

MEMORANDUM

To: Rochelle Wheeler
Senior Transportation Coordinator
City of Alameda

From: Ryan Dole, P.E., T.E. and Tyler Mickelson, E.I.T.
Kimley-Horn and Associates, Inc.

Date: October 11, 2021

Subject: Alameda Slow Streets Before and After Study

The City of Alameda has retained Kimley-Horn and Associates, Inc. to perform a before and after study of the traffic located on and around their new slow streets program. The purpose of this study is to determine the effects of the implementation of the Alameda slow streets program as implemented on Pacific Avenue, San Jose Avenue, Santa Clara Avenue, and Versailles Avenue in Alameda California. This memorandum summarizes the assumptions, methodology, and results of the before and after study conducted for the City.

Slow Streets Project

As noted on the City's website, Slow Streets Alameda is a program implementing "soft" closures of select Alameda streets to through traffic. It was originally implemented to facilitate physical distancing during the COVID-19 pandemic. By limiting automobile traffic on these streets, the City is creating more places for the community to safely walk, run, bike, scooter and roll, in alignment with its Vision Zero, Active Transportation and Climate Action efforts to provide safer and more sustainable ways for everyone to get around. The Slow Streets program began in April 2020 and will continue through October 2021.¹ The City is in the process of evaluating whether to extend the program beyond October 31, 2021, and is considering supplementary traffic calming enhancements such as neighborhood traffic circles.

The City has installed 4.7 miles of slow streets in Alameda as follows:

- Pacific Avenue (9th to Oak)
- San Jose Ave (Morton to Oak) + Morton Street (San Jose to San Antonio)
- Santa Clara Ave (Pacific to 6th)
- Versailles Avenue (Fernside to Calhoun)
- Orion Street (West Midway to Pearl Harbor)²

¹ Quoted directly from the City's announcement on their webpage: <https://www.alamedaca.gov/ALERTS-COVID-19/Slow-Streets-Alameda>

² Orion Street was excluded from this study due to limitation on data collection for short segments at low volumes

Study Scope and Methodology

The before and after study was conducted by using data collected and reported by StreetLight Data, Inc.. StreetLight Data is collected using GPS and other location-based technology from vehicles and cell phones. StreetLight processes this data using algorithms to calculate a representative “slice” of traffic conditions at a given location and time. Similar to other analyses reliant on sample sizes, the larger the “slice” the more accurately Streetlight data can estimate transportation metrics. At locations or time periods when volumes are low it can be difficult for Streetlight to accurately represent absolute traffic volumes, however the change in volumes over time can be more reliably predicted. As such, since this Slow Streets evaluation concerns local residential roadways with lower volumes, estimated volume values are not considered or reported. Instead, the study analyzed the relative change in traffic volumes (based on sample counts) along with speed data for the following time periods:

- March and April 2019 (typical pre-COVID traffic conditions)
- March and April 2020 (immediately after shelter-in-place COVID conditions in effect)
- March and April 2021 (after implementation of slow streets program)

Changes in traffic volumes and speeds were analyzed for the study segments between 7:00 AM and 7:00 PM for both weekdays (T-Th) and weekends (Sa-Su).

The study segments are shown below in **Table 1**.

Table 1: Study Roadway Segments

Street Name	Segment Start	Segment End
Pacific Avenue	9th	Sherman
	Sherman	Grand
	Grand	Willow
	Willow	Oak
Buena Vista	9th	Sherman
	Sherman	Grand
	Grand	Oak
Lincoln	9th	Grand
	Grand	Oak
Morton	San Antonio	Grand
San Jose	Grand	Willow
	Willow	Oak
San Antonio	Morton	Grand

	Chestnut	Oak
Clinton Ave	Grand	Willow
	Willow	Oak
	Pacific	3rd
Santa Clara	3rd	5th
	5th	6th
	Haight	6th
Taylor	5th	6th
Versailles	Calhoun	Encinal
	Encinal	Santa Clara
	Santa Clara	Fernside
Pearl	Calhoun	Encinal
	Encinal	Santa Clara
	Santa Clara	Fernside
Moreland	Lincoln	Fernside
Broadway	Otis	Encinal
	Encinal	Santa Clara
	Santa Clara	Blanding

Change in Volumes and Speed

With a single exception (SB Pearl Street between Encinal Avenue and Santa Clara Avenue), all study roadway segments saw a decrease in traffic volumes ranging from 10 to more than 30 percent from the spring of 2019 to the spring of 2020. In an effort to characterize how current traffic volumes compare to pre-COVID 2019 conditions, the remainder of this study focuses on the difference between spring 2019 and spring 2021 (most recent data available). This comparison between 2019 and 2021 allows for determination on whether traffic conditions are approaching pre-pandemic levels and whether the Slow Streets program has created any major shifts in local traffic routing. Summary tables and charts for the data analysis can be found in **Attachment A** and the following is an overview of the analysis findings.

Pacific Avenue Summary:

- Weekday volumes are 15-32 percent lower than in 2019.
- Weekday average speeds are 9-45 percent lower when compared to 2019.

- Weekend volumes are lower on some sections of the street, while other sections of the street have seen an increase in volumes between 18 and 27 percent.
- Weekend average speeds have decreased 7-46 percent on Pacific Avenue, except between Grand and Willow where speeds have increased on average by 23 percent.
- Average speeds on Pacific Avenue are normally around 10 MPH, and no more than 14 MPH.

Pacific Avenue Parallel Streets:

Buena Vista Avenue

- Weekday volumes are still 13-23 percent lower than in 2019.
- Weekday average speeds are about the same as in 2019 with a less than 10 percent increase.
- Weekend volumes are 9-17 percent lower than in 2019.
- Weekend average speeds have increased 17-20 percent between Sherman Street and Oak Street with no increase between 9th Street and Sherman Street.
- Average speeds for all Buena Vista Avenue segments are still below the 25 MPH posted speed limit.

Lincoln Avenue

- Weekday volumes are about 30 percent lower in 2021 than in 2019
- Weekday average speeds are 11-12 percent higher than 2019, up to about 22 MPH.
- Weekend volumes are 12-17 percent lower than in 2019.
- Weekend average speeds have increased 26-43 percent since 2019, up to 23 MPH.

San Jose Avenue and Morton Street Summary:

- Weekday volumes are 25-30 percent lower in 2021 than in 2019
- Weekday average speeds are 8-14 percent lower when compared to 2019.
- Weekend volumes are 8-14 percent lower than in 2019.
- Weekend average speeds saw a decrease in 3 percent between San Antonio and Grand with an increase ranging from 19-22 percent on the rest of the street.

San Jose Avenue Parallel Streets:

San Antonio Avenue

- Weekday volumes are 13-28 percent lower than in 2019.
- Weekday average speeds have increased 4-19 percent since 2019.
- Weekend volumes are 9 percent lower than in 2019 between Morton and Grand and have increased 3 percent between Chestnut and Oak.
- Weekend average speeds have increased 8-35 percent since 2019.

Clinton Avenue

- Weekday volumes are 22-30 percent lower than in 2019

- Weekday average speeds are 7-11 percent higher than 2019.
- Weekend volumes are 2-3 percent higher than in 2019.
- Weekend average speeds have increased 29-64 percent since 2019.

Santa Clara Avenue Summary:

- Weekday volumes are still 31-33 percent lower than in 2019
- Weekday average speeds are 28-40 percent lower when compared to 2019.
- Weekend volumes are 4-7 percent higher than in 2019.
- Weekend average speeds have increased between 6-50 percent when compared to 2019.

Santa Clara Avenue Parallel Streets:

Haight Avenue

- Weekday volumes are 31 percent lower than in 2019.
- Weekday average speeds have increased 41 percent since 2019.
- Weekend volumes are 13 percent higher than in 2019.
- Weekend average speeds have increased 120 percent since 2019.

Taylor Avenue

- Weekday volumes are 3 percent higher than in 2019.
- Weekend volumes are 39 percent higher than in 2019.
- Taylor avenue segment is too short (<0.5mi) for speed data to be estimated by StreetLight, therefore it is excluded for this segment.

Versailles Avenue Summary:

- Weekday volumes are 3-22 percent lower than in 2019
- Weekday average speeds are about the same as in 2019 on both ends of the street and have decreased by 20 percent between Encinal and Santa Clara.
- Weekend volumes are 24-34 percent lower than in 2019.
- Weekend average speeds are about the same as 2019 on both ends of the street and have decreased by 56 percent between Encinal and Santa Clara.

Versailles Avenue Parallel Streets:

Pearl Street

- Weekday volumes are 14-24 percent lower than in 2019.
- Weekday average speeds have increased 0-10 percent since 2019.
- Weekend volumes are 19 percent lower than in 2019 between Calhoun and Encinal and have increased 12 percent between Santa Clara and Fernside.
- Weekend average speeds have increased 27-65 percent since 2019.

Moreland Drive

- Weekday volumes are 12 percent lower in 2021 compared to 2019.

- Weekday average speeds have increased 17 percent since 2019.
- Weekend volumes are 16 percent lower in 2021.
- Weekend average speeds have increased 32 percent since 2019, up to an average of 15 MPH from 11 MPH.

Broadway

- Weekday volumes are 27-30 percent lower in 2021 than in 2019
- 2021 weekday average speeds are 3-14 percent higher than 2019.
- Weekend volumes are 10-17 percent lower in 2021 than in 2019.
- Weekend average speeds have increased 16-40 percent since 2019.

Observations and Findings

The following observations are made based on the before and after study on the Slow Streets program in Alameda:

- Weekday volumes are lower in 2021 compared to 2019 for almost every slow street and parallel street study segment.
 - The weekday data does not indicate that there have been large shifts to parallel routes due to the Slow Streets program. A some parallel streets experience smaller reductions in volumes compared to their nearby Slow Street, which may indicate some volume diversion, but this was not a trend across all segments. Parallel segments with lower percent-change values than the nearby Slow Street segment are:
 - Buena Vista Avenue between 9th Street and Sherman Avenue
 - San Antonio Avenue between Chestnut Street and Oak Street
 - The only study segment volume that strongly suggests rerouting to parallel streets is Taylor Avenue which saw a 3-percent increase in weekday volumes.
- Weekend volumes are typically lower in 2021 compared to 2019, but not globally. While Slow Streets and parallel streets saw a mixture of volume decreases/increases, some of the segments that may be experiencing parallel rerouting include:
 - Versailles Avenue parallel streets – these streets saw percent-changes less than Versailles Avenue, and in some cases increases in volumes. However, this may also be influenced by the Park Commercial Street as drivers may be avoiding traveling to Park Street and are instead travelling toward the Miller-Sweeney and High Street Bridges.
 - Haight and Taylor Streets – Both saw much higher percent-changes than Santa Clara Avenue. However, Santa Clara Avenue also saw higher 2021 volumes compared to 2019. Together, the Santa Clara, Haight, and Taylor data may indicate traffic diversions around the Webster Commercial Street and/or increased commercial activity along Webster Street as opposed to diversion around the Slow Street on Santa Clara.
- 2021 weekday speeds on the Pacific, San Jose/Morton, and Santa Clara were all lower than 2019 values. Weekday speeds on Versailles were either flat or lower.

- Typically, as vehicle volumes decrease, travel speeds increase. Since the Slow Street weekday volumes and speeds both experienced decreases, it appears that the implementation of the Slow Streets program has helped to lower speeds.
 - In contrast, during weekdays, parallel streets generally followed the expected traffic pattern that speeds would increase under lower volume conditions.
- Weekend speed data indicates that Slow Streets have had less or no effect on speeds during weekends. Only six out of the thirteen segments on the Slow Streets experienced lower weekend speeds in 2021 compared to 2019.
 - Note, while speeds have generally increased, most roadway segments still have average speeds under 20 MPH, and no average speeds exceed 25 MPH.
 - Weekend speeds on parallel streets have increase more since 2019 than slow streets indicating that the Slow Streets program may be helping to keep speeds lower than they may have otherwise.



*Attachment A – Slow and Parallel Street
Data Tables and Charts*

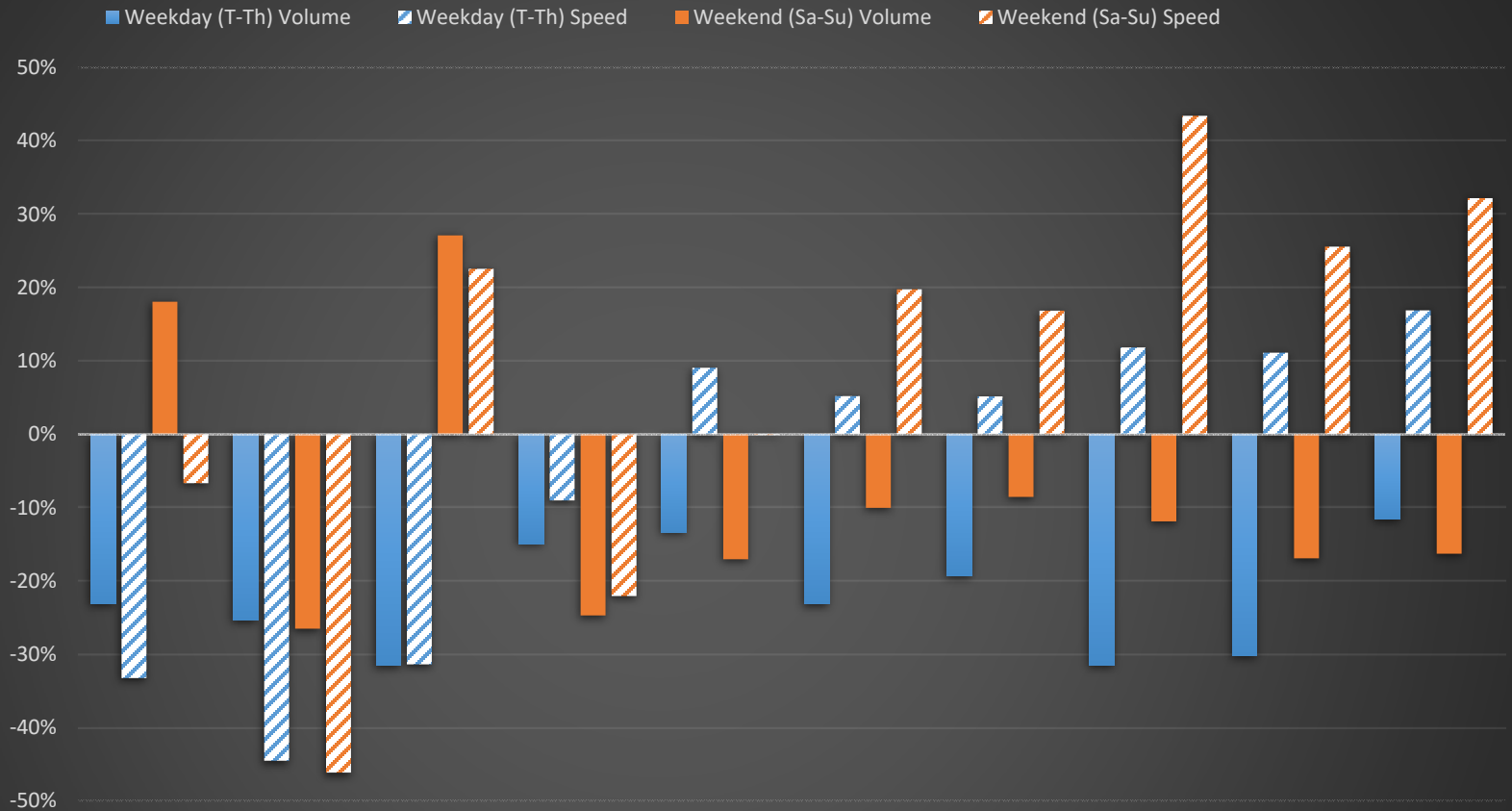
Slow Streets

Segment ID	Name	Start	End	Weekday (T-Th)			Weekend (Sa-Su)			
				Speed (mph)			Speed (mph)			
				2019	2020	2021	2019	2020	2021	
Pacific Avenue	23	Pacific	9th	Sherman	15	13	10	11	10	11
	24	Pacific	Sherman	Grand	16	15	9	16	11	9
	25	Pacific	Grand	Willow	12	12	8	11	10	14
	26	Pacific	Willow	Oak	13	12	11	11	11	9
Pacific Diversions	27	Buena Vista	9th	Sherman	22	25	24	23	23	23
	28	Buena Vista	Sherman	Grand	20	22	21	18	19	21
	29	Buena Vista	Grand	Oak	19	20	20	17	17	20
	30	Lincoln	9th	Grand	21	22	23	17	18	25
	31	Lincoln	Grand	Oak	18	18	20	16	16	20
San Jose + Morton	32	Morton	San Antonio	Grand	15	14	13	14	12	14
	33	San Jose	Grand	Willow	15	14	12	11	13	13
	34	San Jose	Willow	Oak	14	15	13	10	11	12
San Jose Diversions	35	San Antonio	Morton	Grand	13	12	15	11	12	15
	36	San Antonio	Chestnut	Oak	12	10	13	11	9	12
	37	Clinton	Grand	Willow	14	13	16	11	8	18
	38	Clinton Ave	Willow	Oak	14	14	15	13	10	17
Santa Clara Avenue	39	Santa Clara	Pacific	3rd	15	15	9	13	14	19
	40	Santa Clara	3rd	5th	14	15	10	8	6	9
	41	Santa Clara	5th	6th	15	14	10	9	10	13
Santa Clara Diversions	42	Haight	3rd	6th	9	10	12	9	6	20
	43	Taylor	5th	6th	No data			No data		
Versailles Avenue	44	Versailles	Calhoun	Encinal	15	14	15	15	15	15
	45	Versailles	Encinal	Santa Clara	13	14	10	15	11	6
	46	Versailles	Santa Clara	Fernside	13	16	14	14	13	11
Versailles Diversions	47	Pearl	Calhoun	Encinal	14	12	14	10	8	14
	48	Pearl	Encinal	Santa Clara	13	12	14	9	11	11
	49	Pearl	Santa Clara	Fernside	13	13	15	8	11	13
	50	Moreland	Lincoln	Fernside	12	15	14	11	8	15
	20	Broadway	Otis	Encinal	18	20	20	16	16	20
	21	Broadway	Encinal	Santa Clara	15	17	15	15	15	17
	22	Broadway	Santa Clara	Blanding	11	12	13	11	12	15

Slow Streets

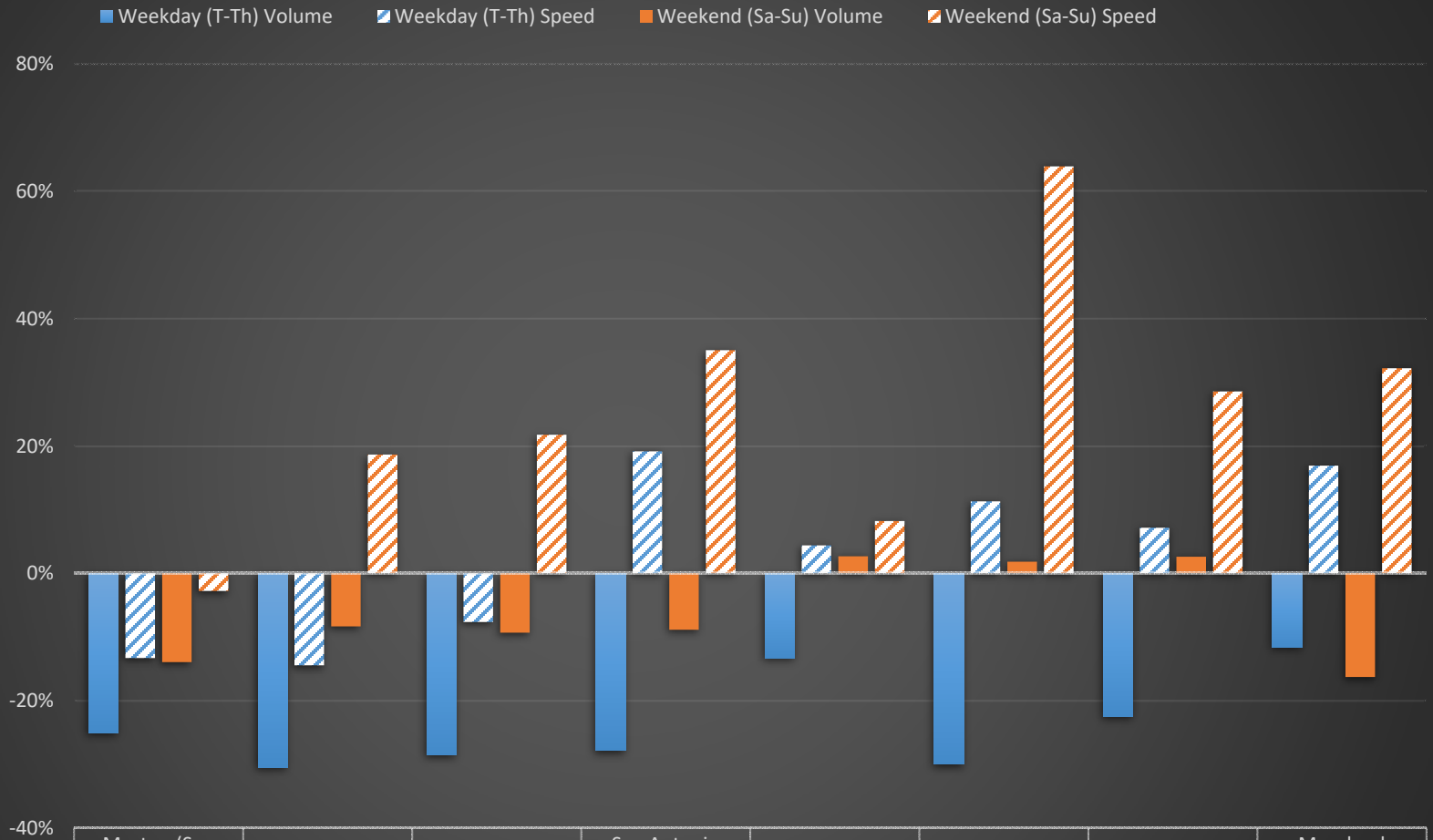
	Segment ID	Name	Start	End	%Δ19-2021				
					Weekday (T-Th)		Weekend (Sa-Su)		
					Volume	Speed	Volume	Speed	
Slow Streets	Pacific Avenue	23	Pacific	9th	Sherman	-23%	-33%	18%	-7%
		24	Pacific	Sherman	Grand	-25%	-45%	-27%	-46%
		25	Pacific	Grand	Willow	-32%	-31%	27%	23%
		26	Pacific	Willow	Oak	-15%	-9%	-25%	-22%
	Parallel to Pacific Ave	27	Buena Vista	9th	Sherman	-13%	9%	-17%	0%
		28	Buena Vista	Sherman	Grand	-23%	5%	-10%	20%
		29	Buena Vista	Grand	Oak	-19%	5%	-9%	17%
		30	Lincoln	9th	Grand	-31%	12%	-12%	43%
	San Jose + Morton	31	Lincoln	Grand	Oak	-30%	11%	-17%	26%
		32	Morton	San Antonio	Grand	-25%	-13%	-14%	-3%
		33	San Jose	Grand	Willow	-30%	-14%	-8%	19%
		34	San Jose	Willow	Oak	-29%	-8%	-9%	22%
	Parallel to San Jose	35	San Antonio	Morton	Grand	-28%	19%	-9%	35%
		36	San Antonio	Chestnut	Oak	-13%	4%	3%	8%
		37	Clinton	Grand	Willow	-30%	11%	2%	64%
		38	Clinton Ave	Willow	Oak	-22%	7%	3%	29%
	Santa Clara Avenue	39	Santa Clara	Pacific	3rd	-33%	-40%	7%	50%
		40	Santa Clara	3rd	5th	-31%	-29%	4%	6%
		41	Santa Clara	5th	6th	-31%	-28%	4%	39%
	Parallel to Santa Clara	42	Haight	3rd	6th	-31%	41%	13%	120%
		43	Taylor	5th	6th	3%	No data	39%	No Data
	Versailles Avenue	44	Versailles	Calhoun	Encinal	-22%	2%	-24%	2%
		45	Versailles	Encinal	Santa Clara	-13%	-20%	-26%	-56%
46		Versailles	Santa Clara	Fernside	-3%	0%	-34%	-19%	
Parallel to Versailles	47	Pearl	Calhoun	Encinal	-22%	0%	-19%	39%	
	48	Pearl	Encinal	Santa Clara	-14%	4%	0%	27%	
	49	Pearl	Santa Clara	Fernside	-24%	10%	12%	65%	
	50	Moreland	Lincoln	Fernside	-12%	17%	-16%	32%	
	20	Broadway	Otis	Encinal	-28%	8%	-10%	25%	
	21	Broadway	Encinal	Santa Clara	-27%	3%	-17%	16%	
	22	Broadway	Santa Clara	Blanding	-30%	14%	-17%	40%	

Pacific Avenue and Parallel Streets Percent Change in Volume and Speed between 2019 and 2021



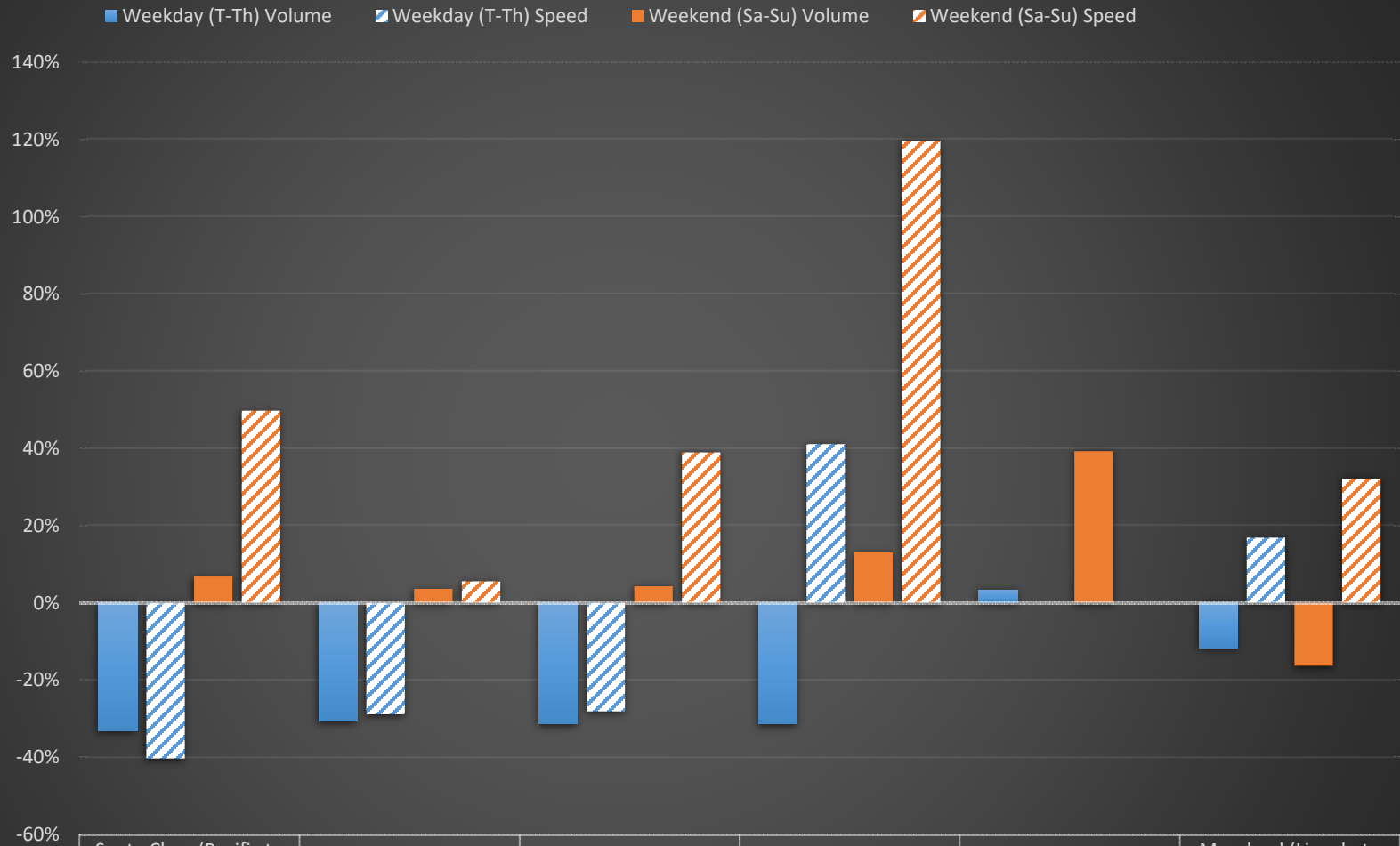
	Pacific (9th to Sherman)	Pacific (Sherman to Grand)	Pacific (Grand to Willow)	Pacific (Willow to Oak)	Buena Vista (9th to Sherman)	Buena Vista (Sherman to Grand)	Buena Vista (Grand to Oak)	Lincoln (9th to Grand)	Lincoln (Grand to Oak)	Moreland (Lincoln to Fernside)
Weekday (T-Th) Volume	-23%	-25%	-32%	-15%	-13%	-23%	-19%	-31%	-30%	-12%
Weekday (T-Th) Speed	-33%	-45%	-31%	-9%	9%	5%	5%	12%	11%	17%
Weekend (Sa-Su) Volume	18%	-27%	27%	-25%	-17%	-10%	-9%	-12%	-17%	-16%
Weekend (Sa-Su) Speed	-7%	-46%	23%	-22%	0%	20%	17%	43%	26%	32%

San Jose/Morton and Parallel Streets Percent Change in Volume and Speed between 2019 and 2021



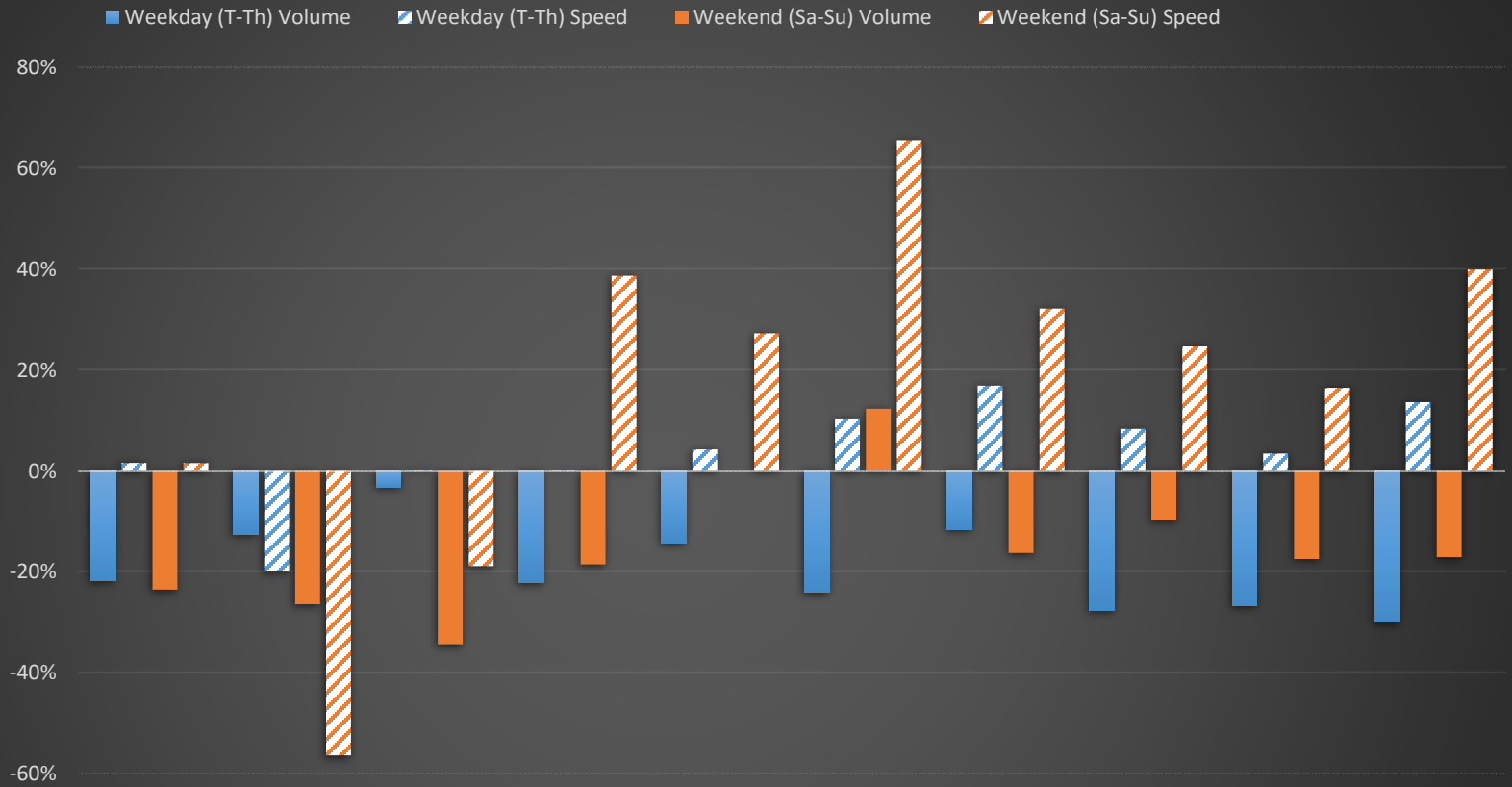
	Morton (San Antonio to Grand)	San Jose (Grand to Willow)	San Jose (Willow to Oak)	San Antonio (Morton to Grand)	San Antonio (Chestnut to Oak)	Clinton (Grand to Willow)	Clinton Ave (Willow to Oak)	Moreland (Lincoln to Fernside)
Weekday (T-Th) Volume	-25%	-30%	-29%	-28%	-13%	-30%	-22%	-12%
Weekday (T-Th) Speed	-13%	-14%	-8%	19%	4%	11%	7%	17%
Weekend (Sa-Su) Volume	-14%	-8%	-9%	-9%	3%	2%	3%	-16%
Weekend (Sa-Su) Speed	-3%	19%	22%	35%	8%	64%	29%	32%

Santa Clara and Parallel Streets Percent Change in Volume and Speed between 2019 and 2021



	Santa Clara (Pacific to 3rd)	Santa Clara (3rd to 5th)	Santa Clara (5th to 6th)	Haight (3rd to 6th)	Taylor (5th to 6th)	Moreland (Lincoln to Fernside)
Weekday (T-Th) Volume	-33%	-31%	-31%	-31%	3%	-12%
Weekday (T-Th) Speed	-40%	-29%	-28%	41%	0%	17%
Weekend (Sa-Su) Volume	7%	4%	4%	13%	39%	-16%
Weekend (Sa-Su) Speed	50%	6%	39%	120%	0%	32%

Versailles and Parallel Streets Percent Change in Volume and Speed between 2019 and 2021



	Versailles (Calhoun to Encinal)	Versailles (Encinal to Santa Clara)	Versailles (Santa Clara to Fernside)	Pearl (Calhoun to Encinal)	Pearl (Encinal to Santa Clara)	Pearl (Santa Clara to Fernside)	Moreland (Lincoln to Fernside)	Broadway (Otis to Encinal)	Broadway (Encinal to Santa Clara)	Broadway (Santa Clara to Blanding)
Weekday (T-Th) Volume	-22%	-13%	-3%	-22%	-14%	-24%	-12%	-28%	-27%	-30%
Weekday (T-Th) Speed	2%	-20%	0%	0%	4%	10%	17%	8%	3%	14%
Weekend (Sa-Su) Volume	-24%	-26%	-34%	-19%	0%	12%	-16%	-10%	-17%	-17%
Weekend (Sa-Su) Speed	2%	-56%	-19%	39%	27%	65%	32%	25%	16%	40%