Assessing Future Housing and Transportation Preferences in the City of Palo Alto

Jake Gold / Makaila M. Farrell / Max Williamson / Ricky Joshua Toh Wen Xian

Acknowledgements

This research would not have been possible without help from our various stakeholders.

- **Elaine Uang:**
  Palo Alto Forward mission statement: “We are a group of residents interested in crafting a vision for the future of Palo Alto that expands choice, opportunity and quality of life.” (Palo Alto Forward)
- **Adina Levin:**
  Friends of Caltrain mission statement: “A financially stable, electrified rail system, with frequent all-day service, easy access via transit, walking and biking, and well integrated into transit-supportive land uses.”
- **Hillary Gitelman:** Palo Alto Planning Director

Introduction

“Palo Alto needs more than just single family housing” or “It’s great to live along El Camino Real, but otherwise ‘*transportation’* is too slow” and “It’s too freaking expensive!”. These are just a few quotes from local residents and employees who have expressed their concerns regarding the housing and transportation options in Palo Alto. With the recent finalization of the Palo Alto Comprehensive Plan Update, our research team decided to collaborate with Friends of Caltrain, an NGO looking to improve transit in the peninsula, and Palo Alto Forward, another NGO dedicated to bettering the infrastructure and housing of the city, to better understand changing housing and transportation preferences (Palo Alto Forward).

The Palo Alto Comprehensive Plan Update contains policies and implementation programs to guide future decision making. These initiatives concern housing, transportation, economic development, and local government. Each city is required by the State of California to publish a general plan that describes, at the very least, land use and development. The Palo Alto Comprehensive Plan was adopted this November, and will serve as the city’s conceptual blueprint until 2030. So what does the plan suggest for housing and transportation in Palo Alto? The plan describes previous single-family housing developments, and mentions a future need for multi-family units. Overall, the city contains 27,400 housing units whereas the plan projects an additional 3,545-4,420 multi-family units in the next 13 years (Total, Palo Alto Comprehensive). However, Palo Alto’s current zoning code caps the density of multi-family units, particularly in and around extant single family housing. This may slow the development of new housing units in the future (Palo Alto Comprehensive).

Currently, Palo Alto’s commercial areas are built outward from transportation hubs such as; El Camino Real and the University Avenue Caltrain Station. The largest of these commercial areas is the Stanford Shopping Center, which accounts for more than a third of the city’s tax income. The Stanford University campus, Stanford Medical Center, and Stanford Research Park also account for high commuter traffic because they host the majority of available jobs in Palo Alto (Levin). Single residential homes make up more than 61% of the housing stock in Palo Alto. These single family residential neighborhoods are pushed north and south of El Camino Real, isolated from the high density of commercial resources (Palo Alto Comprehensive). Our team conducted a survey experiment to understand public opinions of the current city layout, and to identify potential areas for improvement.

Methodology

Our team surveyed Palo Alto residents and employees to collect feedback regarding the city’s current and future housing and transportation options. We designed a short, multiple choice survey composed of two sections: current living conditions and prefered living conditions. The goal of the survey was to identify any significant discrepancies between current and prefered living options, and then discuss how the city of Palo Alto can make these prefered housing and transportation options accessible. We also asked individuals to rank current housing and transportation conditions in Palo Alto on a scale from 0 to 100. These options include, but are not limited to, walkability, public transport reliability, neighborhood safety, and housing costs. We also wanted to share personal living experiences, so we interviewed individuals to build up a portfolio in a supplemental project entitled, Faces of Palo Alto. Faces of Palo Alto is a social and artistic project designed to emphasize the human element in city

planning. Each vignette is based on a worker or resident whose experience in Palo Alto embodied a specific need for housing and transportation reform.

To minimize demographic biases, our team visited four public spaces around the city: Stanford Shopping Center, Palo Alto Caltrain Station, California Avenue Farmers Market, and the Downtown Gitelman Farmers Market. Stanford Shopping Center and the Caltrain Station were populated by younger employees, many of whom commute into the city, whereas the farmer's markets were frequented by local residents of all age demographics.

Over the course of two weeks, our group collected ninety surveys and a dozen interviews from a diverse set of individuals. Generally, people have a reflexive dislike or disinterest towards surveyors. They were "busy" or "not interested", but always polite. For every ten to twenty people we approached, approximately one or two would fill out a survey or be open to an interview. Collecting meaningful survey data required extensive amounts of time and effort. Though our survey data appears to be representative of most age and employment demographics, our results should be interpreted as general trends rather than statistically significant housing and transportation preferences.

Results and Discussion

Demographics:

To more accurately convey the results of this paper, we categorized the participant demographics into relevant groupings. These groups include variations on locality, employment, and age (See Figure 1 and 2 below). The employment demographic represents the proportions of our respondents that either live and work in Palo Alto, live locally, but work outside of Palo Alto, or live outside of Palo Alto but work locally. We assume that our data pool is sufficiently representative, but acknowledge that some groups dominate more than others. For instance, we interviewed roughly the same amount of local and non-local employees, despite the known, significantly larger non-local working demographic in Palo Alto. As we anticipated, age distribution was largely site dependent. However, our survey data was relatively distributed between the major age classes.

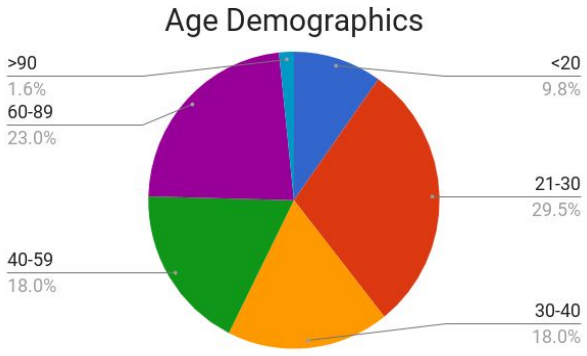

Figure 1: Respondents' age distribution, categorized by year.

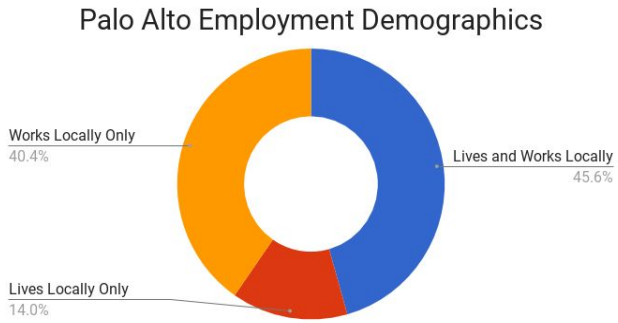

Figure 2: Palo Alto employment distribution. Displays the percent of all working class individuals who either work locally and live outside of the city, live and work locally, and who live in Palo Alto, but work outside of the city.

Housing:

In general, people had a consistent view of housing in Palo Alto. Out of the 24 written side-comments from local residents and employees, 13 mentioned the high housing and rent costs. The other 11 comments concerned transportation. A large number of individuals verbally commented on the high cost of living in Palo Alto prior to taking the survey. In fact, housing cost was ranked 19/100, the lowest ranked survey category by almost double. However, housing cost was also the most important factor when choosing a residence. Over 80% of individuals claimed housing cost was one of their top three considerations when deciding where to live (Figure 3). In addition, 58% of individuals prefered neighborhood safety as a top three factor. However, safety was the highest rated neighborhood attribute in Palo Alto (82/100).

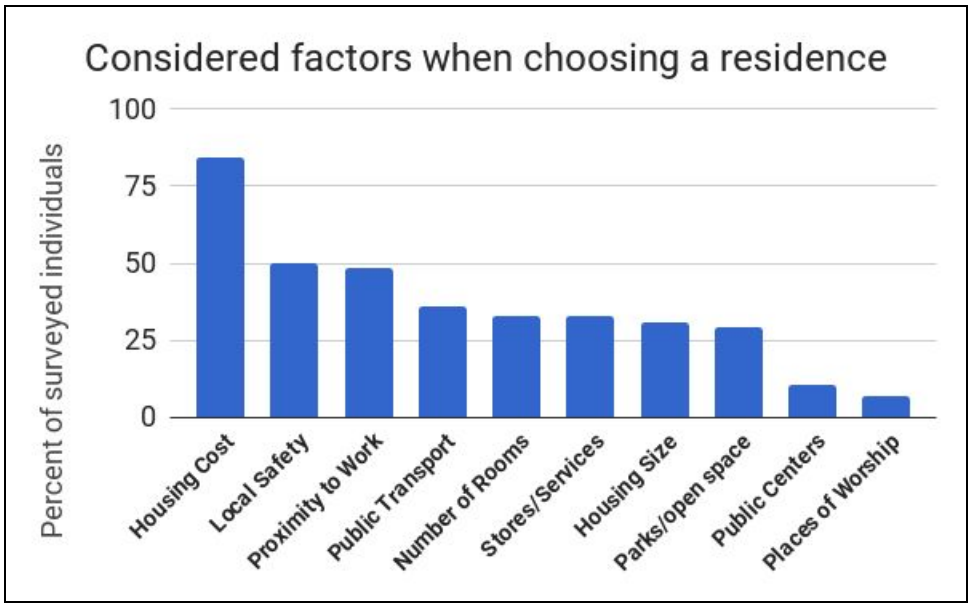

Figure 3: This figure displays the potential factors individuals consider when choosing a new residence. The numbered axis represent the percentage of total individuals who listed the factor as one of their top three choices.

There is a discrepancy between the type of residences commuters and residents currently occupy, and the type each group would prefer to occupy. For instance, 33% of surveyed commuters live in larger, single family houses, whereas more than 56% would prefer single family housing (Figure 4 and 5). However, the opposite trend can be seen for local residents. 56% of them occupy single family homes, but only 37% prefer a larger house. Based on our survey data and individual feedback, local housing costs could be a strong driver of housing preference. Palo Alto residents are more willing to live in cheaper, higher density units as compared to commuters. This effect could be compounded by commuters living in more affordable neighborhoods, where their ability to buy a single family house is more realistic. Further research should be conducted to verify the significance of these claims, asking locals and non-locals if living in larger house in a cheaper area is prefered to living in a smaller house in a nicer area. But either way, housing cost plays a huge factor in considering a new residence, regardless of where participants live.

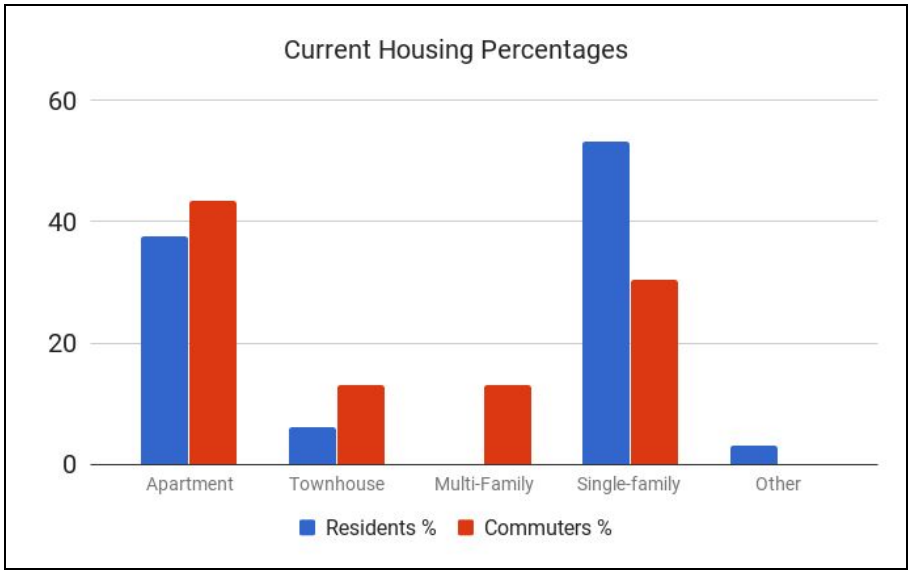

Figure 4: The image displays the percentage of surveyed residents or commuters who live in each type of listed residence.

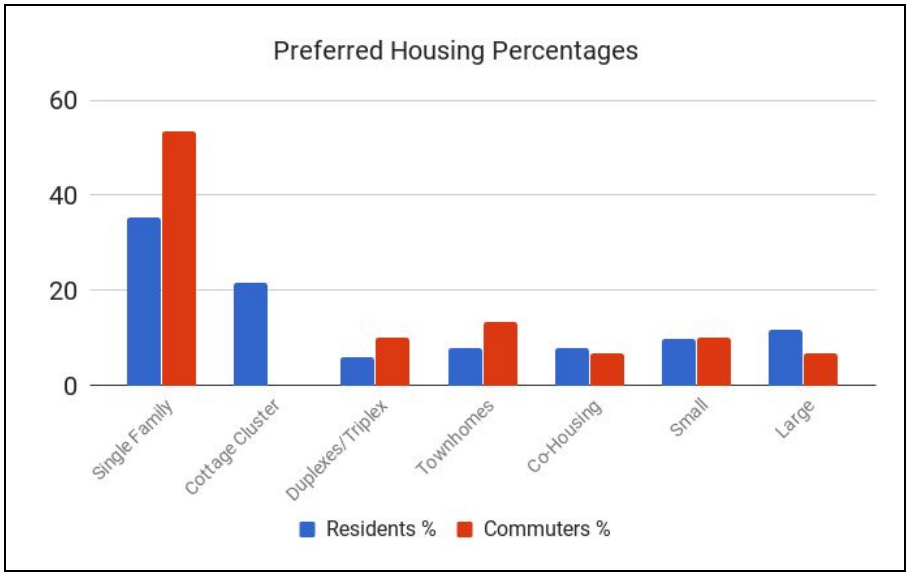

Figure 5: The image displays the percentage of surveyed residents or commuters who would prefer to live in each type of listed residences.

We also asked people what commercial entities they would prefer in an ideal neighborhood (Figure 6). More than 80% of surveyed individuals preferred access to a grocery store as one of their top five neighborhood attributes. This was followed by a preference for parks and restaurants. We noticed the answers given were largely generation dependent. 73% of Elderly individuals (60+) prefered drug stores and libraries, which was significantly more than any other age demographic. 82% of parents of younger children preferred local schools and parks in their ideal neighborhoods.

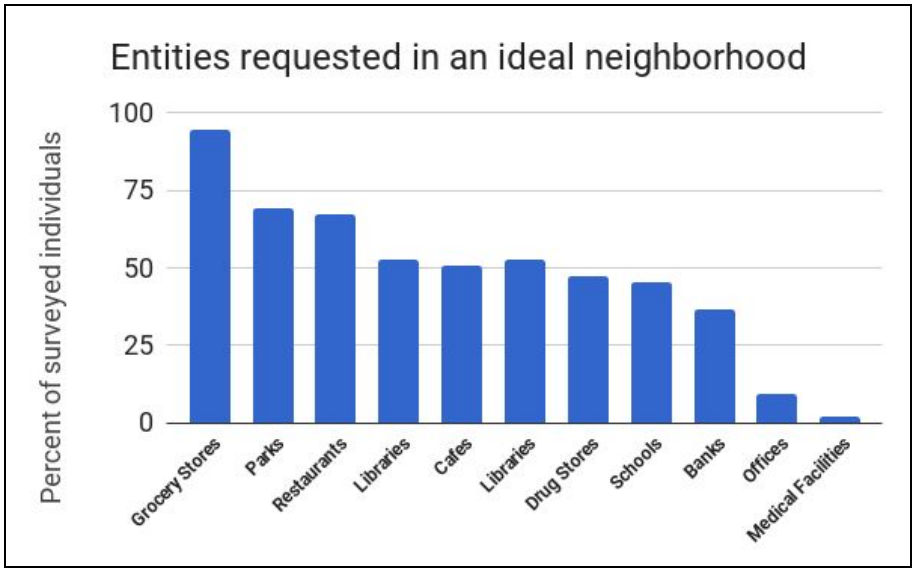

Figure 6: This figure displays the percentage of individuals who prefer the listed entities as one of their top five attributes in an ideal neighborhood.

Transportation:

Generally, the residents of Palo Alto are interested in commuting via more sustainable public transportation options, whereas commuters are content with their current options. Though just over 30% of employed residents drive to work, less than 20% prefer driving over other forms of transportation (Figure 7 and 8). This number drops to 13% for driving by oneself. The majority of local residents would prefer to walk or bike to work (57%). This preference likely originates from the close proximity to work. Based on our survey, less than 25% of local residents work outside of the city, so the majority of locals could have the option of walking of biking to work. Keep in mind, both residents and commuters rated the bikeability and walkability of Palo Alto as 77/100, compared to a 47/100 for driving. On the other hand, commuters are often bound to certain forms of transportation based on their distance from work. 80% of commuters use either cars or Caltrain, whereas 78% prefer to use cars or Caltrain. There is very little difference between the current commuter transportation options and their prefered options. Many individuals mentioned time and reliability as their major concerns for switching commuting styles. Drivers in particular mentioned that cars are the fastest way to get to and from work, and still allow them to get around their hometowns for non-work related travels.

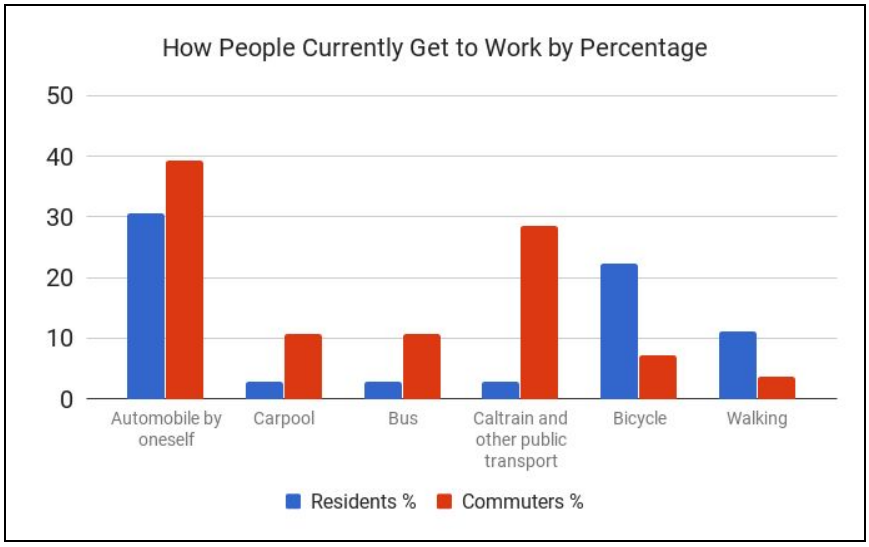

Figure 7: The image displays the percentage of surveyed residents or commuters who get to work via the listed transportation options.

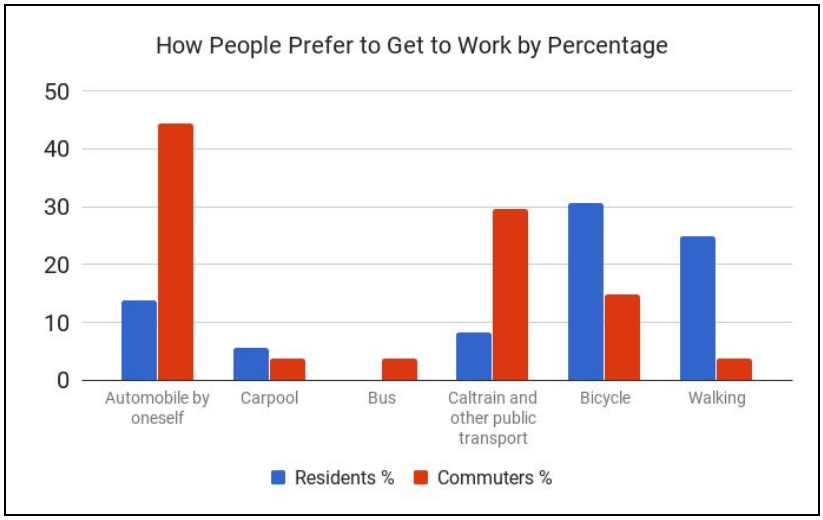

Figure 8: The image displays the percentage of surveyed residents or commuters who would prefer to get to work via the listed transportation options.

The maps below (Figures 9 and 10) display the residences and respective workplaces of over thirty individuals. The distribution may suggest where transportation options can be improved. Participants' homes are shown with the blue pinpoints, while workplaces are shown in red. The first map displays the commutes of Palo Alto residents that either work in Palo Alto or work out of the city, whereas the second map shows the commutes of those living outside of Palo Alto and working in the city. Non-local housing is not concentrated in one particular city, but generally resides between Palo Alto and San Jose. South Bay transportation accessibility projects listed in the Comprehensive Plan may be a priority over the next few years.

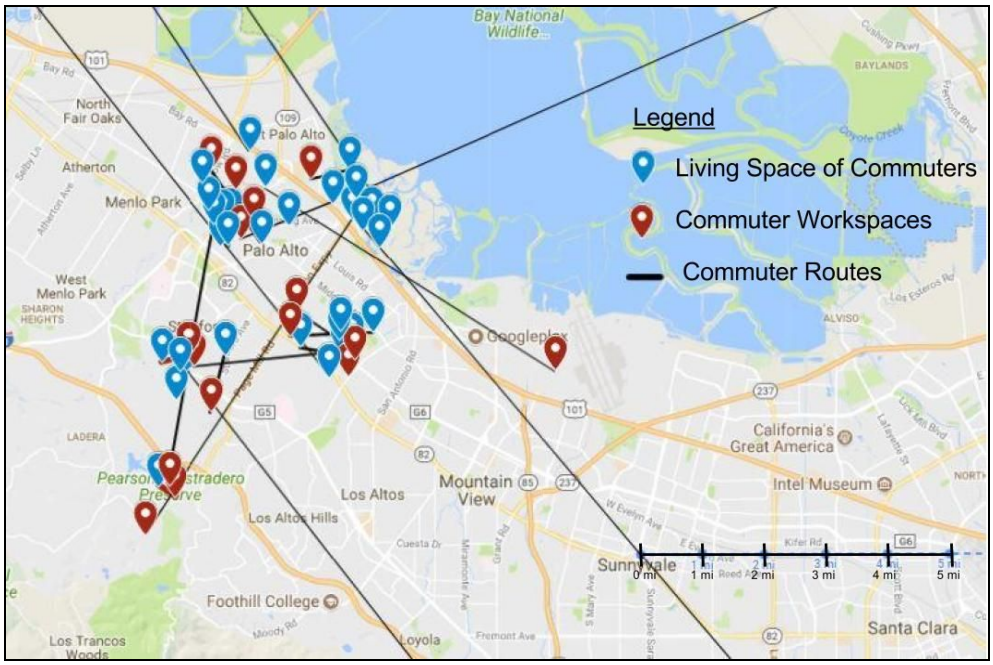

Figure 9: A geospatial representation of daily commuter routes within Palo Alto. Red sites are workplaces, blue sites are residences, and the black lines represent commuting paths. This figure is meant to display a general trend of commuting rather than our complete geospatial guide.

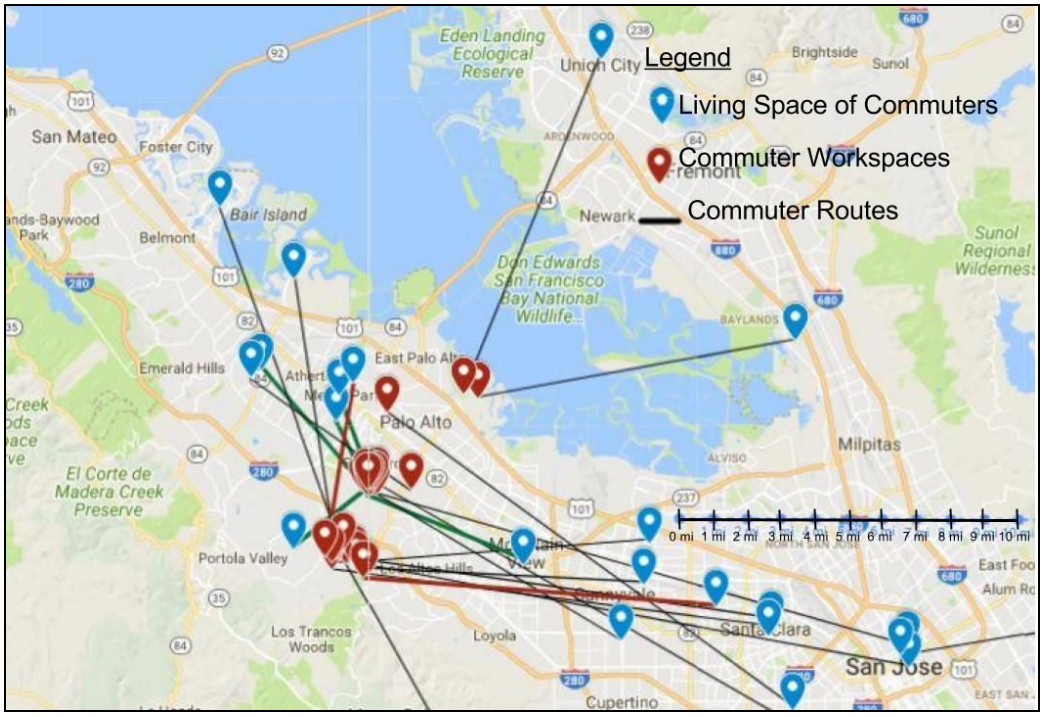

Figure 10: A geospatial representation of daily commuter routes within Palo Alto. Red sites are workplaces, blue sites are residences, and the black lines represent commuting paths. This figure is meant to display a general trend of commuting rather than our complete geospatial guide.

Bikeability projects may be more important at a local scale. According to current urban planning conventions, 5 miles or less is considered a bikeable distance from home to work (Levin). For those that work and live in Palo Alto, 93.8% live within a bikeable distance to their workplaces. However, only 37.5% of local employees bike to work. While this biking rate is significantly higher than the national average (McLeod), there is significant room for bikeability growth. The green lines display bikeable routes to work that are not currently being biked or walked; whereas the red lines, represent routes to work that are currently being biked or walked. Many of the non-utilized bikeable routes are those leading to work in the postal code 94305, which consists of the campus of Stanford University and the surrounding areas (Santa). Potential projects could include improving El Camino Real routes, or Palo Alto connection to Stanford to be more bike friendly. In the map, there is also a general five mile radius from the Stanford/Palo Alto area. The overlap with nearby cities such as Menlo Park and Mountain View show the need for cross-city collaboration to improve regional bikeability.

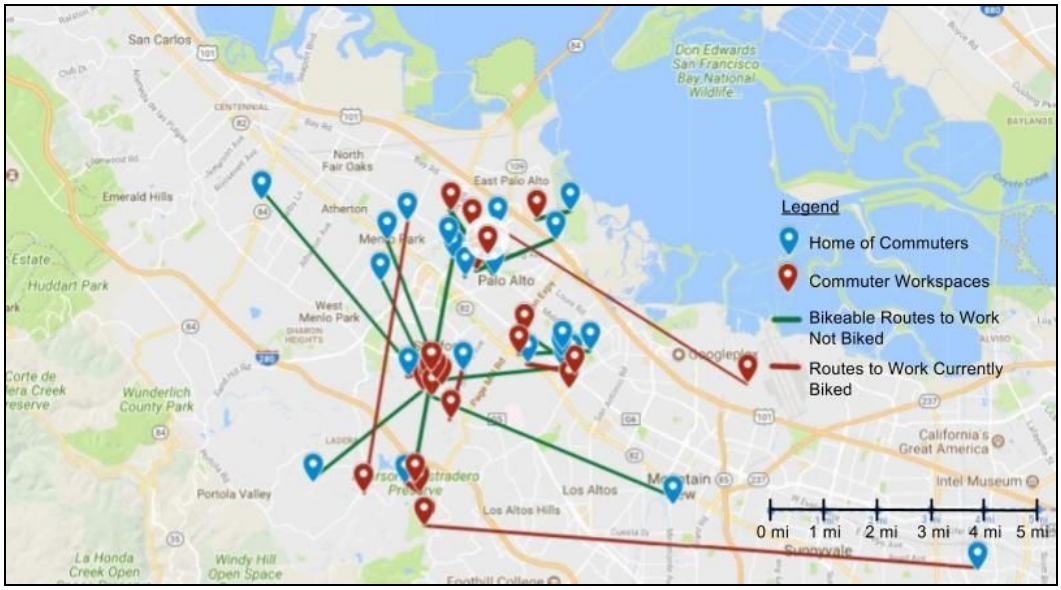

Figure 11: Commutes Currently Biked and Bikeable Commutes for Jobs Within Palo Alto

Very few individuals take advantage of the local bus systems. Roughly 7% of employees take a bus to work, and only 1.5% of all employees claimed it was their prefered form of commuting. The quality of the bus transit system was ranked 50/100 due to a variety of factors. Many people claimed the bus system was too infrequent, and fails to make its routes and times as accessible as the Caltrain system. There have also been mixed reactions about the prominent bus routes on El Camino Real, with some people seeing it as efficient while others thinking that delays should still be cut down. With the uncertainty in the bus system, people can't afford to use it as a reliable means of getting to work everyday. When asked what people valued in a bus transit system, frequency, network connectivity, and service range were all ranked between 70-82/100.

Next Steps:

In order to discuss the implications of our research, we have to put our project in the context of past projects and current policy. This paper has presented a variety of housing and transportation needs that are currently not met. These needs include; improving the reliability of public transit, reducing housing costs, and increasing bike activity around Palo Alto. We recognize that housing and transportation will never suit everyone's needs perfectly. In an ideal world, housing would always be bigger, better, and more affordable. But since our research is meant to be solution focused, rather than highlight existing problems, we hope that the city of Palo Alto will make every effort to alleviate housing and transportation issues. There are numerous opportunities for Palo Alto to improve housing and transportation options for thousands of individuals. Many of these solutions have already been published in the Comprehensive Plan. We hope that the city of Palo Alto will use our research, and other publicly available survey data to make informed decisions concerning the implementation of proposed Comprehensive Plan projects. While there are demands that are not as achievable from a feasibility standpoint, there are many concerns that can be addressed in the near future. We

hope that research teams will continue to conduct surveys and gather usable data to help city governments choose and fine-tune future developments projects.

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Other:

Discussions with Adina Levin (Friends of Caltrain), Elaine Uang (Palo Alto Forward), and Hillary Gitelman (Palo Alto Director of Planning)

Appendix

The following section summarizes our relevant findings. Please see the attached survey data excel document for all survey question data, with calculations. All relevant info can be found in the shared document.

A. Demographics

Local vs. Non-Local Balance **Age Demographics**

Local/Non-Local	Percentage	Age Range	Percentage
Lives and Works Locally	38.08	<20	10.52
Lives Locally Only	11.94	21-30	31.58
Works Locally Only	34.32	30-40	19.30
Live out, Work out	14.92	40-59	19.30
		60-89	24.56
		>90	1.75

A. Rates of Biking

Live out and Work in Palo Alto		Live in and Work in Palo Alto	
People who Bike within Bikeable Range	0	People who Bike within Bikeable Range	6
People within Bikeable Range	5	People within Bikeable Range	15
Total Number of Workers	23	Total Number of Workers	16
Rate of Biking	0	Rate of Biking	0.375
Rate of Biking within Bikeable Range	0	Rate of Biking within Bikeable Range	0.4
Live in and Work out of Palo Alto			
People who Bike within Bikeable Range	0		
People within Bikeable Range	0		
Total Number of Workers	7		
Rate of Biking	0		
Rate of Biking within Bikeable Range	0		

B. Home

1. Aggregate Current
2. Current Type of Home (Residents vs. Commuters)

	Residents	Commuters	Residents %	Commuters %
Apartment	12	10	37.5	43.48
Townhouse	2	3	6.25	13.04
Multi-Family Housing	0	3	0	13.04
Single-family Housing	17	7	53.125	30.43
Other	1	0	3.125	0

N/A	0	0	0	0
Total	32	23		

3. Desired Type of Neighbourhood (Residents vs. Commuters)

	Residents	Commuters	Residents %	Commuters %
Single Family Homes	18	16	35.29	53.33
Cottage Cluster Homes	11	0	21.57	0
Duplexes/Triplex	3	3	5.88	10
Townhomes/Row Houses	4	4	7.84	13.333
Co-Housing	4	2	7.84	6.67
Small flats/apartments	5	3	9.80	10
Large Apartments	6	2	11.76	6.67
N/A	0	0	0	0
Total	51	30		

C. Transportation

1. Aggregate

Current Mode of Transportation to Work **Desired Mode of Transportation to Work**

Type of Vehicle	Percentage	Type of Vehicle	Percentage
Single-Occupancy Vehicle	43.1	Single-Occupancy Vehicle	31.0
Carpool	6.2	Carpool	5.6
Bus	6.2	Bus	1.4
Caltrain	21.5	Caltrain	22.5
Bike	15.4	Bike	23.9
Walk	7.7	Walk	15.5

1. Current Modes of Transport to Work

	Residents	Commuters	Residents %	Commuters %
Automobile by oneself	11	11	30.56	39.29
Carpool	1	3	2.78	10.711
Bus	1	3	2.78	10.711
Caltrain and other public transport	1	8	2.78	28.57
Bicycle	8	2	22.22	7.14
Walking	4	1	11.11	3.57
N/A	10	0	27.78	0

Total	36	28		

2. Desired Modes of Transport to Work

	Residents	**Commuters**	**Residents %**	**Commuters %**
Automobile by oneself	11	11	30.56	39.29
Carpool	1	3	2.78	10.71
Bus	1	3	2.78	10.71
Caltrain and other public transport	1	8	2.78	28.57
Bicycle	8	2	22.22	7.14
Walking	4	1	11.11	3.57
N/A	10	0	27.78	0
Total	36	28		