, that concludes the questions about person 3. Is there a fourth person that lives in the household with you (of any age)?

Yes

No

Does this person live with you full-time or part of the time?

Full-time

[   ]　　　　Part-time (please explain):

What is their relationship to you?

Husband/Wife/Spouse/Partner

Child (your own or others)

Parent or in-law parent

Housemate/roommate

Other relative or non-relative (adult)

How old is this person? [For interviewer: please enter as a number]

Years

During a typical workweek, does this person stay under your care or go to daycare? Please exclude school, as we will ask you about school later.

Stay under your care for part of the day

Stay under your care for the full day

Get dropped off at daycare for part of the day

Get dropped off at daycare for the full day

Go to school

Other

Whether they have a driver's license or not, would this person meet eligibility requirements for getting a driver's license? (E.g. age, vision, etc.)

Yes

No

Does this person have a driver's license?

Yes

No

Is this person employed part-time, full time, or not currently employed?

Employed part-time

Employed full-time

Not employed

Retired

During the typical work week, does this person:

Work at home

Work at the same location each day of work

Split their time between more than one location, depending on the day of work (e.g. one place per day, work at one location Mon/Wed/Fri and another location Tues/Thurs)

Travel between multiple locations during the work day (e.g. housekeeping, landscaping, etc.)

I'm going to read off some modes of transportation that people commonly use to get to and from work, and I would like you to tell me how this person usually gets to work. If they use more than one mode, please tell me which you think they use most frequently.

Walk

Bike

Personal Vehicle (Car/Truck/SUV)

Taxi services or rideshare, such as Uber or Lyft

Bus

Train/Subway

Paratransit, i.e. a shuttle for people with disabilities

Not sure

Not applicable

Other:

I'd like you to think back to this person's commute in their previous home. Do you think it is easier, harder, or about the same for this person to get to their job at your current home compared with your previous home? [For interviewer: if this person's job has changed since moving to this property, that is fine]

Easier to get to

Harder to get to

About the same

I'm not sure

Unknown because this person was not previously part of the same household as the primary survey respondent

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Why is this person's job easier to get to?

[   ]

Why is this person's job harder to get to?

[   ]

Is this person a student?

Yes

No

I'm going to read off some modes of transportation that people commonly use to get to and from school, and I would like you to tell me how this person usually gets to school. If they use more than one mode, please tell me which you think they use most frequently.

Walk

Bike

Personal Vehicle (Car/Truck/SUV

Taxi services or rideshare, such as Uber or Lyft

Bus

Train/Subway

Paratransit, i.e. a shuttle for people with disabilities

Not sure

Not applicable

[   ]   Other:

I'd like you to think back to this person's commute in their previous home. Do you think it is easier, harder, or about the same for this person to get to school in your current home compared with your previous home?

Easier to get to

Harder to get to

About the same

111

I'm not sure

Unknown because this person was not previously part of the same household as the primary survey respondent

Why is this person's school easier to get to?

[   ]

Why is this person's school more difficult to get to?

[   ]

Person 5

Thank you, that concludes the questions about person 4. Is there a fifth person that lives in the household with you (of any age)?

Yes

No

Does this person live with you full-time or part of the time?

Full-time

[   ]   Part-time (please explain):

What is their relationship to you?

Husband/Wife/Spouse/Partner

Child (your own or others)

Parent or in-law parent

Housemate/roommate

Other relative or non-relative (adult)

How old is this person?

Years

[   ]

During a typical workweek, does this person stay under your care or go to daycare? Please exclude school, as we will ask you about school later.

Stay under your care for the whole day

Stay under your care for part of the day

Get dropped off at daycare for the full day

Get dropped off at daycare for part of the day

Go to school

[   ]   Other

Whether they have a driver's license or not, would this person meet eligibility requirements for getting a driver's license? (E.g. age, vision, etc.)

Yes

No

Does this person have a driver's license?

Yes

No

Is this person employed part-time, full time, or not employed?

Employed part-time

Employed full-time

Not employed

Retired

During the typical work week, does this person:

Work at home

Work at the same location each day of work

Split their time between more than one location, depending on the day of work (e.g. one place per day, work at one location Mon/Wed/Fri and another location Tues/Thurs)

Travel between multiple locations during the work day (e.g. housekeeping, landscaping, etc.)

I'm going to read off some modes of transportation that people commonly use to get to and from work, and I would like you to tell me how this person usually gets to work. If they use more than one mode, please tell me which you think they use most frequently.

Walk

Bike

Personal Vehicle (Car/Truck/SUV)

Taxi services or rideshare, such as Uber or Lyft

Bus

Train/Subway

Paratransit, i.e. a shuttle for people with disabilities

Not sure

Not applicable

Other:

I'd like you to think back to this person's commute in their previous home. Do you think it is easier, harder, or about the same for this person to get to their job at your current home compared with your previous home? [Note to interviewer: if this person's job has changed since moving to this property, that is fine]

Easier to get to

Harder to get to

About the same

I'm not sure

Unknown because this person was not previously part of the same household as the primary survey respondent

Why is this person's job easier to get to?

Why is this person's job harder to get to?

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[   ]

Is this person a student?

Yes

No

I'm going to read off some modes of transportation that people commonly use to get to and from school, and I would like you to tell me how this person usually gets to school. If they use more than one mode, please tell me which you think they use most frequently.

Walk

Bike

Personal Vehicle (Car/Truck/SUV

Taxi services or rideshare, such as Uber or Lyft

Bus

Train/Subway

Paratransit, i.e. a shuttle for people with disabilities

Not sure

Not applicable

[   ]   Other:

I'd like you to think back to this person's commute in their previous home. Do you think it is easier, harder, or about the same for this person to get to school in your current home compared with your previous home?

Easier to get to

Harder to get to

About the same

I'm not sure

Unknown because this person was not previously part of the same household as the primary survey respondent

Why is this person's school easier to get to?

[ ]

Why is this person's school more difficult to get to?

[ ]

Person 6

Thank you, that is all the questions about person 5. Is there a sixth person that lives in the household with you (of any age)?

Yes

No

Does this person live with you full-time or only part of the time?

Full-time

[ ]   Part-time (please explain):

What is their relationship to you?

Husband/Wife/Spouse/Partner

Child (your own or others)

Parent or in-law parent

Housemate/roommate

Other relative or non-relative (adult)

How old is this person?

Years   [ ]

During a typical workweek, does this person stay under your care or go to daycare? Please exclude school, as we will ask you about school later.

Stay under your care the whole day

Stay under your care for part of the day

Get dropped off at daycare for the whole day

Get dropped off at daycare for part of the day

Go to school

Other:

Whether they have a driver's license or not, would this person meet eligibility requirements for getting a driver's license? (E.g. age, vision, etc.)

Yes

No

Does this person have a driver's license?

Yes

No

Is this person employed part-time, full time, or not employed?

Employed part-time

Employed full-time

Not employed

Retired

During the typical work-week, does this person:

Work at home

Work at the same location each day of work

Split their time between more than one location, depending on the day of work (e.g. one place per day, work at one location Mon/Wed/Fri and another location Tues/Thurs)

Travel between multiple locations during the work day (e.g. housekeeping, landscaping, etc.)

I'm going to read off some modes of transportation that people commonly use to get to and from work, and I would like you to tell me how this person usually gets to work. If they use more than one mode, please tell me which you think they use most frequently.

Walk

Bike

Personal Vehicle (Car/Truck/SUV)

Taxi services or rideshare, such as Uber or Lyft

Bus

Train/Subway

Paratransit, i.e. a shuttle for people with disabilities

Not sure

Not applicable

Other:

I'd like you to think back to this person's commute in their previous home. Do you think it is easier, harder, or about the same for this person to get to their job at your current home compared with your previous home? [Note to interviewer: if this person's job has changed since moving to this property, that is fine]

Easier to get to

Harder to get to

About the same

I'm not sure

Unknown because this person was not previously part of the same household as the primary survey respondent

Why is this person's job easier to get to?

Why is this person's job harder to get to?

Is this person a student?

Yes

No

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I'm going to read off some modes of transportation that people commonly use to get to and from school, and I would like you to tell me how this person usually gets to school. If they use more than one mode, please tell me which you think they use most frequently.

Walk

Bike

Personal Vehicle (Car/Truck/SUV

Taxi services or rideshare, such as Uber or Lyft

Bus

Train/Subway

Paratransit, i.e. a shuttle for people with disabilities

Not sure

Not applicable

I'd like you to think back to this person's commute in their previous home. Do you think it is easier, harder, or about the same for this person to get to school in your current home compared with your previous home?

Easier to get to

Harder to get to

About the same

I'm not sure

Unknown because this person was not previously part of the same household as the primary survey respondent

Why is this person's school easier to get to?

[   ]

Why is this person's school more difficult to get to?

[   ]

Demographic Information

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This last set of questions ask some demographic questions, including your income, educational attainment, race/ethnicity, and language spoken.

What is your household's total annual income from all sources? Please indicate the range from the choices in the dropdown menu below. We will be asking for a breakout by employment, public benefits, and other sources in the questions to follow.

[▼]

What is your household's total annual income from employment before taxes? Please indicate the range from the choices in the dropdown menu below.

[▼]

What is your household's total annual income from public benefits. For example, Medicaid, Social Security, etc? State a range if you are unsure of the exact amount. Or "Don't Know" if you don't know. If you don't receive public benefits, you can say "0."

Supplemental Security Income	[ ]
Medicaid (Enter as Yes/No)	[ ]
Temporary Assistance for Needy Families	[ ]
General Assistance	[ ]
Social Security	[ ]
Other	[ ]
Food stamps	[ ]

What is your household's total annual income from other sources, such as family support? State a range if you are unsure of the exact amount. Or "Don't Know" if you don't know. If you don't receive income from other sources, you can say "0." [For interviewer: if amount is not provided annually, please calculate annual income]

Other Income	[ ]
Description of other income	[ ]

What is the highest degree or level of school that you have completed? I'm going to read off some options, and please stop me if I read the correct answer for you.

Less than a high school degree

High school degree or equivalent (e.g. GED)

Some college

Associate's degree

Bachelor's degree

Graduate degree or professional degree

What is your age?

Years

What is your gender?

Male

Female

Other

Which of the following best describes your race?

White

Black or African American

Hispanic/Latino

American Indian or Alaska Native

Asian

Native Hawaiian or Pacific Islander

Other

I don't know

I prefer not to answer

What languages are spoken at home? Check all that apply

English

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Spanish

Tagalog (Filipino)

Chinese, dialect:

Arabic

Other, please specify:

Thank you for your participation in this survey.

Appendix G: Focus Group Guide

<center>**Focus Groups**</center>

<center>*Assessing the Travel Demand and Co-Benefit Impacts of Affordable Transit-Oriented Development*</center>

Outline

       10:00-10:05 - Introductions [Miriam Zuk]

       10:05-10:10 - Overview of the objectives of the study

       10:10-11:00 - Begin focus group discussion.

Introduction

Thank you for taking the time to participate in our study today. I am _____ from UC Berkeley and our note taker for today is _____.

The purpose of this session is to understand the benefits of living in affordable housing near transit. The study aims to understand the great potential for affordable housing near transit to positively impact the environment as well as the health and wellbeing of affordable housing residents.

I encourage everyone to share their opinion, even if their opinion may differ from that of others.

Overview of Location

Firstly, we are interested in understanding how you perceive the location of this property and whether or not you feel it is convenient. The first three questions will ask you about your opinion on the location of this property:

1. Please think back to what kind of neighborhood you were hoping to find when you moved. What were some things you looked for?

2. What do you think about the location of this building? What do you like about this location, and what do you not like about this location?

3. How does the location of this building affect your lifestyle? How has your lifestyle changed since moving to this property?

It sounds like there are a few key ways in which the location of this property impacts your day-to-day life, such as [summarize here]. Is that correct? Does anyone have anything else to add about the location of this building?

Employment:

Next, we are interested in learning about how the location of this property relates to your job. The next few questions will ask you about your job and your commute.

1. How do you get to work? Please tell us a little bit about your commute.

    If you drive, do you feel that there are good parking options both at work and at home?

    If you do not take transit to work, what are a few key reasons you choose not to take transit? For example, "too expensive," "takes too long," etc.

    If you do not walk to work, what are a few key reasons you choose not to walk? For example, "distance is too far," "I do not feel safe," "traffic and air pollution," etc.

    If you do not bike to work, what are a few key reasons you choose not to bike? For example, "I do not own or have access to a bike," "I do not feel safe," "distance is too far," etc.

2. How does your job location influence where you want to live? Conversely, how does where you live influence your job choice?

3. If your job has changed since moving here, what was your experience like looking for a job while living at this property?

I am hearing that the location of this property influences your commute, job choice, and job search in the following ways [summarize here]. Does that sound right?

Access to Destinations and Amenities:

The next set of questions asks you about your ability to access destinations and amenities from this property.

1. How do you travel for your household needs?

    If you do not take transit for your household needs, what are a few key reasons you choose not to take transit? For example, "too expensive," "takes too long," etc.

    If you do not walk for your household needs, what are a few key reasons you choose not to walk? For example, "distance is too far," "I do not feel safe," "traffic and air pollution," etc.

If you do not bike for your household needs, what are a few key reasons you choose not to bike? For example, "I do not own or have access to a bike," "I do not feel safe," "distance is too far," etc.

2. How walkable do you think your neighborhood is?

3. How convenient is public transportation to this location?

4. What can you get to by walking? What about by biking? Transit?

5. Are there places you can get to by driving that you wish you could get to by walking, biking, or transit? If so, what are they?

Overall, it seems that this location is accessible to [summarize here], but you wish it were more accessible to [summarize here]. Is there anything else you would like to add?

Health & Safety:

We would also like to understand how living in this property has impacted your health. The next set of questions asks you about physical activity and access to health services.

1. How has moving to this property changed how often you walk?

2. Do you feel safe walking in your neighborhood? Why or why not?

3. Has your level of physical activity changed since moving to this property? If so, how?

4. Please describe your access to health services.

   Can you easily access necessary doctor appointments, hospitals, and other health care services? If not, why not?

5. Are you satisfied with your access to recreational activities? Please explain why or why not.
   For example, what is your access like to parks and green spaces?

   How do you typically get to these parks and recreational spaces?

   Do these parks and recreational spaces feel safe? Why or why not?

6. What recreational activities does your neighborhood lack that you wish it had?

7. Where do you typically get your food and/or groceries? How do you get there?

   Do you feel that this place has healthy food options?

8. How has your ability to access recreational activities, healthy food, and health services changed since living at this property?

In summary, this location is accessible to the following health services and amenities [summarize here]. However you wish it were more accessible to [summarize here].

Economic/Household Budget:

Lastly, we are interested in learning whether the location of this property has impacted your transportation costs.

1. What are your transportation costs?

    Do you have subsidized transportation access?

    If you drive, do you pay for parking?

2. How do transportation costs fit into your household budget?

3. Have your transportation costs changed since moving to this property? If so, how?

I am hearing that your transportation costs have [summarize here] since moving to this property.

Conclusion:

Thank you for your participation in this focus group. We appreciate your contributions throughout the discussion.

VMT Resident Services Coordinator Site Level Survey

[export from Qualtrics]

Start of Block: Property name

Q1 What is the name of this property?

○ Alta Mira Senior and Family Housing Apartments (23)

○ The Ambassador (14)

○ Baycliff (1)

○ Belmont (2)

○ Blossom River (3)

○ Camellia Place (4)

○ Cathedral Gardens (5)

○ Coggins Square (6)

○ Eden Baywood (26)

○ Los Robles (7)

○ MacArthur Park Apartments (Los Angeles) (20)

○ Madison Apartments (25)

○ Mandela Gateway (8)

○ Metro Hollywood/Carlton Court Apartments (Los Angeles) (19)

○ The Oaks (15)

○ Oroysom Village (9)

○ Oxford Plaza (10)

○ Pueblo del Sol (Los Angeles) (18)

○ Richmond City Center Apartments (24)

○ Riverwood Grove (11)

○ Santa Cecilia Apartments (Los Angeles) (21)

○ Sol y Luna Apartments (Los Angeles) (22)

○ Station Center (12)

○ Story Plaza Apartments (13)

○ Wexford Way (16)

○ Other (17) _____

Q2 Surveyor

▼ Abby (1) ... Tryn (16)

Q3 This first set of questions ask about parking spaces at the property.

---

[*]

Q4 How many parking spaces are available at the property? Please enter the response as a number (e.g. 20 not twenty).

_____

---

[*]

Q5 How many units does the property have? Please do not include any units belonging to managers in this count. Please enter the response as a number (e.g. 75 not seventy five).

_____

---

[*]

Q6 How many parking spots are residents eligible to obtain? Please enter the response as a number (e.g. 20 not twenty).

_____

Q7 Does the property charge residents for parking?

○ Yes (1)

○ No (2)

○ I don't know (3)

✳

Q8 If the property does charge residents for parking, how much are they charged per month? Please enter the response as a number with no dollar sign (e.g. 20 not $20).

_____

End of Block: Parking spaces

Start of Block: Transit passes

Q9 This next section asks about transit passes for residents.

Q10 Are transit passes offered to residents?

○ Yes (1)

○ No (2)

○ I don't know (3)

Q11 Do you offer discounts on the transit passes to residents?

○ Yes (1)

○ No (2)

○ I don't know (3)

✳

Q12 How much is the discount on transit passes that you offer to residents on a monthly basis? Please enter the response as a number with no dollar sign (e.g. 20 not $20).

_____

Q13 If you offer discounted transit passes to residents, please indicate what types of residents receive these passes. Please select all that apply.

☐ Students (1)

☐ Adults (2)

☐ Seniors (65+) (3)

☐ Disabled (5)

☐ Other (4) _____

Q14 What types of transit passes are offered to residents? Please select all that apply.

☐ Lifeline (low income) Passes (Muni) (1)

☐ BART EZ Rider Card (Parking) (Bay Area) (2)

☐ BART specialty tickets (discounts for senior, middle and secondary school students, persons with disabilities, Medicare cardholders) (Bay Area) (3)

☐ TAP Reduced Fare (Senior, Disabled/Medicare, College/Vocational, Students (K-8 and 9-12) (Los Angeles) (6)

☐ VTA Passes (Santa Clara Valley) (5)

☐ Other (4) _____

Q15 How do residents qualify for transit passes?

_____

Q16 Have you ever considered offering transit passes to residents, or done so in the past?

○ Yes (1)

○ No (2)

○ I don't know (3)

End of Block: Transit passes

Q17 This next set of questions asks about shared mobility (e.g. carshare or bikeshare) options at or near the property.

Q18 Is there a carshare (e.g. Zipcar) or bikeshare on-site or nearby (within three blocks of) the property?

○ Yes (1)

○ No (2)

○ I don't know (3)

Display This Question:
If Is there a carshare (e.g. Zipcar) or bikeshare on-site or nearby (within three blocks of) the pro... = Yes

Q19 If yes, please share whether it is a carshare or bikeshare (you may select both options from the below):

☐ Carshare (1)

☐ Bikeshare (2)

Display This Question:
If If yes, please share whether it is a carshare or bikeshare (you may select both options from the... = Carshare

Q20 Do residents receive a carshare service discount?

○ Yes (1)

○ No (2)

○ I don't know (3)

【✳】

Q21 How many carshare spots do you have at your property? Please enter the response as a number (e.g. 2 not two).

_____

Q22 Do you charge carshare companies for parking spots on your property?

○ Yes (1)

○ No (2)

○ I don't know (3)

Q23 What carshare companies have parking spots on your property? Please select all that apply.

☐ Zipcar (1)

☐ Gig (2)

☐ Getaround (3)

☐ Audi on Demand (4)

☐ Other (5) _____

Q24 Do residents receive a bikeshare discount?

○ Yes (1)

○ No (2)

○ I don't know (3)

✳

Q25 How many bikeshare spots are there? Please enter the response as a number (e.g. 50 not fifty).

_____

Q26 To what extent do residents use ride hailing services (such as Uber or Lyft)? If possible, please estimate the percentage of residents that use these services to the best of your knowledge, or provide anecdotal information on frequently you see ride hailing services being used by residents.

_____

_____

_____

_____

_____

End of Block: Shared mobility

Start of Block: Bike parking

Q27 This next set of questions asks about bike parking at the property.

Q28 Does the property have on-site bike parking spaces?

○ Yes (1)

○ No (2)

○ I don't know (3)

❋

Q29 What is the total number of on-site bike parking spaces? Please enter the response as a number (e.g. 50 not fifty).

_____

Q30 What kind of on-site bike parking spaces does the property have? Please check all that apply.

☐ Lockers (1)

☐ Bike racks (outside of lockers) (5)

☐ Rooms (2)

☐ Cages (3)

☐ Other (4) _____

End of Block: Bike parking

Q31 Do you provide shuttle services for residents?

○ Yes (1)

○ No (2)

○ I don't know (3)

Q32 Where does the shuttle go? Please write the address or the nearest cross streets in the space provided below.

_____

Q33 Do you charge residents for these services?

○ Yes (1)

○ No (2)

○ I don't know (3)

Q34 Are these services provided on demand or does the service operate within set time frames?

○ On demand (1)

○ Within set time frames (2)

○ I don't know (3)

Q35 At what times is the service available? Please select all the time windows that apply from the options below.

	Day (6:00 AM - 8:00 PM) (1)	Night (8:01 PM-5:59 AM) (2)
Weekdays (1)	☐	☐
Weekends (8)	☐	☐
Other (7)	☐	☐

✳

Q36 How frequently do shuttles run? Please enter your response in number of minutes (e.g. 10 not ten).

_____

End of Block: Shuttle services

Start of Block: Resident services

Q37 This next section asks about resident services.

Q38 Does the property have a community room or other type of community space?

○ Yes (1)

○ No (2)

○ I don't know (3)

Q39 How frequently do Resident Associations, meetings, or other similar community events occur?

_____

Q40 Do you provide after school programs or childcare?

○ Yes (1)

○ No (2)

○ I don't know (3)

Q41 If you responded yes that you do provide after school programs or childcare, do you charge for these services?

○ Yes (1)

○ No (2)

○ I don't know (3)

Q42 This next section asks about recent and planned capital improvements.

Q43 What are some examples of recent transportation facility improvements or expansions, both on and/or adjacent to your site? These can be improvements made by the property or by an external party like the city.

_____

_____

_____

_____

_____

Q44 What are some examples of transportation facility improvements or expansions that *you* would like to see on or adjacent to your site?

_____

_____

_____

_____

_____

Q45 What are some examples of transportation facility improvements or expansions that *residents* have requested or would like to see on or adjacent to your site?

_____

_____

_____

Appendix I. List of Study Sites

Property Name	Address	City	Bay Area or Los Angeles	No. Study Participants	Units with Subsidy	Within Half Mile of HQT?	Place Type	Onsite Parking Spaces
Alta Mira[*]	28987 Mission Blvd Hayward, CA 94544	Hayward	Bay Area	9	86	Yes	Urban Neighborhood	120
Baycliff	2300 Lancaster Drive, Richmond, California, 94806	Richmond	Bay Area	8	341	No	Suburban Neighborhood	381
Belmont	1010 Power Avenue, Pittsburg, California, 94565	Pittsburg	Bay Area	9	224	No	Suburban Neighborhood	270
Blossom River	1000 Blossom River Way, San Jose, California, 95123	San Jose	Bay Area	10	143	Yes	Urban Neighborhood	288
Camellia Place	5450 DeMarcus Blvd. Dublin, CA 94568	Dublin	Bay Area	7	112	Yes	Suburban Neighborhood	115
Cathedral Gardens[+o]	638 21st St, Oakland, California 94612	Oakland	Bay Area	20	100	Yes	Urban Core	100
Coggins Square	1316 Las Juntas Way, Walnut Creek, California, 94596	Walnut Creek	Bay Area	6	86	Yes	Urban Neighborhood	95
Eden Baywood	4275 Bay Street Fremont, CA 94538	Fremont	Bay Area	4	81	No	Urban Neighborhood	104
Frank G. Mar[*]	283 13th Street Oakland, CA 94612	Oakland	Bay Area	22	119	Yes	Urban District	119
Los Robles	32300 Almaden Boulevard, Union City, California, 94587	Union City	Bay Area	21	139	No	Suburban Neighborhood	217
MacArthur Park[*+]	676 S. Alvarado Street, Los Angeles, California, 90057	Los Angeles	Los Angeles	13	89	Yes	Urban Core	90
Madison at 14th[o]	160 14th Street, Oakland, CA94612	Oakland	Bay Area	10	79	Yes	Urban District	46
Mandela Gateway[o]	1350 7th Street, Oakland, California, 94607	Oakland	Bay Area	23	166	Yes	Urban Neighborhood	168
Metro Hollywood/Carlton	1672 N. Western Avenue, Hollywood, California, 90027	Hollywood	Los Angeles	2	119	Yes	Urban Core	105
Oroysom Village	43280 Bryant Terrace, Fremont, California, 94539	Fremont	Bay Area	6	59	No	Suburban Neighborhood	70
Oxford Plaza[o]	2175 Kittredge St, Berkeley, California, 94704	Berkeley	Bay Area	11	97	Yes	Urban Core	44
Pollard Plaza	1150 McLaughlin Ave, San Jose, CA 95122	San Jose	Bay Area	9	129	No	Suburban Neighborhood	218
Prosperity Place[*o]	188 11th Street Oakland, CA 94607	Oakland	Bay Area	15	70	Yes	Urban Core	50
Pueblo Del Sol	1400 Gabriel Garcia Marquez Street Los Angeles CA 90033	Los Angeles	Los Angeles	16	375	Yes	Urban Core	121
Richmond City Center[o]	1000 Macdonald Avenue, Richmond, California, 94801	Richmond	Bay Area	1	63	Yes	Urban Neighborhood	84
Riverwood Grove[*o]	2150 Tasman Drive, Santa Clara, California, 95054	Santa Clara	Bay Area	8	69	Yes	Urban District	134
Santa Cecilia[*]	1750 E. 1st Street, Los Angeles, California, 90033	Los Angeles	Los Angeles	9	79	Yes	Urban District	80
Sol y Luna[o]	2915-2935 E 1st St, Los Angeles, CA 90033	Los Angeles	Los Angeles	1	51	Yes	Urban District	52
Station Center	34800 11th St., Union City, California, 94587	Union City	Bay Area	11	157	Yes	Suburban Neighborhood	40
The Ambassador	1168 36th Street, Emeryville, California, 94608	Emeryville	Bay Area	15	68	No	Urban Neighborhood	111
The Oaks	3073 North Main Street, Walnut Creek, California 95127	Walnut Creek	Bay Area	9	35	Yes	Suburban Neighborhood	36
Wexford Way	Eden6900 Mariposa Circle Dublin, CA 94568	Dublin	Bay Area	17	130	No	Suburban Neighborhood	210
[*] Discount transit passes offered								
[+] Carshare onsite								
[o] Bikeshare onsite								

Appendix J: Site Summaries

Site: Camellia Place Apartments
Address: 5450 DeMarcus Blvd, Dublin, CA, 94568
County: Alameda
Place Type: Suburban Neighborhood, TOD
Data Collection Period: 6/21-7/3/18

Site Description:
Camellia Place is located in the city of Dublin, which is nestled in the East Bay Area. It lies just north of the Dublin / Pleasanton BART and the I-580 freeway. It was built as a part of a 91-acre Dublin Transit Center master plan. The 4-story building encloses a safe outdoor play area for the residents of Camellia Place.

Site Observations:
The resident services coordinator was very involved and helped make calls to residents on the day of event to encourage participation.

Site: Oxford Plaza Apartments
Address: 2175 Kittredge St, Berkeley, CA, 94704
County: Alameda
Place Type: Urban Core, TOD
Data Collection Period: 11/4-11/18/17

Site Description:
Oxford Plaza is a 6 story mixed use development in the middle of downtown Berkeley with a walk score of 97. Apartments are stacked right on top of commercial businesses such as restaurants and yoga studios. Their open space amenities are on the rooftop of the building. Oxford Plaza is also a few blocks from Downtown Berkely BART station.

Site Observations:
Oxford Plaza is located on a busy street in Downtown Berkeley, and a block away from the UC Berkeley campus. The property manager was very helpful and responsive. She flyered for the study, and conducted resident outreach in advance. Data collection ran smoothly. The property is a dense multifamily complex. Weekend visits went well, and researchers still encountered residents who were interested in participating following the final site visit.

Site: Wexford Way Apartments
Address: 6900 S. Mariposa Circle, Dublin, CA, 94568
County: Alameda
Place Type: Suburban Neighborhood, non-TOD
Data Collection Period: 2/28-3/7/18

Site Description:
Wexford Way is a 24-acre housing development in Dublin, CA. The site has solar panels installed on many of the rooftops and parking spaces for a sustainable energy source. There are multiple green open spaces in between buildings for residents to enjoy. Additionally, there is an enclosed playground for children that is set back from the roadway.

Site Observations:
There was a high turnout for on-boarding due to assistance from a helpful resident services coordinator. However, only two researchers were comfortable with the application download process, which slowed on-boarding, and may have discouraged a few participants from downloading the app because it seemed too complicated for them.

Site: Oroysom Village Apartments
Address: 43280 Bryant Terrace, Fremont, CA 94539
County: Alameda
Place Type: Suburban Neighborhood, non-TOD
Data Collection Period: 11/15-11/29/17

Site Description:
Oroysom Village is a 59-unit housing development in
Fremont, CA. The site contains two and three-bedroom
apartments. Amenities on-site include a playground, community room, computer room, and
courtyard.

Site Observations:
Property management helped coordinate researcher's on-boarding and off-boarding, but was not
instrumental with resident outreach. The townhomes on the property are very spread out. There
would be no reason for residents to walk to the community room unless there was an event.

Site: The Ambassador Apartments
Address: 1168 36th St, Emeryville, CA, 94608
County: Alameda
Place Type: Urban Neighborhood, non-TOD
Data Collection Period: 2/2-2/16/18

Site Description:
The Ambassador is a 5-story and 68-unit apartment complex in Emeryville, CA. The site features a drought-tolerant courtyard, computer room, playground, and two community rooms. The area is well-served by AC Transit, and the Emery Go-Round, which can take residents to the MacArthur BART station for free. Additionally, the Bay Bridge Shopping Center, community gardens, and the Emeryville Senior Center are located close by.

Site Observations:
There were several breaks in communication with property management, but they helped advertise the on-boarding event to residents. Researchers made two on-boarding trips to the site, and two off-boarding visits. On-boarding and off-boarding took place in the computer room, which is adjacent to the central courtyard. The Ambassador is located right next to the highway, and on some busy streets.

Site: Eden Baywood Apartments
Address: 4275 Bay St, Fremont, CA, 94538
County: Alameda
Place Type: Urban Neighborhood, non-TOD
Data Collection Period: 4/26-5/3/18

Site Description:
Eden Baywood is an 81-unit apartment complex located in Fremont, CA. On-site amenities include a playground and community room.

Site Observations:
The apartment complex is very spread out across the property. Property management was very helpful in coordinating the on-boarding event. They provided food, as well, to incentivize residents to show up and participate in the study.

Site: Alta Mira Senior and Family Housing Apartments
Address: 28901 Mission Blvd, Hayward, CA, 94544
County: Alameda
Place Type: Urban Neighborhood, TOD
Data Collection Period: 3/30-4/6/18

Site Description:
Alta Mira is a two-building, one apartment complex in a mixed income, master-planned development adjacent to the South Hayward BART station. Affordable senior housing is located in a separate building from the affordable multifamily units. This 86-unit apartment complex is also located close to a new public park next door to the site. On-site amenities include a computer room, community room, and courtyard with a community garden.

Site Observations:
The resident services coordinator was very helpful in arranging the visit. On-boarding took place during an Easter Egg Hunt at the apartment complex to increase resident participation.

Site: Mandela Gateway Apartments
Address: 1350 7th St, Oakland, CA, 94607
County: Alameda
Place Type: Urban Neighborhood, TOD
Data Collection Period: 10/26-11/9/17

Site Description:
Mandela Gateway is a mixed-use 166-unit building spread out across two separate blocks in Oakland, right across the street from the West Oakland BART station. Several small businesses, including a credit union, and a grocery store cooperative, occupy retail spaces underneath the apartment complex. On-site amenities include a community room, computer room, kitchen, and an enclosed playground space on-site. In addition, there is a bike-pedestrian greenway adjacent to the apartment building.

Site Observations:
Property management was accommodating and responsive. On-boarding took place during a holiday party on-site. Courtyard space during the gathering was very helpful for getting residents on-boarded. Property management gave researchers raffle tickets to give to residents who agreed to participate, which helped increase participation. They also allowed researchers to return during after hours and use the computer lab for off-boarding. The property is located in a well-trafficked area, given that it is on one of the main thoroughfares in West Oakland, and across from the elevated BART tracks produces some traffic noise.

Site: Cathedral Gardens Apartments
Address: 638 21st St, Oakland, CA, 94612
County: Alameda
Place Type: Urban Core, TOD
Data Collection Period: 2/26-3/12/18

Site Description:
Cathedral Gardens is a 100-unit building located in downtown Oakland. It is a few blocks away from 19th St BART station, and around the corner from a Greyhound bus station. Residents have access to amenities including bike parking, a community room, and an on-site children's playground.

Site Observations:
Data collection at this site took place on three separate dates because there was such a high volume of resident participation - many of the residents who attended the first on-boarding told friends to attend the next week to sign up for the study. The resident services coordinator was incredibly helpful in passing out flyers, and made additional reminder calls to all participating residents to attend off-boarding. The development is a dense, multifamily complex in Downtown Oakland. Site visits took place in the community room, adjacent to the central courtyard. Visibility of the community room from the courtyard helped with increasing participation as people were walking through the complex.

Site: Madison at 14th Apartments
Address: 100 9th St, Oakland, CA, 94607
County: Alameda
Place Type: Urban District, TOD
Data Collection Period: 5/22-5/29/18

Site Description:
Madison Apartments is a 79-unit apartment complex in Oakland, located close to the Lake Merritt BART station. When this complex was built in 1908, it was the largest wooden structure west of the Mississippi, and is listed on the National Register of Historic Places. On-site amenities include bike racks, and a community room. It is a short walk to the Oakland Museum of California, Laney College, and parks.

Site Observations:
The resident services coordinator was responsive and helpful in encouraging residents to participate in the study. The apartment complex is a dense, multifamily building. There was a lot of foot traffic in common areas like the community room. The community room is also used for a childcare program.

Site: Frank G Mar Apartments
Address: 281-283 13th St, Oakland, CA, 94612
County: Alameda
Place Type: Urban District, TOD
Data Collection Period: 6/22-7/6/18

Site Description:
Frank G Mar Apartments is a mixed-use 119-unit apartment complex in Downtown Oakland and Chinatown. It is close to Lake Merritt BART station, as well as neighborhood amenities such as parks, Laney College, and the Oakland Museum of California. On-site amenities include a community room and courtyard.

Site Observations:
The majority of residents who participated in the study from this site were Cantonese and Mandarin speakers. Turnout was very high, but with only one researcher who spoke Cantonese and Mandarin, on-boarding and off-boarding were slow. The resident services coordinator was very helpful with recruitment, and even assisted with language translation when she was available.

Site: Prosperity Place Apartments
Address: 188 11th St, Oakland, CA, 94607
County: Alameda
Place Type: Urban Core, TOD
Data Collection Period: 7/5-7/12/18

Site Description:
Prosperity Place is a 71-unit apartment complex in Downtown Oakland / Chinatown. It is a few blocks from Laker Merritt BART station, as well as other neighborhood amenities including parks, Laney College, and the Oakland Museum of California. There is a playground, central courtyard, and community room on-site.

Site Observations:
The resident services coordinator was difficult to reach via email, but friendly and helpful during the site visits. This is a dense, multifamily apartment building. Site visits took place in the community room adjacent to the central courtyard.

Site: Los Robles Apartments
Address: 32300 Almaden Blvd, Union City, CA, 94587
County: Alameda
Place Type: Suburban Neighborhood, non-TOD
Data Collection Period: 1/19-1/27/18

Site Description:
Los Robles is a 139-unit apartment complex in Union City, CA. The development is in a predominantly single-family neighborhood just off of busy Alvarado-Niles Boulevard, one of the busiest traffic and commercial corridors in Union City. On-site amenities include a playground, basketball court, and community room.

Site Observations:
The resident services coordinator was incredibly helpful in arranging the site visits. The on-boarding at Los Robles was held during a bingo game night to engage more residents in the study, but only 6 out of 21 had compatible phones with the app. The resident services coordinator also gave researchers a list of contact information for other EAH properties with resident services coordinators who she thought might be interested in becoming a site for the study. Los Robles is located in a suburban area. A large parking lot encircles the low-lying and spread out site.

Site: Station Center Apartments
Address: 34800 11th St, Union City, CA, 94587
County: Alameda
Place Type: Suburban Neighborhood, TOD
Data Collection Period: 3/11-4/4/18

Site Description:
Station Center is mixed-use, TOD adjacent to Union City
BART station in Union City, CA. It is close to local
parks, shopping, and schools. The development sits on a
former industrial site that has gone through an extensive planning, remediation, redevelopment
process in the past several decades. Much of the surrounding area is low-rise and is slowly being
developed by BART and the City of Union City. On-site amenities include gardens, a playground, a
fitness center, and community room.

Site Observations:
The resident services coordinator was not incredibly responsive via email, but the on-boarding site
visit went smoothly with 10 out of 11 participants able to download the app. A miscommunication
occurred between property management and researchers, and off-boarding was cut short.
Researchers had to return for a third visit to conclude off-boarding.

Site: Belmont Apartments
Address: 1010 Power Ave, Pittsburgh, CA, 94565
County: Contra Costa
Place Type: Suburban Neighborhood, non-TOD
Data Collection Period: 12/6-12/13/17

Site Description:
Belmont is a 224-unit apartment complex in Pittsburgh, CA. On-site amenities include an outdoor picnic / lounge area and two pools. The neighborhood is close to shopping and schools.

Site Observations:
The resident services coordinator was helpful and seemed to have good relationships with residents, but turnout was moderate with only 9 participants. The apartment complex is very spread out and car-centric. Site visits took place in the community area outside, which is in the middle of the parking lot, and not attached to any structures. This may not have been amenable for intercepting residents. At the time of surveying (Fall 2017), the Pittsburgh Center BART station was not open.

Site: Baycliff Apartments
Address: 2300 Lancaster Dr, Richmond, CA, 94806
County: Contra Costa
Place Type: Suburban Neighborhood, non-TOD
Data Collection Period: 10/27-11/3/17

Site Description:
Baycliff is a 341-unit apartment complex in Richmond, CA.
On-site communal amenities include a tennis court, business
center, and a pool. The neighborhood is close to the Hilltop
Shopping Mall.

Site Observations:
The apartment complex is spread out across the complex with over 20 separate townhome buildings
on a hill, with no community room or central area. Site visits took place in the laundry room.
Turnout was low, and the resident services coordinator was very hands-off.

Site: Richmond City Center Apartments
Address: 1000 Macdonald Ave, Richmond, CA, 94801
County: Contra Costa
Place Type: Urban Neighborhood, TOD
Data Collection Period: 4/12-4/19/18

Site Description:
Richmond City Center is a 63- unit apartment complex, located close to the Richmond BART station. This apartment is part of a larger master-planned redevelopment in Downtown Richmond, CA. On-site amenities include a children's play area and courtyard.

Site Observations:
While the resident services coordinator was incredibly helpful and flyered on behalf of researchers beforehand, only one person completed the study. Researchers were stationed at the entrance to the building, but there was very little foot traffic, and those who passed by seemed uninterested in participating. The resident who completed the study said that mention of the GPS application on the flyer almost deterred them from participating. The resident services coordinator also mentioned that there was very low resident turnout at another recent event.

Site: Coggins Square Apartments
Address: 1316 Las Juntas Way, Walnut Creek, CA, 94597
County: Contra Costa
Place Type: Suburban Neighborhood, TOD
Data Collection Period: 12/8-12/15/17

Site Description:
Coggins Square is an 86-unit apartment complex in Walnut Creek. It is a 3.5-acre master planned development across the street from the Pleasant Hill BART station. On-site amenities include a community room with a kitchen, a pool, play area, and a landscaped open space.

Site Observations:
Property management was responsive and communicative. They also posted flyers in advance of the event. On-boarding and off-boarding took place in the centrally located community room. Due to a diverse set of language needs (including Russian), off-boarding took some time. The property is not very spread out, and has parking underground.

Site: The Oaks Apartments
Address: 3073 N Main St, Walnut Creek, CA, 94597
County: Contra Costa
Place Type: Suburban Neighborhood, TOD
Data Collection Period: 3/9-3/16/18

Site Description:
The Oaks is a 35-unit apartment complex in Walnut Creek, CA, close to the Pleasant Hill BART station. On-site amenities include a playground and basketball court, community room with kitchen, and a swimming pool.

Site Observations:
The resident services coordinator was very helpful and called all of the residents in advance of the on-boarding event. Data collection ran smoothly with only 9 participants. The site is small and low-lying. The area surrounding the apartment is suburban, but the site is next to a main thoroughfare (without sidewalks), and close to the elevated BART tracks.

Site: Blossom River Apartments
Address: 1000 Blossom River Way, San Jose, CA, 95123
County: Santa Clara
Place Type: Urban Neighborhood, TOD
Data Collection Period: 10/24-11/15/17

Site Description:
Blossom River is a 143-unit townhome apartment complex in Santa Clara, and one block from the Oakridge VTA station and Oakridge Mall. On-site amenities include a basketball court and a community room with a kitchen, computers, and pool table.

Site Observations:
The resident services coordinator was very responsive to emails, but not proactive about outreach to residents prior to on-boarding. Researchers were stationed in the central community area, close to the parking lot, but most residents went straight from their cars to their homes. Townhomes on the property are very spread out.

Site: Riverwood Grove Apartments
Address: 2150 Tasman Dr, Santa Clara, CA, 95054
County: Santa Clara
Place Type: Urban District, TOD
Data Collection Period: 11/17-12/6/17

Site Description:
Riverwood Grove is a 69-unit apartment complex in Santa Clara, close to the Lick Mill VTA station. On-site amenities include a playground and central courtyard.

Site Observations:
Property management and the resident services coordinator were helpful and posted flyers in advance of on-boarding. However, turnout was relatively low with only 8 participants, even though researchers planned on-boarding during a Family Engagement Night at the apartment site. Riverwood Grove is a moderate density with a central and highly used community room. There are two main vehicular entrances to the property, and most units do not have entryways from the street.

Site: Pollard Plaza Apartments
Address: 1150 McLaughlin Ave, San Jose, CA, 95122
County: Santa Clara
Place Type: Suburban Neighborhood, non-TOD
Data Collection Period: 10/17-11/2/17

Site Description:
Pollard Plaza is a 129-unit apartment complex in San Jose, CA. On-site amenities include a courtyard, fitness center, and swimming pool.

Site Observations:
Property management and the resident services coordinator were very involved and willing to help recruit participants before on-boarding. Researchers were stationed in the central courtyard. A lot of residents walked through the courtyard, which was helpful for study recruitment.

Site: Pueblo del Sol Apartments
Address: 1400 Gabriel Garcia Marquez St, Los Angeles, CA, 90033
County: Los Angeles
Place Type: Urban Core, TOD
Data Collection Period: 3/24-4/7/18

Site Description:
Pueblo del Sol is a 375-unit apartment building located in Los Angeles, close to the Pico / Aliso LA Metro station. The complex includes 2-, 3-, and 4-bedroom apartments and townhomes. Communal amenities include a swimming pool, community room, and fitness center. Located in central Downtown Los Angeles, Pueblo del Sol is close to restaurants, entertainment, and shopping. The large site serves as a "resource hub" for the surrounding neighborhoods in East LA, as many people who aren't residents of the site often participate in community services and recreational programs.

Site Observations:
On-site staff helped with extensive outreach, and turnout was strong. Studies involving follow-up site visits have been difficult at this site in this past, but 16 out of our 18 participants (89%) returned for off-boarding. We had to turn down some prospective study participants who were either homeowners nearby or lived in housing that did not meet eligibility (i.e. housing that was not in our California Tax Allocation Committee database). Many of these residents partake in services offered at the development and did not know they had to actually live at the site to be eligible for the study. Most of the residents were Spanish speakers.

Site: MacArthur Park Apartments
Address: 681 S Bonnie Brae St, Los Angeles, CA, 90057
County: Los Angeles
Place Type: Urban Core, TOD
Data Collection Period: 3/26-4/4/18

Site Description:
MacArthur Park Apartments is an 89-unit building with 2- and 3-bedroom apartments in Los Angeles. It is conveniently located close to the Westlake / MacArthur Park LA Metro station, and adjacent to the METRO Red / Purple Line. On-site amenities include barbecue areas, playground, and community room. Parking is provided on a multi-story podium, which also functions as a METRO station parking lot.

Site Observations:
Turnout for the visit was strong, as we were heavily assisted by partners with McCormack Baron Salazar (MBS). Most of the participants were Spanish-speakers, which strained our research team (only half of the researchers during the visit were fluent Spanish-speakers). Main entrance to the building is on a neighborhood street (S Bonnie Brae St), and the building sits between two large commercial corridors (Wilshire Ave and 7th St).

Site: Metro Hollywood / Carlton Court Apartments
Address: 5443 Carlton Way, Los Angeles, CA, 90027
County: Los Angeles
Place Type: Urban Core, TOD
Data Collection Period: 3/26-4/10/18

Site Description:
Carlton Court / Metro Hollywood is a 119-unit joint apartment complex in Los Angeles, close to the Hollywood / Western LA Metro station. It is also close to Los Angeles City College, restaurants, and shopping. On-site amenities include a barbecue area, playground, and a community room. The Metro Hollywood site is on the corner of N Western Ave and Hollywood Boulevard, while Carlton Courts is located just behind it.

Site Observations:
Site visit took place during the mid-morning, which may have impeded participation. On-site staff and partners with McCormack Baron Salazar (MBS) were very helpful in trying to recruit participants, even taking time to do door-to-door outreach and intercepts to try and get more participants. In addition to Spanish, there were a large number of Russian, Armenian, and Thai speakers at this site. The main entrance to Metro Hollywood is directly in front of the Hollywood/Western LA Metro station, with some surface parking and additional pedestrian access points on Hollywood Boulevard. The main entrances to Carlton Court are mid-block on N Western Avenue and on Carlton Way, a smaller neighborhood street.

Site: Santa Cecilia Apartments
Address: 117 S Boyle Ave, Los Angeles, CA, 90033
County: Los Angeles
Place Type: Urban District, TOD
Data Collection Period: 3/27-4/3/18

Site Description:
Santa Cecilia is a 79-unit mid-rise apartment complex in Los Angeles, located close to the Mariachi Plaza / Boyle Heights LA Metro station. On-site amenities include bike racks, a community room, fitness center, and four courtyards. The apartment opened in June 2017, and is a registered Platinum LEED for Homes project.

Site Observations:
Site visited was coordinated with partners at McCormack Baron Salazar (MBS) Property Management. The site visit took place in the late morning, but ultimately had a good turnout thanks to heavy promotion by on-site staff. No need to intercept or flyer to residents on the day-of, despite being in a community room that was tucked away towards the back area of the building. Main entrance to the building is located on the busy intersection of S Boyle Ave. and E. 1st St, directly across from the Mariachi Plaza Metro station.

Site: Sol y Luna Apartments
Address: 2915-2935 E 1st St, Los Angeles, CA, 90033
County: Los Angeles
Place Type: Urban District, TOD
Data Collection Period: 3/28-4/5/18

Site Description:
Sol y Luna is a 51-unit apartment complex in Los Angeles, close to the Soto LA Metro station. On-site amenities include a bike room.

Site Observations:
Most of the residents at this development were more comfortable speaking in Spanish. Promotion for the site visit seemed to be lacking from staff at the development. The time window we were allowed to visit was in mid-afternoon, which may have negatively impacted turnout. Researchers tried intercepting residents at entrances and in the parking lot, but participation was still limited.

Appendix K: Control Variable Diagnostics

Table: Collinearity - Variance Inflation Factor (VIF) Test of Control Variables

Variable	VIF
Urban Core Place Type	6.45
Urban District Place Type	6.05
Parking Ratio	5.39
TOD	5.38
Employment Access Index	4.01
Net Density	3.20
Urban Neighborhood Place Type	3.18
Average Block Size Acres	3.00
Number of Housing Units at Site	2.74
HH Size	2.74
Presence of School-Aged Children	2.43
Hispanic	2.34
Retired	2.21
Not Working	2.21
Single Family Housing	2.18
African American	2.11
Part Time Worker	1.88
Asian	1.86
Age	1.77
Vehicle Ownership	1.48
Income Midpoint	1.21
Female	1.17
Mean VIF	2.95

Note: omitted (reference) variables – Full Time Worker and Suburban Neighborhood Place Type

Table: Correlation Matrix of Control Variables