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A Tale of Two City Streets: Evaluating the Safety, Congestion, and Cut-Through Effects of Road Diets

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A Tale of Two City Streets:

Evaluating the Safety, Congestion, and Cut-Through Effects of Road Diets

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Every year, more than 200 people are killed in Los Angeles while walking, bicycling, or driving. In 2015, Mayor Eric Garcetti launched a citywide Vision Zero initiative, which set a goal to eliminate traffic fatalities by 2025. One key tool the city can use to improve traffic safety on dangerous roads is the road diet, a reconfiguration of lanes that removes vehicle travel lanes. Road diets often face opposition, though. This opposition typically stems from fear of increased traffic congestion and neighborhood cut-through traffic as well as doubt that road diets actually improve traffic safety. My project analyzes crash data, traffic count data, and bluetooth travel data on two similar streets in Northeast Los Angeles to gauge whether road diets have these effects. One of the streets underwent a road diet in 2016 while the other didn't, making them an effective test case. My analysis of shows no evidence that the road diet caused unacceptable traffic conditions or additional neighborhood cut-through traffic. I also find some evidence that the road diet improved traffic safety outcomes. My review of the literature bolsters my findings that road diets are an effective safety countermeasure and that in most scenarios they do not cause unacceptable increases in traffic congestion. The literature on neighborhood cut-through traffic is much less developed. Based on these findings, I recommend that Los Angeles identify additional opportunities to both research and implement road diets.</td></tr>
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DISCLAIMER

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EXECUTIVE SUMMARY

The City of Los Angeles adopted a Vision Zero initiative in 2015, setting a goal to eliminate traffic fatalities citywide by 2025. Road diets, reconfigurations of roadway space that remove vehicle lanes and add space for multimodal infrastructure, are a key tool the Los Angeles Department of Transportation (LADOT) can use to progress toward this goal. However, the implementation of road diets often faces opposition. Some people fear increases in traffic congestion and in neighborhood cut-through traffic, while others doubt that road diets will improve traffic safety outcomes.

My research sets out to determine whether road diets really cause the traffic congestion and cut-through traffic that people fear and whether they do in fact improve traffic safety. To do so, I use two streets in Northeast Los Angeles as test cases. Fletcher Drive received a road diet in 2016, as LADOT converted it from a 4-lane road to a 3-lane road with bicycle lanes and a center left-turn lane. LADOT considered implementing a similar road diet on the nearby Verdugo Road, but ultimately decided not to.

Because the two streets have similar physical characteristics and are part of the same neighborhood, they make an effective test case. My research analyzes the changes in traffic safety, traffic congestion, and cut-through traffic on both roadways. To the extent that I find changes in outcomes on Fletcher Drive after the implementation of the road diet but no changes on Verdugo Road, I have reason to suspect that the road diet is the cause of the change.

My analysis shows no evidence that the Fletcher Drive road diet caused unacceptable traffic conditions or additional neighborhood cut-through traffic on the road. I find some evidence that the road diet improved traffic safety outcomes. Traffic safety outcomes improved on both Fletcher Drive and Verdugo Road in the study period, but the crash rate per million vehicle miles traveled improved more greatly on Fletcher Drive than on Verdugo Road.

I also review the existing literature on the effects of road diets. I find some evidence from previous studies that road diets are an effective safety countermeasure and that in most scenarios they do not cause unacceptable increases in traffic congestion. The existing body of literature on neighborhood cut-through traffic is much less developed.

Based on my findings, I recommend that LADOT identify additional opportunities to both research and implement road diets. My literature review found that road diets can improve traffic safety outcomes in a variety of contexts, and my analysis saw modest safety gains with no evidence that road diets cause traffic congestion or cut-through traffic issues.

To advance the understanding of road diets in Los Angeles, I recommend that LADOT target streets with excess capacity, streets with a high number of severe crashes due to speeding or aggressive driving, and streets with high volumes of multimodal traffic as priority streets for road diets. Such contexts are likely to offer clearer insights and more robust analysis opportunities.

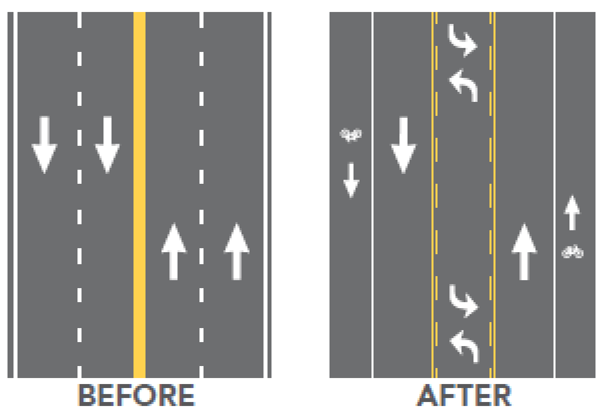
Given the limited findings of my research, LADOT may wish to consider road diet pilot projects that can be tested out, studied, and modified if they do not achieve their stated goals or have unintended consequences. I further recommend that future research examine additional features of road diets, such as their effects on multimodal traffic volumes, air and noise pollution, and vehicle speed.

INTRODUCTION

Every year, more than 200 people are killed in Los Angeles while walking, bicycling, or driving. Children, older adults, and residents of underserved communities are disproportionately represented among these deaths. So, too, are people who walk and bicycle. In 2015, in response to this ongoing crisis, Mayor Eric Garcetti issued an executive directive stating that fatalities are not a tolerable byproduct of transportation. As part of this directive, the mayor launched the citywide Vision Zero initiative, which set a goal to eliminate traffic fatalities citywide by 2025.

The Los Angeles Department of Transportation (LADOT) oversees the planning, design, construction, and maintenance of the City's transportation system. As such, it plays a key role in identifying and improving the city's most dangerous roadways. One key tool in LADOT's toolkit to improve traffic safety on dangerous roads is the road diet. A road diet is a reconfiguration of lanes that typically removes vehicle travel lanes and adds a center left-turn lane as well as bicycle, transit, and/or pedestrian infrastructure (see Figure 1). Its goal is to improve traffic safety and promote multimodal travel (such as walking, bicycling, or transit). The USDOT (2017) calls road diets a "proven safety countermeasures" because they have demonstrated effectiveness at reducing collisions when studied over the past decades.

Figure 1. Two Vehicular lanes are replaced with two bicycle lanes and a center left-turn lane



Despite the ability of road diets to improve safety outcomes, their implementations often face opposition. This opposition comes from a variety of sources: car commuters using the road in question often fear that the decrease in vehicular travel lanes will cause congestion, slowing them down. Residents of adjacent streets often fear that drivers will cut through neighborhood streets to avoid the road diet. Skeptics often express doubt that road diets will improve safety outcomes, including in Los Angeles.

But do road diets really cause the traffic congestion and cut-through traffic that some fear? And do they in fact improve traffic safety? My research project sets out to answer these questions in the context of Los Angeles, a notoriously sprawling and automobile-centric cityscape. To do so, I use two roads in Northeast Los Angeles as test cases.

Fletcher Drive Overview

In 2016, LADOT implemented a road diet on the Fletcher Drive/Avenue 36 corridor between Eagle Rock Boulevard and San Fernando Road in the Glassell Park neighborhood (see Figure 2). Most of the corridor is denoted Fletcher Drive, but the easternmost two blocks are denoted Avenue 36. Throughout this report, I will refer to the entire roadway simply as Fletcher Drive.

Before the road diet, Fletcher Drive was a 56-foot-wide four-lane roadway with street parking and no bicycle facilities (see Figure 3 and Figure 4). It was (and still is) lined primarily by residential development, both single- and multi-family, with some low-intensity commercial uses as well. The segment is 0.66 miles in length.

I analyzed traffic congestion at the intersection of Fletcher Drive and Estara Avenue to estimate congestion levels along the corridor. This signalized intersection is at the approximate midpoint of the corridor and features permissive signals (that is, no left-turn arrows). Estara Avenue, which intersects with Fletcher Drive, features one lane in both directions and lower traffic volumes than Fletcher Drive.

Figure 2. Fletcher Drive Overview

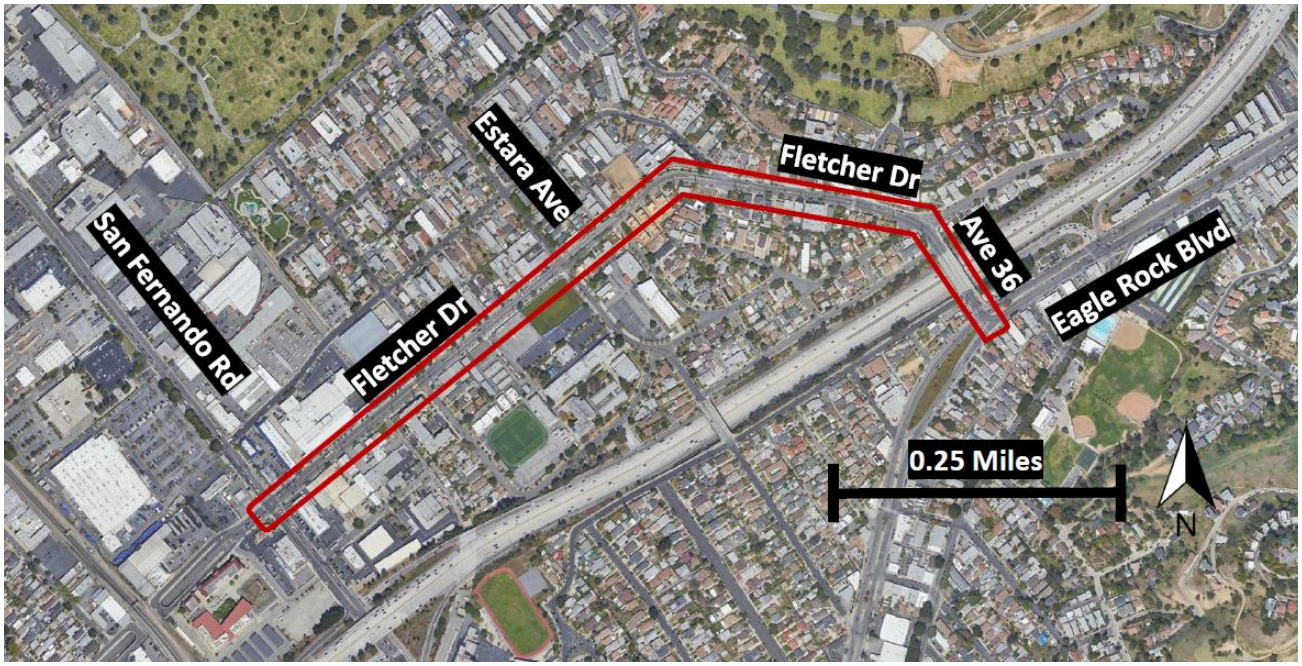
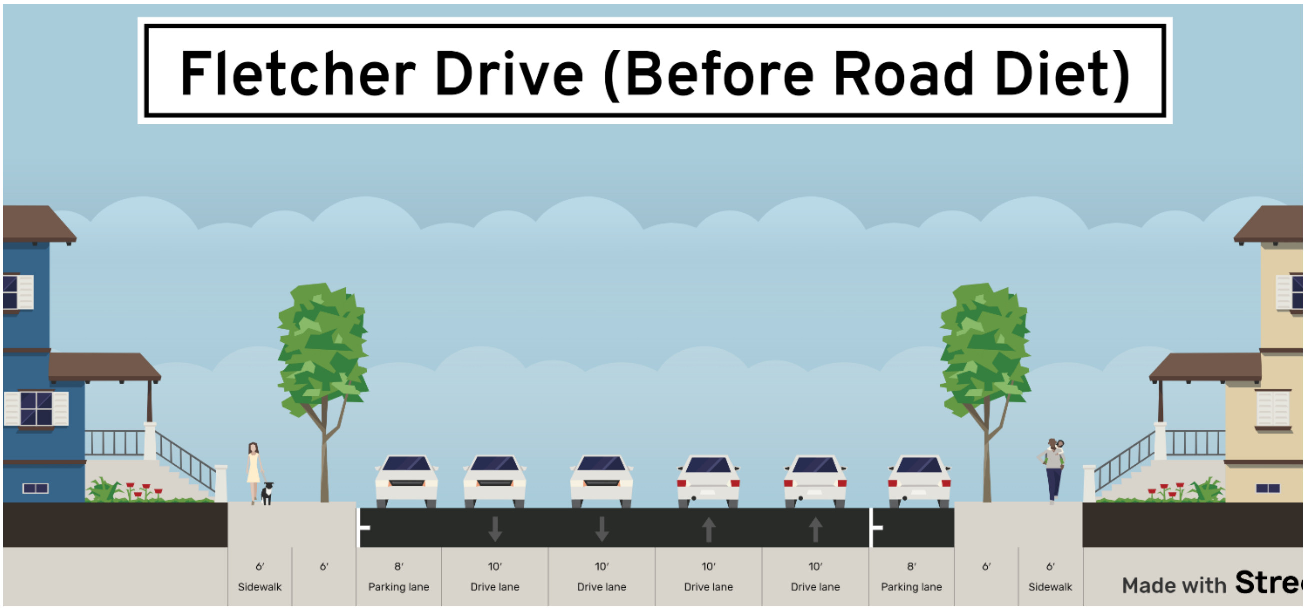


Figure 3. Fletcher Drive Street View Before Road Diet. Source: Google Streetview

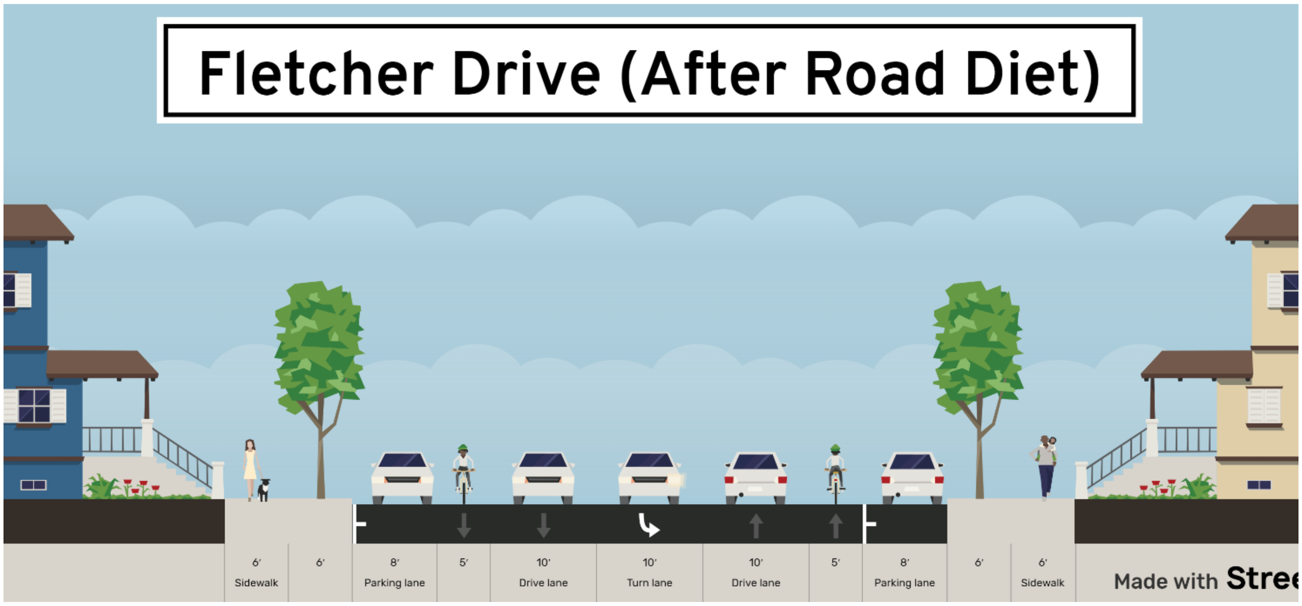
Figure 4. Fletcher Drive Cross-Section Before Road Diet. Source: Streetmix



After the road diet, Fletcher Drive was a 56-foot-wide two-lane roadway with street parking, painted bicycle lanes, and a center left-turn lane (see Figure 5 and Figure 6).

Figure 5. Fletcher Drive Street View After Road Diet. Source: Google Streetview

Figure 6. Fletcher Drive Cross-Section After Road Diet. Source: Streetmix



Verdugo Road Overview

Verdugo Road between Filion Street and Palmer Drive is also a 56-foot-wide 4-lane roadway in the Glassell Park neighborhood with street parking and no bicycle facilities (see Figure 7, Figure 8, and Figure 9). It is also lined primarily with residential development, both single- and multi-family. The segment is 0.76 miles in length and approximately half a mile northeast of Fletcher Drive. The two roadways are not parallel to each other, so an increase in congestion in one roadway is unlikely to cause drivers to use the other. The city briefly considered implementing a road diet on both Fletcher Drive and Verdugo Road, but ultimately opted to only do so on Fletcher Drive.

I analyzed traffic congestion at the intersection of Verdugo Road and Wawona Street to estimate congestion levels along the corridor. This intersection shares many features in common with the intersection of Fletcher Drive and Estara Avenue. It is at the approximate midpoint of the corridor and features permissive signals (that is, no left-turn arrows). Wawona Street, which intersects with Verdugo Road, features one lane in both directions and lower traffic volumes than Verdugo Road.

Figure 7. Verdugo Road Overview

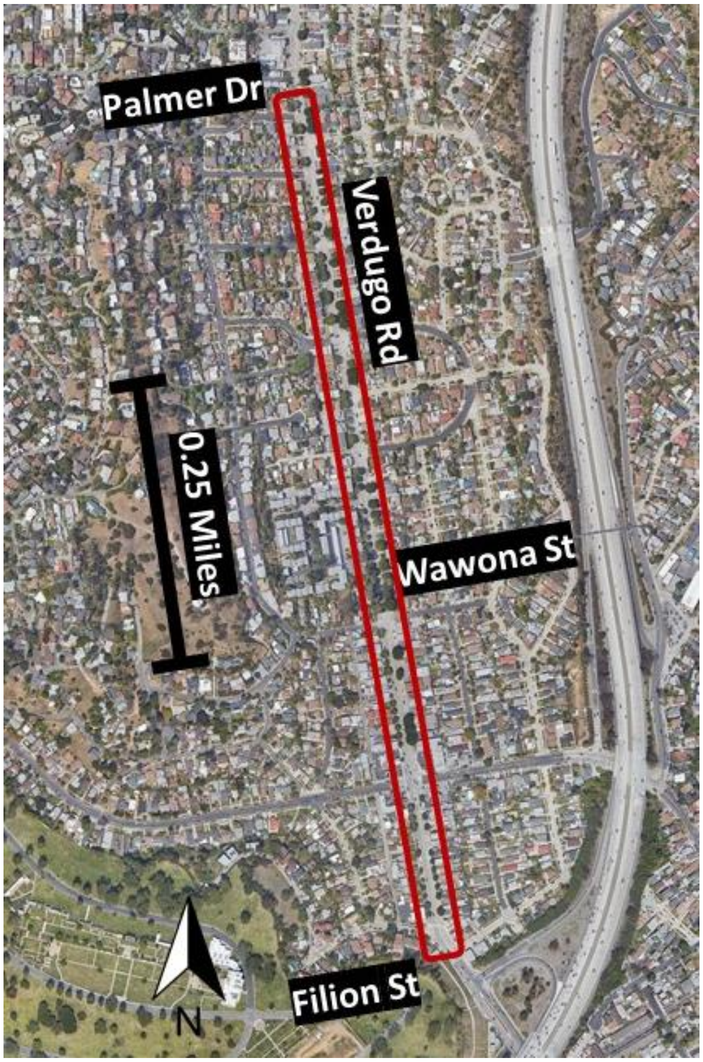
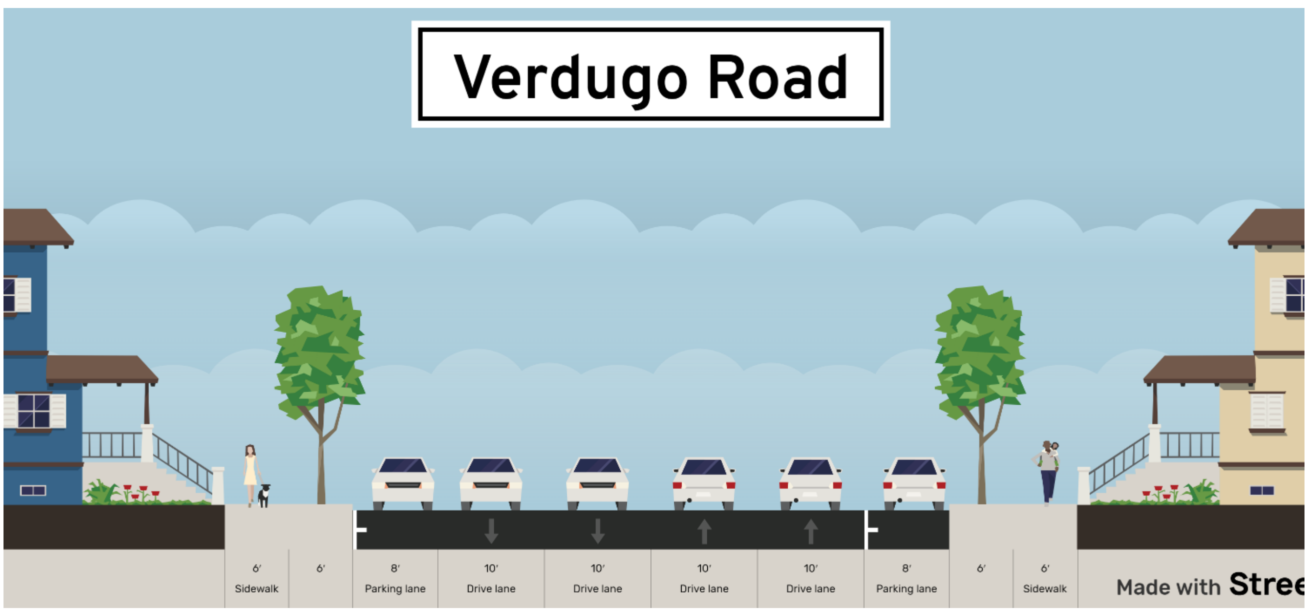


Figure 8. Verdugo Road Street View. Source: Google Streetview

Figure 9. Verdugo Road Cross-Section. Source: Streetmix



Because Fletcher Drive and Verdugo Road have similar physical characteristics, similar surrounding development, and are in the same neighborhood, they make good comparison cases. My analysis examines the changes in traffic safety, traffic congestion, and cut-through traffic experienced on both streets after the implementation of a road diet on Fletcher Drive in 2016. If Fletcher Drive experienced changes in any of these categories that Verdugo Road did not experience, this could be because of the road diet that LADOT implemented on Fletcher Drive.

The rest of this report proceeds as follows. First, I ground this research in the current literature on road diets, especially with respect to their effects on traffic safety, traffic congestion, and cut-through traffic. Next, I describe my research methodology in further detail. After this, I describe my research findings and the upshot of these results. I close with recommendations to policymakers based on these findings.

LITERATURE REVIEW

This section of the report presents the most relevant literature on the effects of road diets. It specifically presents research on the three key topics described in the introduction: traffic safety, vehicle congestion, and cut-through traffic.

As this review shows, multiple studies have researched the effects of road diets on traffic safety and on traffic congestion. The effect of road diets on cut-through traffic, however, has not been researched as deeply. My research replicates past research showing road diets' effects on safety and traffic congestion while addressing a gap in the current literature on road diets' effects on cut-through traffic.

This literature review finds the following:

- Several studies point to road diets as effective safety improvement. They suggest that road diets can reduce the rate of total crashes and of severe crashes.
- Most conventional (4-lane to 3-lane) road diets do not exacerbate traffic congestion, as the capacity of a corridor is controlled primarily by signalized intersections, not simply the number of lanes.
- Only a few studies have researched whether road diets cause drivers to cut through neighborhood streets in lieu of driving on the reconfigured route. These studies have not produced a consensus view on the subject.

TRAFFIC SAFETY

Numerous studies point to conventional road diets as effective traffic safety improvement measures. Based on traffic safety data from multiple states, including California, the USDOT (2017) lists road diets as a "proven safety countermeasure." A research synthesis (Thomas, 2013) identified six robust studies analyzing the traffic safety impacts of road diets. It found that conventional road diets can be expected to reduce total crashes by an average of 29 percent.

The first study on conventional road diets was conducted by the Iowa Department of Transportation (coincidentally located in my hometown of Ames, Iowa) in 1999. This study (Welch, 1999) analyzes safety data from road diets in Minnesota and Washington. Based on his analysis, he estimates that conventional road diets can be expected to result in a "20 to 30 percent decrease in crashes." While this study is noteworthy as the first to estimate the crash impacts of road diets, it does not analyze crash outcomes on nearby streets to control for exogenous impacts to traffic safety.

Huang et al. (2002) analyzed the crash histories of 35 streets in Northern California and greater Seattle, 11 of which had undergone road diets. Their analysis found no statistically significant difference between the road diet and comparison sites in total number of crashes or in severity of crashes. A few years later, Pawlovich et al. (2006) analyzed the crash histories of 30 sites in Iowa, 15 of which had undergone road diets. Their results indicated a 25.2% reduction in crash frequency per mile, which the researchers note differs from Huang's finding of a statistically insignificant reduction.

In 2008, Harkey et al. used data from the studies conducted by Huang et al. and Pawlovich et al. They reanalyzed these data using an empirical Bayes approach (that is, a statistical estimation method that generates sample weights through prior data) and a larger group of reference sites as part of a large National Cooperative Highway Research Program (NCHRP) study. This analysis resulted in a 19 percent estimated reduction in crashes on streets that had undergone road diets. According to Thomas (2013), the Harkey et al. findings are considered a more reliable estimate than the earlier estimate by Huang et al. of a non-significant change in crashes because of their use of reference sites.

Two recent studies from the UCLA Institute of Transportation Studies examine the traffic safety impacts of road diets on streets in Los Angeles. Martinez (2016) analyzed the crash histories of five streets in Los Angeles that underwent road diets between 2006 and 2009. He found a statistically significant reduction in crash and injury rates, but no statistically significant reduction in fatal and severe injury crashes. Logg (2019) analyzed the crash histories of 62 nonconventional road diet projects in Los Angeles. She found non-statistically significant reductions in the per mile rate of total collisions and fatal collisions.

This body of literature suggests that road diets can effectively improve the traffic safety outcomes on a roadway. Additionally, two studies performed in Los Angeles add local evidence that road diets improve traffic safety. However, given the small sample sizes employed by some of these studies and the non-unanimous findings described above, there is more work to be done to discover if there is an ironclad relationship between the implementation of a road diet and traffic crash reduction. The need for additional research to show this relationship even more robustly motivates the following study.

TRAFFIC CONGESTION

Welch's 1999 study analyzes existing traffic congestion on two streets in Iowa as well as projected traffic operations after proposed road diets would be implemented. He states that while many stakeholders assume the 50% reduction in lane-miles will result in a 50% reduction in capacity, this isn't the case. He shows that while traffic delay increases slightly, the streets easily maintain acceptable operations. He explains that the capacity of a corridor is controlled primarily by signalized intersections. Further, many drivers on a four-lane street drive in the right lane unless they are turning left. Thus, the center left-turn lane on a three-lane street functions similarly to the left lane of a four-lane street, causing minimal additional delay for drivers.

In another early study, Burden and Lagerwey (1999) compared volumes on 17 streets in various North American cities before and after they underwent road diets. They found that road diets most commonly take place on streets with ADT volumes of 25,000 vehicles or fewer.

In 2006, Gates et al. studied nine streets in Minnesota that had undergone road diets. They found a decrease in both average and 85th percentile travel speeds of less than two miles per hour. Because they sampled streets with volumes up to 17,400 vehicles per day, they proposed a guideline that road diets should be expected to have minimal congestion impacts for any street with an ADT volume of 17,500 vehicles per day or fewer.

In 2011, Stamatiadis et al. undertook a series of microsimulations to establish volume guidelines for road diet conversions. They found that contrary to the findings of Gates et al., conventional road diets can be applied to streets with up to 23,000 vehicles per day while maintaining acceptable traffic operations.

A recent study from the UCLA Institute of Transportation examines traffic volumes on streets in Los Angeles that underwent road diets. Jouliot (2018) analyzed ADT volumes and limited turning movement counts on four streets in Los Angeles that underwent road diets. He found that traffic volumes increased on the streets with road diets and did not increase on similar nearby streets. In agreement with Welch (1999), Jouliot suggests that road diets process vehicles more efficiently, given their left-turn lanes. A limitation of this study is that it did not collect full hour turning movement count data but instead relied on 15-minute turning movement count and 24-hour ADT data.

The literature strongly suggests that road diets need not cause excessive congestion. Studies find that four-lane roads with ADTs with volumes between 17,400 and 23,000 vehicles per day can maintain acceptable traffic operations after a conventional road diet. Of course, we should expect this volume to vary based on factors like the time profile of the traffic, the volume of side-street traffic, and the presence and design of traffic control (such as signalized intersections) along the corridor.

CUT-THROUGH TRAFFIC

The effect of road diets on cut-through traffic is an understudied topic in the literature. A variety of studies that examine safety and traffic congestion impacts of road diets point out that the potential of road diets to increase traffic on neighborhood streets is an important topic for future research. (Gudz et al., 2016 and Comeau et al., 2016). However, these studies do not research whether the concern of neighborhood cut-through traffic is substantiated in practice.

A limited selection of studies do broach this subject. Sallaberry (2000) analyzed ADT on a street that underwent a road diet in San Francisco as well as parallel arterial streets. The report found that the ADT on the street that underwent a road diet dropped by 10% while the ADTs on the surrounding arterials increased by 2% to 8%.

Ntonifor (2017) analyzed license plate data on neighborhood side streets before and after an arterial in Virginia underwent a road diet. She found that the percentage of traffic "cutting through" remained roughly consistent after the road diet's implementation, and thus concluded that it had no significant effect on cut-through traffic.

Nixon and Agrawal (2017) analyzed ADT data at 45 locations near a street that underwent a road diet in San Jose. They found that some neighborhood streets surrounding the street that underwent a road diet did see increased traffic volumes, especially in the AM peak hour. They also noted that some traffic diverted onto surrounding arterial streets. They conclude that road diets do have the potential to cause trip reroutes.

The literature in this area is not robust or conclusive. It appears that road diets may have the potential to cause drivers to reroute, but it isn't clear whether all or even most road diets will cause these reroutes or whether drivers are more likely to reroute to other arterials, nearby freeways, or neighborhood streets.

RESEARCH METHODOLOGY

In the following sections, I describe the data I used to perform this research and the methodology I used to collect, assemble, and analyze this data.

TRAFFIC SAFETY

I used crash data, downloaded from the City of Los Angeles' online database (RoadSafeGIS), to analyze traffic safety performance of the two roadways. See Appendix A for the downloaded crash data. For each of these roadways, I collected crash data from 2012 to 2020, using geocoded data with information about both crash type and crash severity.

My analysis determines the total number of crashes that occurred on each roadway from 2012 to 2015 as well as from 2017 to 2019, to compare safety performance before and after the road diet's implementation in 2016. In addition to analyzing the total number of crashes, my analysis determines the number of severe (fatal and serious injury) crashes in this same time frame and the types of crashes that occurred.

I excluded crash data from the year 2016 from the analysis because of ongoing construction and excluded crash data from 2020 because of the impacts of the COVID-19 pandemic to travel behavior. I included all crashes that occurred on the roadway segments but excluded crashes that occurred at intersections on the segment boundaries (such as San Fernando Road and Eagle Rock Boulevard). I did so because these intersections were not reconfigured by the road diet.

My analysis also determines the total number of crashes per million vehicle miles traveled on each roadway before and after the road diet's implementation. I use Bluetooth travel data, downloaded from Streetlight Data, Inc., to determine the total volume of traffic on each roadway. For further detail on Streetlight data, see the following two subsections.

TRAFFIC CONGESTION

I used traffic volume data, downloaded from the City of Los Angeles' online database (NavigateLA), to analyze traffic congestion performance at signalized intersections on each of the two roadways in question. See Appendix B for the downloaded traffic count data. For each of these roadways, I collected traffic congestion data from 2011 to 2020. I downloaded the data in PDF format and transcribed it into excel.

I analyzed traffic congestion at signalized intersections on these two roadways because signalized intersections are the primary cause of delay on arterial roadways. As opposed to freeways, where delay is caused by vehicle ingress and egress at ramps, delay on arterials is primarily caused by stoppages in traffic flow due to red lights, stop signs, and pedestrian crossings.

One weakness of traffic count data is the inherent variability in traffic volumes on a day-to-day basis. While the city attempts to count traffic in a consistent manner, they cannot fully control for factors such as weather or special events that could influence traffic volumes. Because the City only collected traffic counts on one day before and after the implementation of the road diet, this source does not account for this variability. Thus, I searched for another source of traffic data.

To augment the traffic count data I collected, I also downloaded traffic data from Streetlight Data, Inc. See Appendix B for the downloaded traffic count data from Streetlight. This data uses Bluetooth travel data to approximate traffic volumes. This data source also comes with drawbacks; because Streetlight's analysis process is not public, I am unable to verify the accuracy of the data. As I will describe in the Findings and Analysis section, the Streetlight data I used showed different trends in traffic patterns than the City of Los Angeles traffic data.

Additionally, Streetlight does not measure vehicles; it measures Bluetooth devices. Because of this, it may count wealthy adult travelers (who may own, for example, a Bluetooth smart watch, an iPhone, and a Bluetooth-enabled vehicle) more than a low-income or youth traveler who does not own any of those devices.

Because the Streetlight data analysis process is not public and does not count cars directly and because the City traffic data comes from counts of physical cars passing through intersections, I believe the City's data to be more reliable.

I use capacity analysis, guided by the Highway Capacity Manual's 6th edition, to assess the change in congestion conditions after the implementation of the road diet on Fletcher Drive. See Appendix C for Synchro output sheets showing the capacity analysis results.

VEHICLE CUT-THROUGH

I use Bluetooth travel data, downloaded from Streetlight Data, Inc., to analyze traffic on parallel corridors to the roadways in question. See Table 8 and Table 9 in the Findings and Analysis section for the downloaded vehicle cut-through data from Streetlight. For each of these roadways, I collect Bluetooth travel data showing the portion of cars cutting through neighborhood routes.

Streetlight identifies every vehicle that travels from one end of Fletcher Drive or Verdugo Road to the other end. On Fletcher Drive, this means traveling from Eagle Rock Boulevard to San Fernando Road. On Verdugo Road, this means vehicles that travel from Filion Street to Palmer Drive. Streetlight then determines the total number of these vehicles that drive on each roadway segment in the corridor's vicinity on their trip. Based on these volumes, I determine the overall magnitude of cut-through traffic volume based on the volumes of traffic on side-streets compared to the volumes of traffic on the main roadway.

My analysis determines the magnitude of through traffic using neighborhood side streets as a cut-through route prior to and after the road diet on both roadways. The "before" time period is the first six months of 2016; this is before the road diet construction began. The "after" time period is the first six months of 2019. My approach allows me to analyze a large dataset that would be difficult to capture by manually counting vehicles. However, it comes with the same drawbacks about Streetlight data outlined above.

FINDINGS AND ANALYSIS

In the following sections, I describe the results of my analysis and my interpretation of the findings on the topics of traffic safety, traffic congestion, and cut-through traffic. I find no evidence to support the claims that road diets cause burdensome congestion or that road diets push traffic onto neighborhood streets. I find some evidence that the road diet improved traffic safety outcomes.

TRAFFIC SAFETY

The following subsection describes the results of my traffic safety analysis and my interpretation of the findings. I find that while total and severe crashes decreased to varying degrees on Fletcher Drive, they also decreased on Verdugo Road. Because these improvements in traffic safety outcomes occurred on both roadways, it’s not clear that the road diet on Fletcher Drive caused the traffic safety improvements.

I also compare the change in crash frequency on these two roadway segments to the changes in traffic volumes. Using traffic volume data from Streetlight, I find evidence that the number of crashes per million vehicle miles decreased more greatly on Fletcher Drive than on Verdugo Road. I used Streetlight data for this analysis because it was the only traffic volume data source available on both roadway segments.

Lastly, I find that the prevalence of sideswipe crashes (a crash type frequently associated with severe crashes) decreased on Fletcher Drive after the installation of the road diet but did not decrease on Verdugo Road. This may suggest a relationship between street configuration and traffic collisions.

Traffic Safety Findings

I analyze crash data on each segment in the four years before (2012 to 2015) and the three years (2017-2019) after the implementation of a road diet on Fletcher Drive in 2016. I exclude data from 2020 because of the impacts to travel behavior from the COVID-19 pandemic. Table 1 through Table 5 present the traffic safety findings, while Table 6 presents these same findings in a single table for ease of reference.

As shown in Table 1, I find decreases in both the total number of crashes and the number of severe crashes (crashes that resulted in a fatality or life-altering injury) on both roads between 2012-2015 and 2017-2019.

Table 1. Crash Summary

	Fletcher Drive		Verdugo Road	
	Total Crashes Per Year	Severe Crashes Per Year	Total Crashes Per Year	Severe Crashes Per Year
2012-2015	7.25	1.25	8.25	0.75
2017-2019	7	0	7	0
Percent Change	-3.5%	-100%	-15%	-100%

Figure 10. Crash Summary

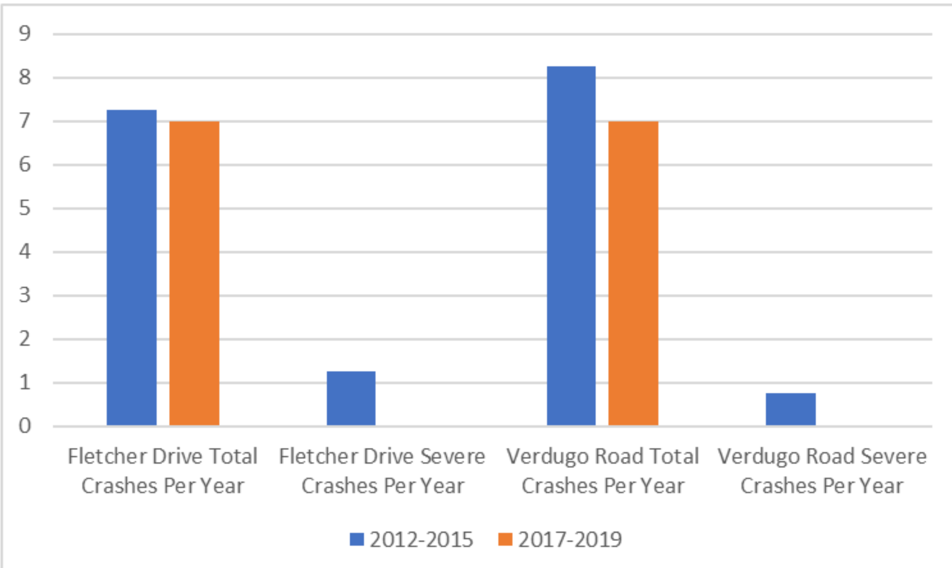


Table 2 and Table 3 below show crash data from Fletcher Drive and Verdugo Road controlling for vehicle miles traveled on each roadway. The crash rate per million vehicle miles traveled on Fletcher Drive decreases by 37% while the crash rate per million vehicle miles traveled on Verdugo Road decreases by 19%.

As shown, the Streetlight data shows a larger increase in travel on Fletcher Drive than on Verdugo Road. Based on this finding, the total crash rate per million vehicle miles traveled on Fletcher Drive decrease more greatly than the crash rate per million vehicle miles traveled on Verdugo Road. The severe crash rate per million vehicle miles traveled decreases to zero in both cases, but the absolute decrease is again greater on Fletcher Drive.

Throughout Los Angeles County, for reference, vehicle miles traveled increased by 4%. (County of Los Angeles Open Data, 2019). This figure aligns with the increase in volume shown on Verdugo Road and shows the increase in traffic on Fletcher Drive to be a potential outlier from the countywide trend.

Table 2. Fletcher Drive Crash Summary by Million Vehicle Miles Traveled

	Total Crashes Per Year	Severe Crashes Per Year	Average Daily Volume	Segment Distance	Total Crashes per Million Vehicle Miles Traveled	Severe Crashes per Million Vehicle Miles Traveled
2012-2015	7.25	1.25	8,520		3.53	0.61
2017-2019	7.00	0	12,940	0.66 miles	2.24	0.00
Percent Change	-3%	-100%	+52%	-	-37%	-100%

Table 3. Verdugo Road Crash Summary by Million Vehicle Miles Traveled

	Total Crashes Per Year	Severe Crashes Per Year	Average Daily Volume	Segment Distance	Total Crashes per Million Vehicle Miles Traveled	Severe Crashes per Million Vehicle Miles Traveled
2012-2015	8.25	0.75	11,700		2.54	0.23
2017-2019	7.00	0	12,180	0.76 miles	2.07	0.00
Percent Change	-15%	-100%	+4%	-	-19%	-100%

Figure 11. Crash Summary by Million Vehicle Miles Traveled

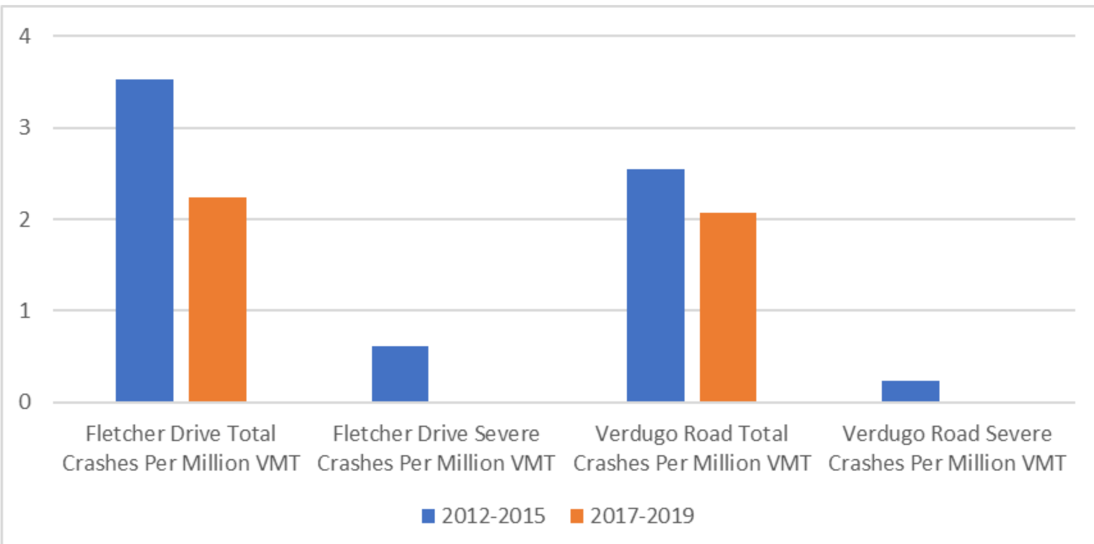


Table 4 and Table 5 below shows crash data on both roadway segments broken down by crash type. As shown, the number of sideswipe crashes decreased on Fletcher Drive but remained relatively consistent on Verdugo Road.

Table 4. Fletcher Drive Crash Type Summary

Years	Sideswipe Crashes Per Year	All Other Crashes Per Year
2012-2015	2.25	5.0
2017-2019	0.67	6.33
Percent Change	-70%	+27%

Table 5. Verdugo Road Crash Type Summary

Years	Sideswipe Crashes Per Year	All Other Crashes Per Year
2012-2015	2.25	6
2017-2019	2.33	4.67
Percent Change	+4%	-22%

Table 6. Traffic Safety Overview

		2012-2015	2017-2019	Percent Change
Fletcher Drive	Total Crashes Per Year	7.25	7	-3.5%
	Severe Crashes Per Year	1.25	0	-100%
	Average Daily Volume	8,520	12,940	+52%
	Segment Distance	0.66 miles		-
	Total Crashes per Million Vehicle Miles Traveled	3.53	2.24	-37%
	Severe Crashes per Million Vehicle Miles Traveled	0.61	0.00	-100%
	Sideswipe Crashes Per Year	2.25	0.67	-70%
	All Other Crashes Per Year	5.0	6.33	+27%
Verdugo Road	Total Crashes Per Year	8.25	7	-15%
	Severe Crashes Per Year	0.75	0	-100%
	Average Daily Volume	11,700	12,180	+4%
	Segment Distance	0.76 miles		-
	Total Crashes per Million Vehicle Miles Traveled	2.54	2.07	-19%
	Severe Crashes per Million Vehicle Miles Traveled	0.23	0.00	-100%
	Sideswipe Crashes Per Year	2.25	2.33	+4%
	All Other Crashes Per Year	6	4.67	-22%

Traffic Safety Findings Interpretation

Total traffic crashes decreased slightly on both Fletcher Drive and Verdugo Road while severe traffic crashes decreased greatly on both streets. Because these improvements in traffic safety outcomes occurred on both roadways, it's not clear that the road diet on Fletcher Drive caused the traffic safety improvements. However, the traffic safety findings for Fletcher Drive are consistent with the literature's prediction of a crash reduction due to the road diet. Additionally, the pronounced decrease in sideswipe crashes suggests that there may be a connection between the road diet and the traffic safety outcome improvement.

Total traffic crashes per million vehicle miles traveled decreased by 37% on Fletcher Drive and by 19% on Verdugo Road. This greater decrease in crash risk on Fletcher Drive may be the result of improved traffic safety through the implementation of a road diet.

Sideswipe crashes are frequently associated with severe crashes and conventional road diets are effective at decreasing their occurrence (USDOT, 2017). Conventional road diets decrease sideswipe crashes because they reduce the number of lanes traveling in a given direction. Because the eliminate drivers' ability to change lanes on a roadway, they reduce the number of sideswipe crashes that occur due to unsafe lane changes. The rate of these crashes decreased by over 70% on Fletcher Drive after the installation of the road diet whereas they increased slightly on Verdugo Road.

TRAFFIC CONGESTION

The following subsection describes the results of my traffic congestion analysis and my interpretation of the findings. I find that traffic congestion levels on both Fletcher Drive and Verdugo Road remain within an acceptable range after the implementation of a road diet on Fletcher Drive. Depending on the data source used, I find either a slight improvement or slight worsening of congestion levels on Fletcher Drive. Based on these findings, I find no evidence that the implementation of a road diet on Fletcher Drive worsened traffic congestion to an unacceptable level.

Traffic Congestion Findings

I analyzed traffic congestion levels at a signalized intersection on each segment before and after the implementation of a road diet on Fletcher Drive in 2016. I used traffic data from Streetlight Data, Inc. and from City of Los Angeles traffic count database, as described in the Research Methods section.

Level of service (LOS) is a traffic engineering descriptor of roadway operations based on the amount of delay a typical driver experiences on a corridor. It ranges from LOS A (little to no delay) to LOS F (gridlock). As shown in Table 7, analysis using Streetlight data showed an overall increase in traffic congestion on Fletcher Drive after the implementation of the road diet while analysis using City traffic counts showed an overall decrease in traffic congestion on Fletcher Drive. Streetlight data showed that traffic congestion levels on Verdugo Road stayed broadly the same.

The increase in traffic congestion on Fletcher Drive using Streetlight data represents an estimated 31 additional seconds of delay for travelers on the corridor. The decrease in traffic congestion on Fletcher Drive using City traffic counts represents an estimated 23 fewer seconds of delay for travelers on the corridor. While the LOS results using the two methods are diametrically opposite (one shows an increase from LOS B to LOS D; the other shows a decrease from LOS D to LOS B) this symmetry is just a coincidence. The total number of seconds of delay are not diametrically opposite.

No City traffic counts were available on Verdugo Road.

Table 7. Traffic Congestion Summary

	Fletcher Drive / Estara Avenue		Verdugo Road / Wawona Street
	LOS (using Streetlight)	LOS (using traffic counts)	LOS (using Streetlight)
2012-2015	B	D	A
2017-2019	D	B	A

Traffic Congestion Findings Interpretation

The California Department of Transportation recently modernized its guidelines for analysis of street performance to no longer refer to LOS. Before this modernization, they generally considered urban intersections to operate acceptably if they operated at level of service D or better (Transportation for America, 2016). Based on this standard, I find that Fletcher Drive continued to operate acceptably after the road diet. Based upon the City's traffic counts, operations actually improved on this roadway. Operations on Verdugo Road, meanwhile, stayed at an acceptable LOS both before and after the Fletcher Drive road diet.

Analysis with City traffic counts show a decrease in traffic congestion on Fletcher Drive after the road diet. And as the following section will show, very little of this difference in traffic can be accounted for by searching for side-street cut-through drivers. So where did this traffic go? Likely, it diffused out by using other routes, such as the nearby State Route 2 (known locally as "the Glendale Freeway") or other regional routes. Other drivers may have chosen to travel at different times or by different modes, or even foregone trips altogether.

Based on these findings, I find no evidence that the Fletcher Drive road diet caused traffic congestion to worsen to an unacceptable level.

CUT-THROUGH TRAFFIC

The following subsection describes the results of my cut-through traffic analysis and my interpretation of the findings. I find that the overall magnitude of cut-through traffic activity increases by 2% on Fletcher Drive after the implementation of the road diet. Meanwhile, the rate of cut-through traffic on Verdugo Road decreased by 59%. I don't find a rationale for the large decrease in cut-through traffic on Verdugo Road. Given the massive reduction, this figure could be an anomaly, as my research finds no changes to the roadway or the immediately surrounding area.

Still, based on the 2% increase to cut-through traffic on Fletcher Drive, I find no evidence that the road diet caused a meaningful increase in cut-through traffic, especially as the "after" period coincides with the prevalence of navigation applications that direct drivers onto residential streets to make trips shorter in distance and time.

Cut-Through Traffic Findings

As described in the Research Methods section, Streetlight reports the volume of traffic on each street in the corridor's vicinity that starts at one end of the corridor and ends at the other. Those values are shown for Fletcher Drive in Table 8 and for Verdugo Road in Table 9 and illustrated for Fletcher Drive in Figure 12 and Figure 13 and for Verdugo Road in Figure 14 and Figure 15. In these figures, brighter, thicker lines illustrate roads with larger volumes of traffic traveling between the beginning and end of the corridor, while narrower, darker lines illustrate roads with smaller volumes of traffic traveling between the beginning and end of the corridor.

The last rows of Table 8 and Table 9 show the sum of the traffic counts on each side street. Because vehicles that travel on multiple side streets are counted more than once, this is not a sum of the number of cut-through trips, but rather a description of the magnitude of cut-through traffic. While not a description of the total number of cut-through trips, it allows us to compare the magnitude of cut-through activity over time.

Table 8 shows that the magnitude of cut-through activity on Fletcher Drive increases from 42% to 43% after the road diet, a 2% increase. Table 9 shows that the magnitude of cut-through activity on Verdugo Road decreased from 22% to 9% after the road diet on Fletcher Drive, a 59% decrease.

Table 8. Fletcher Drive Cut-Through Traffic

Segment	2016 Daily Volume	2016 Daily Volume Percentage	2019 Daily Volume	2019 Daily Volume Percentage
Fletcher Drive	3107	-	3962	-
Andrita Street	406	13%	610	15%
Avenue 32 (N)	212	7%	143	4%
Estara Avenue (N)	189	6%	340	9%
Avenue 35	18	1%	175	4%
Weldon Avenue	0	0%	70	2%
Delay Drive	122	4%	34	1%
Avenue 32 (S)	43	1%	41	1%
Estara Avenue (S)	129	4%	121	3%
Margurite Street	42	1%	35	1%
Portner Street	48	2%	65	2%
Bushwick Street	109	4%	87	2%
Sum	**1318**	**Cut-Through Magnitude: 42%**	**1721**	**Cut-Through Magnitude: 43%**

Figure 12. Fletcher 2016 Cut-Through Map: Minimal cut-through traffic observed avoiding the Fletcher Drive corridor before the road diet was implemented.

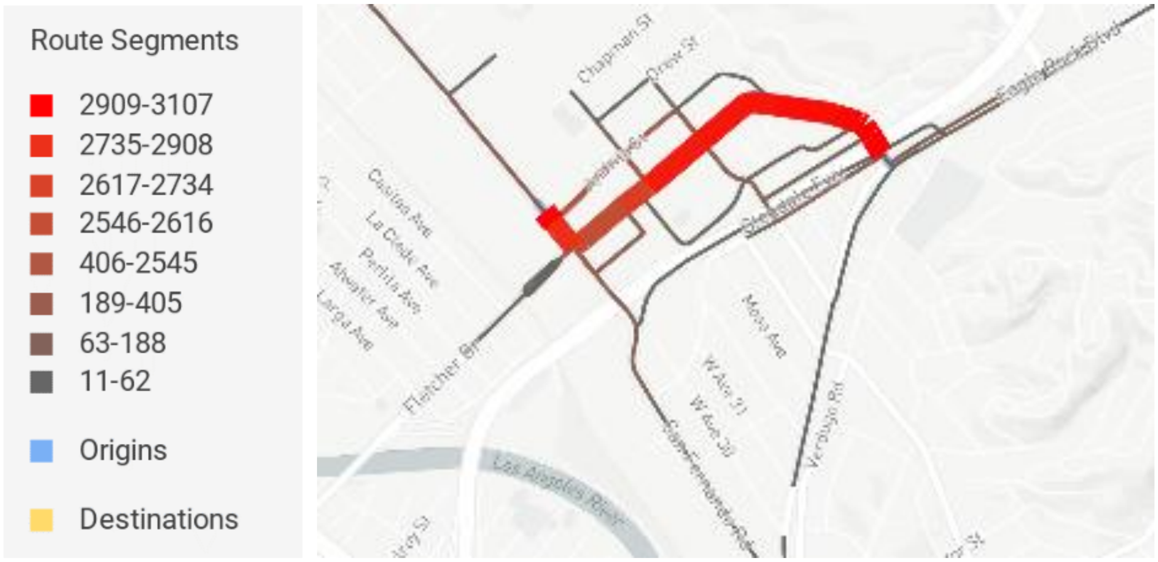


Figure 13. Fletcher 2019 Cut-Through Map: A small increase in cut-through traffic is observed on Fletcher Drive after the road diet implementation.

Table 9. Verdugo Road Cut-Through Traffic

Segment	2016 Daily Volume	2016 Daily Volume Percentage	2019 Daily Volume	2019 Daily Volume Percentage
Verdugo Rd	10607	-	9245	-
Palmer Dr	426	4%	195	2%
Sagamore Way	621	6%	195	2%
Shasta Circle	58	1%	0	0%
Wawona Street	267	3%	72	1%
York Boulevard	560	5%	257	3%
Delevan Drive	361	3%	129	1%
Sum	**2293**	**Cut-Through Magnitude: 22%**	**848**	**Cut-Through Magnitude: 9%**

Figure 14. Verdugo Road 2016 Cut-Through Maps. Minimal cut-through traffic observed avoiding the Verdugo Road corridor in 2016.

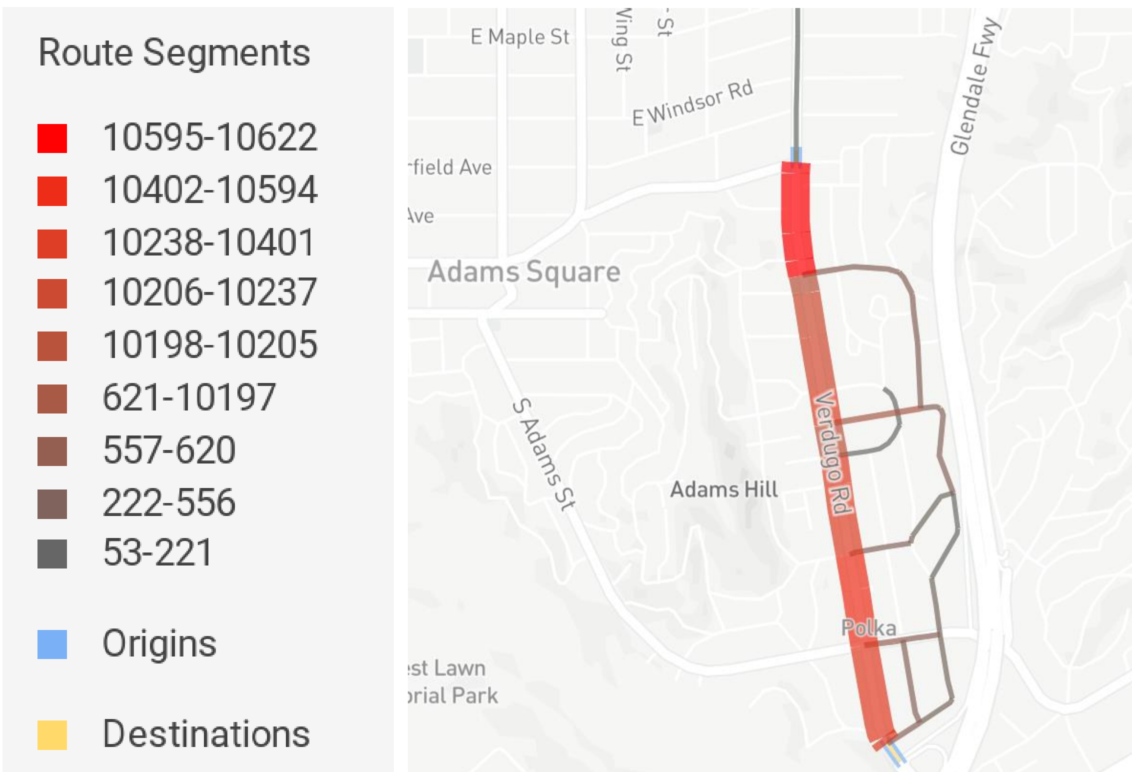
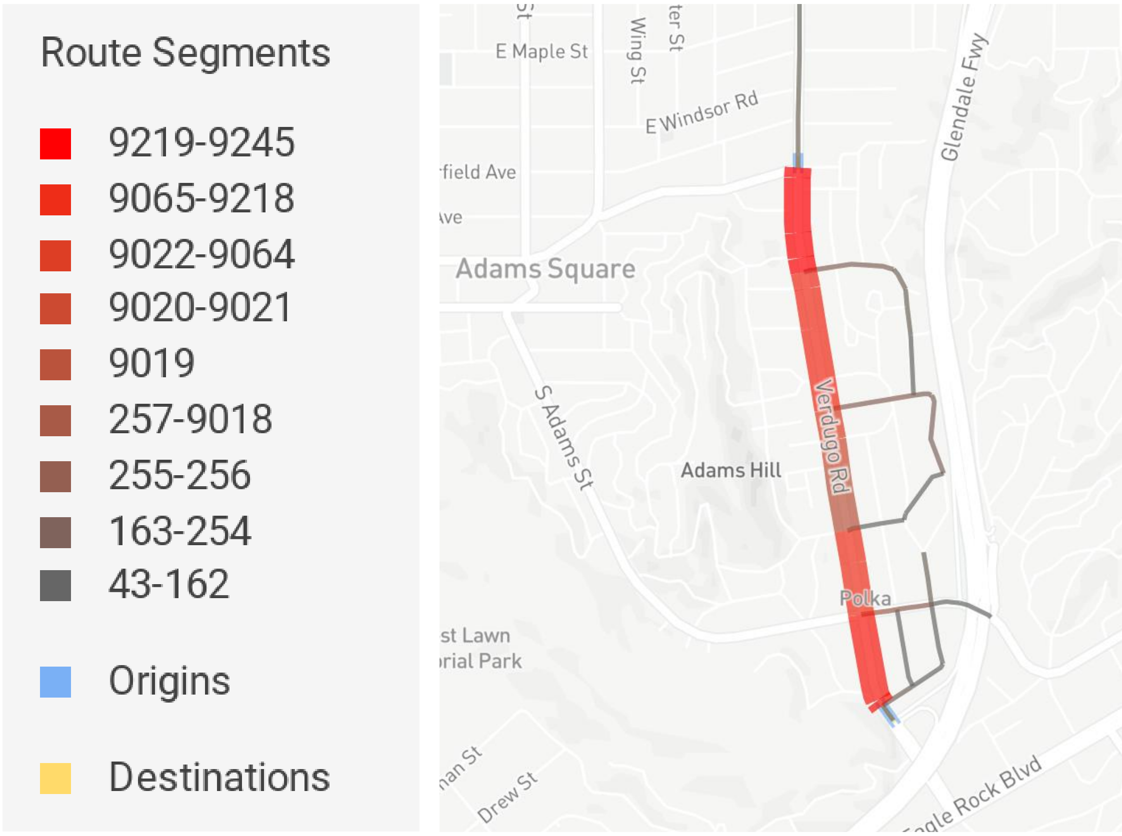


Figure 15. Verdugo Road 2019 Cut-Through Maps. A decrease in cut-through traffic on Verdugo Road is observed in 2019, as compared to 2016.



Cut-Through Findings Interpretation

Because the cut-through traffic activity on Fletcher Drive increased by just 2% after the implementation of a road diet, I do not find evidence that the road diet resulted in an increase in cut-through traffic activity. I also do not find an explanation for the 59% decrease in cut-through activity on Verdugo Road after the implementation of the Fletcher Drive road diet, as my research finds no changes to Verdugo Road or surrounding areas that would cause this change.

POLICY RECOMMENDATIONS

Based on the previous Findings and Analysis section, this research does not find evidence to support the claims that road diets cause burdensome congestion or that road diets push traffic onto neighborhood streets. This research does find some evidence that road diets improve traffic safety outcomes. Additionally, the previous Literature Review section describes findings that suggest that road diets can be an effective traffic safety countermeasure, including in Los Angeles-specific analyses.

Based on these findings, I recommend that LADOT identify additional opportunities to implement road diets. However, given limited findings, LADOT may wish to consider road diet pilot projects that can be tested, studied, and modified if needed to better achieve the City's policies and goals. Doing so can help LADOT make progress toward its Vision Zero goal without creating issues of additional traffic congestion or cut-through traffic. In the sections below, I describe potential streets LADOT should target for future road diets.

STREETS WITH EXCESS CAPACITY

As shown in Appendix C, the intersection of Fletcher Drive and Estara Avenue operated at a level of service B or D, depending on the data source, in the peak hour before the road diet. That is, even in the most highly trafficked hour of the day, this intersection operated with an acceptable (or better than acceptable) level of traffic congestion. Although the road diet reduced the intersection's theoretical capacity, this capacity was previously going unused. This made Fletcher Drive a good candidate for a road diet.

LADOT should identify other streets with excess capacity by determining the level of service at major signalized intersections. On streets with major signalized intersections with excess capacity, they should consider repurposing street space for more productive uses.

One example of such a street is Verdugo Road. As shown in Appendix C, Verdugo Road at the intersection of Wawana Street operated at a level of service A both before and after the Fletcher Drive road diet. That is, even in the most highly trafficked hour of the day, this intersection experienced little to no traffic congestion. This location, while not selected for a road diet, would have been an excellent candidate for one.

STREETS WITH SPEEDING AND CRASHES FROM AGGRESSIVE DRIVING

As shown in the Findings and Analysis section, the rate of severe crashes on Fletcher Drive decreased after the road diet. One likely reason for this decrease is slower speeds and less aggressive driving, given the new infrastructure that makes these behaviors more difficult.

With just one lane of traffic in both directions, motorists experience the street as more of a local road than a highway and drive more slowly and cautiously. Additionally, with only one lane of traffic, motorists cannot change lanes, reducing the occurrence of sideswipe crashes. Lastly, the addition of a center-left turn lane reduces the frequency of broadside crashes, further improving traffic safety outcomes after road diets.

LADOT should identify streets with a high number of severe crashes, and especially severe crashes caused by aggressive driving, sideswipe crashes from swerving, or speeding, as potential road diet candidates. These streets offer the greatest potential project benefit.

STREETS WITH TRANSIT AND/OR BICYCLE TRAFFIC

Many transit routes throughout Los Angeles are greatly delayed by traffic. Because transit vehicles (typically buses) often share the right-of-way with personal vehicles, traffic caused by personal vehicles slow down transit service and make it less appealing, pushing more people to drive personal vehicles. One way to solve this vexing problem is to allot designated roadway space to transit vehicles so personal vehicle traffic does not slow down the more efficient, accessible, and sustainable mode of travel.

A similar narrative applies to bicyclists. Bicyclists riding in mixed traffic with vehicles are especially vulnerable to fatal and severe injury crashes. Dedicated bicycle facilities can improve traffic safety outcomes by reducing travel conflicts between drivers and bicyclists. Reallocating street space from drivers to bicyclists can thus improve traffic safety and make bicycling more convenient and accessible. It can also improve access to transit for people who live within bicycling distance of a frequent transit line.

With this in mind, I recommend that LADOT identify streets with documented multimodal user needs as candidates for road diets. The best transit corridor candidates will feature buses that are frequently slowed down by person vehicle congestion, while the best bicycle corridor candidates will feature high bicycle volumes mixed in traffic with personal vehicles.

AREAS FOR FURTHER STUDY

This research deals with the relationship between road diets and traffic safety, traffic congestion, and cut-through traffic. However, there are many other effects that road diets may have that are under-researched and could prove useful to transportation professionals.

First, further study could help determine the extent to which road diets encourage multimodal travel. This could help determine how road diets affect overall crash rate. How many more pedestrians and bicyclists use roads after a road diet? How does the rate of pedestrian and bicycle crashes – per user – change based on the street reconfiguration? It's possible that the overall number of bicycle crashes could increase on a street after a road diet, but only because the number of bicyclists increases by an even greater amount. Additional study is needed to help unpack these trends.

Road diets may also affect the amount of air and noise pollution the vehicles on a road create. Before and after measurement of these pollution levels could help quantify these effects. In the most extreme cases, when several miles of streets have been closed to car access completely due to regular "CicLAvia" events, air quality has improved along the route and adjacent areas (Shu et. Al, 2016). Also, many road diets add greenery or other landscaping, improving the aesthetics of the road. While these effects are largely qualitative, surveys of residents and street users could help to quantify these effects and more detailed analysis could evaluate the impact on urban heat island effect or stormwater capture opportunities, as well.

Lastly, the relationship between road diets and the speed of roadway users is complex. Congestion, which I research, certainly plays a role. To the extent that congestion reduces speed, this reduction can be perceived as a negative effect. However, road diets may also reduce roadway user speed by slowing the design speed of the road (that is, the speed that roadway users feel comfortable traveling in free-flow conditions). This improves traffic safety, making it a positive effect. Similarly, a road diet may affect top speeds while having negligible impacts on average speeds. Simple speed studies fail to determine whether the speed reduction is due to congestion or a lower design speed, though, necessitating more careful study. Future research could analyze both congestion levels and vehicle speeds during free flow conditions to better understand these trends.

CONCLUSION

Using two streets in Northeast Los Angeles as test cases, I examine whether road diets really cause the traffic congestion and cut-through traffic that some people fear and whether they do in fact improve traffic safety. I find no evidence that road diets cause unacceptable traffic conditions or additional neighborhood cut-through traffic on the road. I also find some evidence that road diets improve traffic safety outcomes. My review of the literature finds similar evidence that road diets can improve traffic safety.

Based on my findings, I recommend that LADOT identify additional opportunities to both research and implement road diets. Given the limited findings of my research, I suggest that LADOT consider road diet pilot projects to gather more information about their effects. Lastly, I suggest areas for future research, such as their effects on multimodal traffic volumes, air and noise pollution, and vehicle speeds.

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Appendix A Crash Data

case_id	collision_date	collision_ti	day_of_week	m_primaryrd	m_secondrd	distance	direction	point_x	point_y	collision_se	number_in	number_ki	ptyatfault	pcf_viol_ca	hit_and_ru	type_of_co	mviw	ped_actior	pcf_violati	weather_1	weather_2	road_surfa	road_cond	road_cond	lighting	control_de	partytype1	party_age1	party_sex1	party_dir1	movement	sobriety1	drug1	veh_type1	veh_year1	veh_make	safety_eq1	partytype2	party_age2	party_sex2	party_dir2	movement	sobriety2	drug2	veh_type2	veh_year2	veh_make	safety_eq2	partytype3	party_age	party_sex3	party_dir3	movement	sobriety3	drug3	veh_type3	veh_year3	veh_make	safety_eq3
5207225	6/23/2011	910	Thursday	VERDUGO RD	PALMER DR	0	Not Stated	-118.234	34.1339	Property D	0	0	1	Unsafe Spe	No	Rear End	Other Mot	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	16	Female	South	Making Lef	Had Not Be	Not Stated	Passenger	2009	HONDA	Air Bag No	Driver	30	Male	South	Making Lef	Had Not Be	Not Stated	Truck or Tr	2002	VOLVO	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
5387747	10/6/2011	1315	Thursday	VERDUGO RD	SHASTA CIR N	45	West	-118.233	34.131	Complaint	1	0	2	Pedestrian	No	Vehicle / P	Pedestrian In Road, in	21954	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	998	Female	North	Entering Tr	Had Not Be	Not Stated	Passenger	2011	HONDA	Air Bag No	Pedestrian	998	Male	West	Stopped	Impairmen	Not Stated	Pedestrian	0	-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
5526820	2/25/2012	1145	Saturday	YORK BLVD	VERDUGO RD	0	Not Stated	-118.232	34.125	Other Visib	4	0	1	Automobil	No	Head-On	Other Mot	No Pedestr	21801	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	52	Female	East	Making Lef	Had Not Be	Not Stated	Passenger	2006	LEXUS	Air Bag De	Driver	25	Male	West	Proceeding	Had Not Be	Not Stated	Passenger	2002	FORD	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
5633941	5/13/2012	950	Sunday	VERDUGO RD	YORK BLVD	60	South	-118.232	34.12483	Complaint	2	0	1	Unsafe Spe	No	Rear End	Other Mot	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	48	Female	South	Slowing / S	Had Not Be	Not Stated	Passenger	2004	VOLVO	Air Bag No	Driver	34	Male	North	Stopped	Had Not Be	Not Stated	Pickup or F	2003	TOYOTA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
5669141	6/8/2012	1630	Friday	VERDUGO RD	DELEVAN DR	400	South	-118.23	34.12191	Property D	0	0	1	Unsafe Spe	Misdemea	Rear End	Other Mot	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	998	Not Stated	North	Proceeding	Impairmen	Not Stated	Not Stated	0	-	Not Stated	Driver	998	Female	North	Proceeding	Had Not Be	Not Stated	Passenger	2012	ACURA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
5686401	6/15/2012	1310	Friday	VERDUGO RD	YORK BLVD	0	Not Stated	-118.232	34.125	Property D	0	0	1	Improper T	Misdemea	Hit Object	Fixed Obje	No Pedestr	22107	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	998	Not Stated	North	Making Rig	Impairmen	Not Stated	Not Stated	0	-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
5776596	9/5/2012	1635	Wednesday	VERDUGO RD	WAWONA ST	10	South	-118.232	34.12708	Complaint	1	0	1	Unsafe Spe	No	Rear End	Other Mot	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	50	Male	North	Proceeding	Impairmen	Not Stated	Passenger	1989	TOYOTA	Air Bag No	Driver	42	Male	North	Stopped	Had Not Be	Not Stated	Pickup or F	1996	TOYOTA	Air Bag De	Driver	51	Female	South	Proceeding	Had Not Be	Not Stated	Passenger	2007	HONDA	Air Bag Deployed
5800888	9/2/2012	255	Sunday	VERDUGO RD	DELEVAN DR	61	North	-118.231	34.12292	Complaint	1	0	1	Driving or I	No	Hit Object	Fixed Obje	No Pedestr	23152	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	Not Stated	Driver	25	Female	South	Ran Off Ro	Had Been I	Not Stated	Passenger	2007	CHEVROLE	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
5820280	8/7/2012	1940	Tuesday	VERDUGO RD	DELEVAN DR	0	East	-118.231	34.12278	Property D	0	0	1	Unsafe Spe	Misdemea	Rear End	Other Mot	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Dusk - Daw	None	Driver	998	Not Stated	East	Proceeding	Impairmen	Not Stated	Not Stated	0	-	Not Stated	Driver	38	Female	East	Stopped	Had Not Be	Not Stated	Passenger	2010	TOYOTA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
5869451	10/8/2012	825	Monday	VERDUGO RD	ORILLA AVE	0	Not Stated	-118.233	34.13309	Severe Inju	1	0	1	Pedestrian	No	Vehicle / P	Pedestrian Crossing in	21950	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	19	Female	North	Proceeding	Had Not Be	Not Stated	Passenger	1994	HONDA	Air Bag No	Pedestrian	76	Female	East	Proceeding	Not Applic	Not Applic	Pedestrian	0	-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
5911750	12/12/2012	1330	Thursday	VERDUGO RD	YORK BLVD	0	Not Stated	-118.232	34.125	Fatal	2	1	1	Traffic Sign	No	Head-On	Other Mot	No Pedestr	21453	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	27	Male	South	Proceeding	Had Been U	Under Dru	Passenger	2006	KIA	Air Bag No	Driver	998	Female	East	Proceeding	Had Not Be	Not Stated	Passenger	2010	HONDA	Air Bag De	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
5955833	11/10/2012	2500	Saturday	VERDUGO RD	PALMER DR	120	South	-118.234	34.13357	Property D	0	0	1	Unsafe Spe	Misdemea	Rear End	Parked Mo	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Not Stated	None	Driver	998	Not Stated	North	Proceeding	Impairmen	Not Stated	Not Stated	0	-	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2002	TOYOTA	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2010	TOYOTA	Not Stated
5986529	2/22/2013	2330	Friday	VERDUGO RD	SHASTA CIR N	2	South	-118.233	34.13087	Property D	0	0	1	Unsafe Spe	Misdemea	Hit Object	Fixed Obje	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	Functionin	Driver	998	Not Stated	South	Ran Off Ro	Impairmen	Not Stated	Passenger	2008	INFINITI	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6026911	3/21/2013	945	Thursday	VERDUGO RD	WAWONA ST	73	South	-118.232	34.12691	Severe Inju	2	0	1	Unsafe Spe	No	Rear End	Other Mot	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	998	Male	North	Proceeding	Had Not Be	Not Stated	Motorcycle	2000	YAMAHA	Driver, Mo	Driver	998	Male	North	Stopped	Had Not Be	Not Stated	Pickup or F	2003	CHEVROLE	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6122202	6/9/2013	2100	Sunday	VERDUGO RD	SHASTA CIR N	0	Not Stated	-118.233	34.13087	Complaint	1	0	1	Automobil	No	Sideswipe	Bicycle	No Pedestr	21801	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	Functionin	Driver	998	Female	North	Making Lef	Had Not Be	Not Stated	Passenger	1996	HONDA	Air Bag No	Bicyclist	998	Male	South	Proceeding	Had Not Be	Not Stated	Bicycle	0	-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6164364	7/25/2013	1900	Thursday	VERDUGO RD	WAWONA ST	50	South	-118.232	34.12697	Other Visib	3	0	1	Wrong Side	No	Sideswipe	Other Mot	No Pedestr	21650	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Not Stated	Driver	27	Male	North	Traveling V	Had Not Be	Not Stated	Passenger	2010	FORD	Air Bag De	Driver	40	Male	North	Stopped	Had Not Be	Not Stated	Passenger	2002	TOYOTA	Air Bag No	Driver	64	Male	South	Proceeding	Had Not Be	Not Stated	Passenger	2012	VOLKSWA	Air Bag Deployed
6179228	8/23/2013	2015	Friday	VERDUGO RD	DELEVAN DR	92	South	-118.231	34.1226	Complaint	4	0	2	Unsafe Spe	No	Rear End	Other Mot	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	Functionin	Driver	38	Female	South	Stopped	Had Not Be	Not Stated	Passenger	2009	LEXUS	Air Bag No	Driver	27	Male	South	Proceeding	Had Not Be	Not Stated	Passenger	2012	VOLKSWA	Air Bag De	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6185109	8/17/2013	1720	Saturday	VERDUGO RD	ORILLA AVE	0	Not Stated	-118.233	34.13309	Complaint	2	0	1	Unsafe Spe	No	Sideswipe	Parked Mo	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	49	Male	North	Proceeding	Had Not Be	Not Stated	Passenger	2012	HYUNDAI	Air Bag No	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Pickup or F	2006	TOYOTA	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Pickup or F	1999	TOYOTA	Not Stated
6197600	5/11/2013	2145	Saturday	VERDUGO RD	WAWONA ST	0	Not Stated	-118.232	34.12711	Property D	0	0	1	Following T	Misdemea	Rear End	Other Mot	No Pedestr	21703	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	998	Male	North	Proceeding	Had Not Be	Not Applic	Passenger	2000	FORD	Not Stated	Driver	998	Female	North	Stopped	Had Not Be	Not Applic	Passenger	2004	CHEVROLE	Other	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6224220	9/15/2013	400	Sunday	VERDUGO RD	WAWONA ST	0	Not Stated	-118.232	34.12711	Property D	0	0		Wrong Side	Misdemea	Sideswipe	Other Mot	No Pedestr	21460	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	998	Not Stated	South	Crossed int	Impairmen	Not Applic	Not Stated	0	-	Not Stated	Driver	998	Female	North	Proceeding	Had Not Be	Not Applic	Not Stated	1999	HONDA	Not Stated	Parked Veh	998	Not Stated	South	Parked	Not Applic	Not Applic	Passenger	2005	FORD	Not Stated
6319580	12/9/2013	1500	Monday	VERDUGO RD	SHASTA CIR N	50	South	-118.233	34.13074	Property D	0	0		Unknown	Misdemea	Rear End	Parked Mo	No Pedestrian Involve		Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	998	Not Stated	South	Proceeding	Impairmen	Not Applic	Not Stated	0	-	Not Stated	Parked Veh	998	Not Stated	South	Parked	Not Applic	Not Applic	Not Stated	2011	BMW	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6505111	5/21/2014	1325	Wednesday	YORK BLVD	VERDUGO RD	0	Not Stated	-118.232	34.125	Complaint	1	0	1	Traffic Sign	No	Broadside	Other Mot	No Pedestr	21453	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	23	Male	North	Proceeding	Had Not Be	Not Stated	Not Stated	2010	SUBARU	Air Bag De	Driver	48	Female	West	Proceeding	Had Not Be	Not Stated	Not Stated	2005	HONDA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6521566	5/12/2014	1740	Monday	VERDUGO RD	SHASTA CIR N	0	Not Stated	-118.233	34.13087	Property D	0	0		Other Thar	No	Hit Object	Other Obje	No Pedestrian Involve		Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	998	Male	North	Stopped	Had Not Be	Not Applic	Not Stated	1999	TOYOTA	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6552984	6/27/2014	2050	Friday	VERDUGO RD	DELEVAN DR	50	South	-118.231	34.12269	Complaint	1	0	1	Unsafe Spe	No	Rear End	Other Mot	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	55	Male	South	Proceeding	Had Not Be	Not Stated	Passenger	2013	NISSAN	Air Bag No	Driver	42	Male	South	Slowing / S	Had Not Be	Not Stated	Passenger	2013	INFINITI	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6553820	6/17/2014	1140	Tuesday	VERDUGO RD	YORK BLVD	18	South	-118.232	34.12495	Complaint	1	0	1	Traffic Sign	No	Broadside	Other Mot	No Pedestr	21453	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	23	Female	North	Proceeding	Had Not Be	Not Stated	Passenger	2013	NISSAN	Air Bag De	Driver	37	Male	West	Proceeding	Had Not Be	Not Stated	Pickup or F	1997	NISSAN	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6571008	7/12/2014	2230	Saturday	VERDUGO RD	WAWONA ST	0	Not Stated	-118.232	34.12711	Complaint	1	0	1	Following T	Felony	Rear End	Other Mot	No Pedestr	21703	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	998	Not Stated	Not Stated	Proceeding	Impairmen	Not Stated	Not Stated	0	-	Not Stated	Driver	58	Female	West	Slowing / S	Not Applic	Not Applic	Passenger	2000	TOYOTA	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6584893	7/26/2014	2200	Saturday	VERDUGO RD	MCCARTHY DR	5	North	-118.233	34.13214	Complaint	1	0	1	Traffic Sign	Felony	Sideswipe	Other Mot	No Pedestr	22450	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	998	Not Stated	South	Making Rig	Impairmen	Not Stated	Not Stated	0	-	Not Stated	Driver	39	Female	South	Proceeding	Had Not Be	Not Stated	Not Stated	2012	MERCEDES	Other	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6604003	8/8/2014	1700	Friday	VERDUGO RD	WAWONA ST	1000	South	-118.232	34.1244	Other Visib	1	0	1	Improper T	No	Broadside	Other Mot	No Pedestr	22107	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	53	Female	East	Making Lef	Had Not Be	Not Stated	Passenger	2007	TOYOTA	Air Bag No	Driver	50	Female	South	Proceeding	Had Not Be	Not Stated	Passenger	2011	JEEP	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6653704	9/10/2014	1945	Wednesday	VERDUGO RD	SHASTA CIR N	60	West	-118.233	34.13104	Complaint	1	0	1	Unknown	Felony	Sideswipe	Bicycle	No Pedestrian Involve		Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	998	Not Stated	West	Proceeding	Impairmen	Not Applic	Not Stated	0	-	Not Stated	Bicyclist	998	Male	West	Proceeding	Had Not Be	Not Stated	Bicycle	0	-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6739397	11/24/2014	2000	Monday	VERDUGO RD	DELEVAN DR	81	South	-118.231	34.12262	Complaint	5	0	1	Unsafe Spe	No	Rear End	Other Mot	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	Functionin	Driver	22	Female	South	Proceeding	Had Not Be	Not Stated	Passenger	2008	TOYOTA	Air Bag No	Driver	61	Female	South	Stopped	Had Not Be	Not Stated	Passenger	1992	LEXUS	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6795902	1/16/2015	210	Friday	VERDUGO RD	FILION ST	0	Not Stated	-118.231	34.12278	Property D	0	0	1	Driving or I	No	Sideswipe	Parked Mo	No Pedestr	23152	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - No S	None	Driver	23	Male	North	Proceeding	Had Been I	Not Stated	Passenger	2006	TOYOTA	Air Bag De	Parked Veh	998	Not Stated	South	Parked	Not Applic	Not Applic	Passenger	1991	BMW	Not Stated	Parked Veh	998	Not Stated	South	Parked	Not Applic	Not Applic	Passenger	2013	FORD	Not Stated
6934380	5/3/2015	1115	Sunday	VERDUGO RD	SHASTA CIR N	0	Not Stated	-118.233	34.13087	Other Visib	3	0	1	Automobil	No	Broadside	Other Mot	No Pedestr	21801	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	998	Male	North	Making Lef	Had Not Be	Not Stated	Passenger	2015	DODGE	Air Bag No	Driver	998	Male	South	Proceeding	Had Not Be	Not Stated	Passenger	2001	MERCEDES	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
6947996	5/20/2015	1735	Wednesday	VERDUGO RD	YORK BLVD	19	North	-118.232	34.12505	Complaint	2	0	1	Automobil	No	Broadside	Other Mot	No Pedestr	21804	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	21	Female	South	Making Lef	Had Not Be	Not Stated	Passenger	2013	MAZDA	Air Bag De	Driver	23	Male	West	Proceeding	Had Not Be	Not Stated	Passenger	2014	TOYOTA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
7125167	11/14/2015	445	Saturday	VERDUGO RD	MCCARTHY DR	40	South	-118.233	34.13202	Other Visib	1	0	1	Other Impr	No	Sideswipe	Parked Mo	No Pedestrian Involve		Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	998	Male	South	Proceeding	Had Not Be	Not Stated	Passenger	2015	AUDI	Air Bag No	Parked Veh	998	Not Stated	South	Parked	Not Applic	Not Applic	Passenger	2001	HONDA	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
7125342	11/7/2015	1850	Saturday	VERDUGO RD	YORK BLVD	0	Not Stated	-118.232	34.125	Property D	0	0	1	Unsafe Lan	Misdemea	Sideswipe	Other Mot	No Pedestr	21658	Clear	Not Stated	Dry	No Unusua	Not Stated	Dusk - Daw	Functionin	Driver	998	Not Stated	North	Changing L	Impairmen	Not Stated	Not Stated	0	-	Not Stated	Driver	49	Female	North	Proceeding	Had Not Be	Not Stated	Passenger	2009	FORD	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8001307	3/19/2016	1520	Saturday	VERDUGO RD	WAWONA ST	300	North	-118.232	34.12792	Complaint	1	0	1	Improper T	No	Broadside	Other Mot	No Pedestr	22107	Clear	Not Stated	Not Stated	No Unusua	Not Stated	Daylight	None	Driver	23	Female	North	Changing L	Impairmen	Not Stated	Passenger	1991	CHEVROLE	Not Requir	Driver	37	Female	North	Proceeding	Had Not Be	Not Stated	Passenger	2007	TOYOTA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8001323	2/10/2016	2005	Wednesday	VERDUGO RD	PALMER DR	10	North	-118.234	34.13392	Complaint	1	0	1	Other Thar	No	Rear End	Other Mot	No Pedestrian Involve		Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	59	Female	South	Proceeding	Had Not Be	Not Stated	Pickup or F	2006	TOYOTA	Air Bag No	Driver	55	Female	South	Stopped	Had Not Be	Not Stated	Passenger	2001	HONDA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8007979	2/27/2016	200	Saturday	VERDUGO RD	SHASTA CIR N	25	West	-118.233	34.13094	Property D	0	0	1	Driving or I	No	Hit Object	Fixed Obje	No Pedestr	23152	Clear	Not Stated	Dry	Other	Not Stated	Dark - Stre	None	Driver	998	Male	South	Ran Off Ro	Had Been I	Not Stated	Passenger	1999	BMW	Air Bag De	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8018978	4/10/2016	2040	Sunday	MCCARTHY DR	VERDUGO RD	0	Not Stated	-118.233	34.13213	Property D	0	0	1	Automobil	Misdemea	Broadside	Other Mot	No Pedestr	21802	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	Functionin	Driver	998	Not Stated	East	Making Rig	Impairmen	Not Stated	Not Stated	0	-	Not Stated	Driver	64	Male	South	Proceeding	Had Been I	Not Stated	Passenger	2012	TOYOTA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8047914	4/18/2016	2025	Monday	VERDUGO RD	DELEVAN DR	0	Not Stated	-118.231	34.12278	Complaint	3	0	1	Unknown	No	Rear End	Other Mot	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	Functionin	Driver	998	Male	South	Proceeding	Had Been I	Not Stated	Not Stated	2007	MERCEDES	Air Bag De	Driver	998	Female	South	Stopped	Had Not Be	Not Stated	Passenger	2015	KIA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8050341	5/17/2016	1630	Tuesday	VERDUGO RD	YORK BLVD	100	East	-118.232	34.12473	Property D	0	0	1	Unsafe Spe	Misdemea	Sideswipe	Parked Mo	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	998	Not Stated	West	Proceeding	Impairmen	Not Stated	Not Stated	0	-	Not Stated	Parked Veh	998	Not Stated	West	Parked	Not Stated	Not Stated	Passenger	1990	CHEVROLE	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8056905	5/2/2016	2330	Monday	VERDUGO RD	YORK BLVD	80	South	-118.232	34.12478	Complaint	1	0		Unknown	Felony	Sideswipe	Other Mot	No Pedestrian Involve		Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	998	Not Stated	South	Other Unsa	Impairmen	Not Stated	Not Stated	0	HONDA	Not Stated	Driver	53	Male	South	Proceeding	Had Not Be	Not Stated	Passenger	2005	TOYOTA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8069842	6/4/2016	1940	Saturday	VERDUGO RD	SHASTA CIR N	70	South	-118.233	34.13068	Complaint	2	0	1	Improper T	Felony	Rear End	Parked Mo	No Pedestr	22107	Clear	Not Stated	Dry	No Unusua	Not Stated	Dusk - Daw	None	Driver	998	Not Stated	North	Proceeding	Impairmen	Impairmen	Passenger	1991	BMW	Not Stated	Driver	33	Male	North	Proceeding	Had Not Be	Not Stated	Passenger	2005	MERCEDES	Air Bag De	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2002	VOLKSWA	Not Stated
8114123	8/6/2016	2215	Saturday	VERDUGO RD	PALMER DR	70	South	-118.233	34.13371	Property D	0	0	1	Driving or I	No	Overturne	Fixed Obje	No Pedestr	23152	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	27	Male	South	Other Unsa	Had Been I	Not Stated	Passenger	2010	HONDA	Air Bag De	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8115867	7/12/2016	1055	Tuesday	VERDUGO RD	YORK BLVD	0	Not Stated	-118.232	34.125	Complaint	1	0		Traffic Sign	No	Broadside	Other Mot	No Pedestr	21453	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	69	Female	East	Proceeding	Not Applic	Not Applic	Passenger	2015	TOYOTA	Air Bag No	Driver	50	Male	South	Proceeding	Not Applic	Not Applic	Passenger	2015	TOYOTA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8121330	7/17/2016	1215	Sunday	YORK BLVD	VERDUGO RD	0	Not Stated	-118.232	34.125	Complaint	1	0	1	Traffic Sign	No	Broadside	Other Mot	No Pedestr	21453	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	52	Male	North	Proceeding	Had Not Be	Not Stated	Not Stated	2015	TOYOTA	Air Bag No	Driver	51	Female	West	Proceeding	Had Not Be	Not Stated	Not Stated	2004	ACURA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8130102	6/28/2016	2020	Tuesday	YORK BLVD	VERDUGO RD	0	Not Stated	-118.232	34.125	Other Visib	1	0	1	Pedestrian	No	Vehicle / P	Pedestrian Crossing in	21950	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	Functionin	Driver	61	Male	West	Making Lef	Had Not Be	Not Stated	Passenger	2007	LINCOLN	Air Bag No	Pedestrian	31	Male	South	Proceeding	Had Not Be	Not Stated	Pedestrian		-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8130114	6/29/2016	1210	Wednesday	PALMER DR	VERDUGO RD	0	Not Stated	-118.234	34.1339	Complaint	1	0		Traffic Sign	No	Vehicle / P	Pedestrian Crossing in	22450	Clear	Not Stated	Dry	Not Stated	Not Stated	Daylight	Not Stated	Driver	53	Male	West	Making Rig	Had Not Be	Not Stated	Passenger	2008	VOLVO	Unknown	Pedestrian	48	Female	Not Stated	Proceeding	Had Not Be	Not Stated	Pedestrian		-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8138273	8/10/2016	1640	Wednesday	VERDUGO RD	SHASTA CIR N	7	North	-118.233	34.13089	Complaint	1	0	1	Following T	No	Rear End	Other Mot	No Pedestr	21703	Clear	Not Stated	Dry	No Unusua	Not Stated	Dusk - Daw	None	Driver	25	Male	South	Proceeding	Had Not Be	Not Stated	Passenger	2013	HONDA	Air Bag De	Driver	51	Male	South	Stopped	Had Not Be	Not Stated	Passenger	2013	MITSUBIS	Air Bag No	Driver	28	Male	South	Stopped	Had Not Be	Not Stated	Passenger	2015	HONDA	Air Bag Not Deployed
8161484	10/15/2016	1115	Saturday	VERDUGO RD	FILION ST	130	North	-118.231	34.12309	Other Visib	1	0		Improper T	No	Sideswipe	Other Mot	No Pedestr	22100	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	63	Male	South	Making U-T	Had Not Be	Not Stated	Not Stated	1997	TOYOTA	Air Bag No	Driver	26	Female	South	Proceeding	Had Not Be	Not Stated	Passenger	2014	FORD	Air Bag De	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8164643	10/17/2016	2115	Monday	VERDUGO RD	YORK BLVD	125	North	-118.232	34.12534	Complaint	1	0	1	Automobil	Felony	Broadside	Other Mot	No Pedestr	21804	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	998	Not Stated	East	Entering Tr	Impairmen	Impairmen	Not Stated		-	Not Stated	Driver	67	Female	South	Proceeding	Had Not Be	Not Stated	Passenger	2004	HONDA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8184510	10/28/2016	905	Friday	VERDUGO RD	DELEVAN DR	0	Not Stated	-118.231	34.12278	Complaint	1	0	1	Unsafe Sta	No	Broadside	Motor Veh	No Pedestr	22106	Raining	Not Stated	Wet	No Unusua	Not Stated	Daylight	None	Driver	65	Male	North	Entering Tr	Had Not Be	Not Stated	Passenger	2009	TOYOTA	Air Bag No	Driver	26	Male	North	Proceeding	Had Not Be	Not Stated	Passenger	2000	HONDA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8196615	11/4/2016	1245	Friday	VERDUGO RD	SHASTA CIR N	0	Not Stated	-118.233	34.13087	Property D	0	0	1	Automobil	No	Broadside	Other Mot	No Pedestr	21801	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	56	Male	North	Making Lef	Had Not Be	Not Stated	Pickup or F	2001	DODGE	Air Bag No	Driver	23	Male	South	Proceeding	Had Not Be	Not Stated	Passenger	2016	TOYOTA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8284455	12/16/2016	910	Friday	VERDUGO RD	YORK BLVD	30	South	-118.232	34.12491	Complaint	1	0	1	Unsafe Spe	Felony	Broadside	Other Mot	No Pedestr	22350	Cloudy	Raining	Wet	No Unusua	Not Stated	Daylight	None	Driver	998	Not Stated	South	Proceeding	Impairmen	Impairmen	Not Stated		-	Not Stated	Driver	39	Male	South	Making Rig	Had Not Be	Not Stated	Passenger	2002	FORD	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8284607	11/20/2016	2230	Sunday	VERDUGO RD	WAWONA ST	40	West	-118.232	34.12721	Other Visib	1	0	1	Unsafe Sta	No	Broadside	Other Mot	No Pedestr	22106	Raining	Not Stated	Wet	Not Stated	Not Stated	Dusk - Daw	Not Stated	Driver	70	Male	West	Other Unsa	Had Not Be	Not Stated	Passenger	1999	HONDA	Air Bag No	Driver	32	Male	West	Proceeding	Had Not Be	Not Stated	Passenger	2008	KIA	Air Bag De	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8310664	12/31/2016	2115	Saturday	VERDUGO RD	WAWONA ST	38	North	-118.232	34.12721	Complaint	1	0	1	Driving or I	No	Rear End	Parked Mo	No Pedestr	23152	Cloudy	Not Stated	Wet	No Unusua	Not Stated	Dark - Stre	Functionin	Driver	22	Female	North	Proceeding	Had Been I	Not Stated	Passenger	2005	DODGE	Air Bag De	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2014	BUICK	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2009	NISSAN	Not Stated
8310799	1/12/2017	1830	Thursday	VERDUGO RD	WAWONA ST	150	North	-118.232	34.12751	Complaint	1	0	1	Following T	No	Rear End	Other Mot	No Pedestr	21703	Raining	Not Stated	Wet	Not Stated	Not Stated	Dark - Stre	None	Driver	24	Male	North	Proceeding	Had Not Be	Not Stated	Passenger	2012	TOYOTA	Air Bag De	Driver	62	Male	North	Making Rig	Had Not Be	Not Stated	Passenger	2015	HONDA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8317294	1/7/2017	1410	Saturday	VERDUGO RD	SHASTA CIR N	125	North	-118.233	34.13121	Other Visib	2	0	1	Unsafe Spe	No	Head-On	Parked Mo	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	46	Male	North	Proceeding	Had Not Be	Not Stated	Passenger	2000	HONDA	Air Bag De	Driver	35	Male	South	Proceeding	Had Not Be	Not Stated	Passenger	2001	HONDA	Air Bag De	Parked Veh	998	Not Stated	South	Parked	Not Applic	Not Applic	Passenger	1996	NISSAN	Not Stated
8325097	2/19/2017	2010	Sunday	VERDUGO RD	SHASTA CIR S	0	Not Stated	-118.233	34.12936	Property D	0	0		Traffic Sign	Misdemea	Sideswipe	Other Mot	No Pedestr	22450	Raining	Not Stated	Wet	No Unusua	Not Stated	Dark - Stre	Functionin	Driver	998	Not Stated	North	Making Rig	Impairmen	Not Stated	Not Stated	1995	CHRYSLER	Not Stated	Driver	35	Male	North	Proceeding	Had Not Be	Not Stated	Passenger	2011	LEXUS	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8325249	2/15/2017	2050	Wednesday	YORK BLVD	VERDUGO RD	0	Not Stated	-118.232	34.125	Complaint	4	0	1	Automobil	No	Broadside	Other Mot	No Pedestr	21801	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	Functionin	Driver	19	Male	West	Making Lef	Had Not Be	Not Stated	Passenger	2012	TOYOTA	Air Bag De	Driver	35	Female	South	Proceeding	Had Not Be	Not Stated	Passenger	1998	TOYOTA	Air Bag De	Driver	34	Male	East	Stopped	Had Not Be	Not Stated	Passenger	2001	HONDA	Air Bag Not Deployed
8472491	8/31/2017	1550	Thursday	VERDUGO RD	YORK BLVD	0	Not Stated	-118.232	34.125	Other Visib	1	0		Unsafe Spe	Felony	Broadside	Other Mot	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	998	Not Stated	Not Stated	Not Stated	Impairmen	Impairmen	Not Stated		-	Not Stated	Driver	51	Male	South	Entering Tr	Not Applic	Not Applic	Passenger	1998	TOYOTA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8493869	10/12/2017	1445	Thursday	VERDUGO RD	WAWONA ST	0	Not Stated	-118.232	34.12711	Other Visib	2	0	1	Automobil	No	Broadside	Other Mot	No Pedestr	21801	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	48	Female	East	Making Lef	Had Not Be	Not Stated	Passenger	2017	TOYOTA	Air Bag No	Driver	32	Male	North	Proceeding	Had Not Be	Not Stated	Passenger	2012	TOYOTA	Air Bag De	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8519098	11/23/2017	1510	Thursday	YORK BLVD	VERDUGO RD	0	Not Stated	-118.232	34.125	Other Visib	1	0	1	Automobil	Felony	Broadside	Bicycle	No Pedestr	21801	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	998	Not Stated	West	Making Lef	Impairmen	Impairmen	Not Stated		-	Not Stated	Bicyclist	37	Female	East	Proceeding	Had Not Be	Not Stated	Bicycle		-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8534623	1/6/2018	1540	Saturday	VERDUGO RD	SHASTA CIR	0	Not Stated	-118.233	34.13087	Property D	0	0		Unsafe Sta	Misdemea	Head-On	Other Mot	No Pedestr	22106	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	998	Not Stated	West	Proceeding	Not Applic	Not Applic	Passenger	2005	SCION	Air Bag No	Driver	29	Male	North	Backing	Not Applic	Not Applic	Passenger	2017	CHRYSLER	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8540522	12/25/2017	1925	Monday	VERDUGO RD	YORK BLVD	0	Not Stated	-118.232	34.125	Other Visib	1	0	1	Automobil	No	Broadside	Other Mot	No Pedestr	21801	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	Functionin	Driver	21	Male	East	Making Lef	Had Not Be	Not Stated	Passenger	2004	PORSCHE	Air Bag No	Driver	22	Male	North	Proceeding	Had Not Be	Not Stated	Passenger	2000	MERCEDES	Air Bag De	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8577422	2/3/2018	1420	Saturday	VERDUGO RD	MCCARTHY DR	0	Not Stated	-118.233	34.13213	Other Visib	1	0	1	Unsafe Sta	No	Vehicle / P	Pedestrian Not in Roa	22106	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	69	Male	North	Parking Ma	Not Stated	Not Stated	Passenger	2012	DODGE	Air Bag No	Pedestrian	90	Male	South	Other	Not Stated	Not Stated	Pedestrian		-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8609148	4/15/2018	200	Sunday	VERDUGO RD	YORK BLVD	150	South	-118.232	34.12459	Property D	0	0	1	Unsafe Spe	Misdemea	Sideswipe	Parked Mo	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	998	Not Stated	North	Proceeding	Impairmen	Not Stated	Passenger	1999	ACURA	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	1998	HONDA	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2002	HONDA	Not Stated
8630814	5/10/2018	710	Thursday	VERDUGO RD	DELEVAN DR	190	South	-118.231	34.12238	Property D	0	0		Traffic Sign	No	Broadside	Other Mot	No Pedestr	21453	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	41	Male	South	Proceeding	Had Not Be	Not Stated	Passenger	2008	BMW	Air Bag De	Driver	26	Male	West	Making Lef	Had Not Be	Not Stated	Passenger	2013	HONDA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8692315	8/26/2018	2210	Sunday	VERDUGO RD	YORK BLVD	360	North	-118.232	34.12597	Property D	0	0	1	Unsafe Spe	Misdemea	Sideswipe	Parked Mo	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	20	Female	North	Proceeding	Impairmen	Not Stated	Passenger	2016	TOYOTA	Air Bag De	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	1997	TOYOTA	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2011	JEEP	Not Stated
8772255	11/22/2018	1525	Thursday	VERDUGO RD	YORK BLVD	0	Not Stated	-118.232	34.125	Complaint	3	0		Traffic Sign	No	Broadside	Other Mot	No Pedestr	21453	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	41	Female	North	Proceeding	Had Not Be	Not Stated	Passenger	2017	TOYOTA	Air Bag De	Driver	57	Female	West	Proceeding	Had Not Be	Not Stated	Passenger	1995	HONDA	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8815005	1/11/2019	2300	Friday	SHASTA CIR	VERDUGO RD	0	Not Stated	-118.233	34.13087	Property D	0	0	1	Improper T	Misdemea	Sideswipe	Parked Mo	No Pedestr	22107	Raining	Not Stated	Wet	No Unusua	Not Stated	Dark - Stre	Functionin	Driver	998	Not Stated	South	Making Lef	Not Applic	Not Applic	Not Stated		-	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2015	BMW	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8861782	3/22/2019	910	Friday	FILION ST	VERDUGO RD	0	Not Stated	-118.231	34.12278	Property D	0	0	1	Unsafe Sta	Misdemea	Rear End	Parked Mo	No Pedestr	22106	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	998	Not Stated	West	Parking Ma	Impairmen	Impairmen	Not Stated		-	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2018	HONDA	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8863153	4/1/2019	1525	Monday	VERDUGO RD	SAGAMORE WAY	7	North	-118.233	34.13012	Complaint	2	0	1	Improper T	No	Sideswipe	Other Mot	No Pedestr	22107	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	81	Female	West	Making Lef	Had Not Be	Not Stated	Passenger	2007	MERCEDES	Air Bag De	Driver	23	Male	North	Proceeding	Had Not Be	Not Stated	Passenger	1995	TOYOTA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8932533	7/31/2019	1750	Wednesday	VERDUGO RD	PALMER DR	45	South	-118.234	34.13377	Other Visib	2	0	1	Improper T	No	Broadside	Other Mot	No Pedestr	22102	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	28	Female	East	Making U-T	Had Not Be	Not Stated	Passenger	2008	NISSAN	Air Bag De	Driver	41	Male	East	Proceeding	Had Not Be	Not Stated	Passenger	2013	TOYOTA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8953436	9/26/2019	1540	Thursday	VERDUGO RD	WAWONA ST	85	West	-118.232	34.12733	Property D	0	0	1	Unsafe Spe	Misdemea	Sideswipe	Parked Mo	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	998	Not Stated	West	Proceeding	Impairmen	Not Stated	Passenger	2003	HONDA	Not Stated	Parked Veh	998	Not Stated	East	Parked	Not Applic	Not Applic	Passenger	2007	TOYOTA	Air Bag No	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
8977120	10/6/2019	450	Sunday	VERDUGO RD	SAGAMORE WAY	0	Not Stated	-118.233	34.1301	Property D	0	0	1	Wrong Side	Misdemea	Sideswipe	Other Mot	No Pedestr	21651	Clear	Not Stated	Dry	Not Stated	Not Stated	Daylight	Functionin	Driver	998	Not Stated	North	Traveling V	Impairmen	Impairmen	Not Stated	2015	NISSAN	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2018	HONDA	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Stated	Not Stated	Passenger	2019	TOYOTA	Not Stated
9009799	12/10/2019	1625	Tuesday	VERDUGO RD	YORK BLVD	0	Not Stated	-118.232	34.125	Complaint	1	0	1	Unknown	No	Sideswipe	Other Mot	No Pedestr	22007	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	Functionin	Driver	39	Female	North	Making U-T	Had Not Be	Not Stated	Passenger	2008	NISSAN	Passenger,	Driver	40	Male	North	Proceeding	Had Not Be	Not Stated	Passenger	2006	FORD	Lap Belt Us	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
9043452	1/6/2020	422	Monday	VERDUGO RD	SAGAMORE WAY	75	South	-118.233	34.1299	Property D	0	0	1	Unsafe Spe	Misdemea	Rear End	Parked Mo	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Functionin	Driver	998	Not Stated	North	Proceeding	Had Been I	Not Stated	Pickup or F	2003	CHEVROLE	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2018	KIA	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2011	BMW	Not Stated
9089688	3/4/2020	300	Wednesday	VERDUGO RD	YORK BLVD	0	Not Stated	-118.232	34.125	Property D	0	0	1	Improper T	Misdemea	Rear End	Parked Mo	No Pedestr	22107	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	998	Not Stated	North	Proceeding	Impairmen	Impairmen	Passenger	2009	HONDA	Not Stated	Parked Veh	998	Not Stated	Not Stated	Parked	Not Applic	Not Applic	Passenger	2015	AUDI	Not Stated	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2009	-	Not Stated
9092320	4/17/2020	1130	Friday	VERDUGO RD	FILION ST	0	Not Stated	-118.231	34.12278	Complaint	1	0	1	Unsafe Spe	Felony	Sideswipe	Other Mot	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	998	Not Stated	South	Proceeding	Impairmen	Impairmen	Not Stated		-	Not Stated	Driver	28	Male	South	Proceeding	Had Not Be	Not Stated	Passenger	1995	-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
9120977	6/22/2020	1615	Monday	VERDUGO RD	SHASTA CIR N	0	Not Stated	-118.233	34.13087	Other Visib	2	0	1	Improper T	Felony	Rear End	Non-Collisi	No Pedestr	22107	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	Not Stated	Driver	998	Not Stated	North	Proceeding	Impairmen	Impairmen	Passenger	2010	-	Air Bag De	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
9125492	7/8/2020	2330	Wednesday	VERDUGO RD	YORK BLVD	300	South	-118.232	34.12418	Other Visib	1	0	1	Pedestrian	No	Vehicle / P	Pedestrian In Road, in	21956	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Pedestrian	45	Female		Not Stated	Not Stated	Impairmen	Pedestrian		-	Not Stated	Driver	71	Female	North	Proceeding	Had Not Be	Not Stated	Passenger	1997	-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
9130806	7/19/2020	805	Sunday	VERDUGO RD	FILION ST	180	North	-118.231	34.12321	Other Visib	1	0	1	Unsafe Spe	No	Rear End	Parked Mo	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	25	Male	North	Proceeding	Had Not Be	Not Stated	Passenger	2020	-	Air Bag De	Parked Veh	998	Not Stated	North	Parked	Not Applic	Not Applic	Passenger	2012	-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
9142969	8/8/2020	1000	Saturday	VERDUGO RD	MCCARTHY DR	15	South	-118.233	34.13208	Property D	0	0	1	Unsafe Sta	Misdemea	Rear End	Parked Mo	No Pedestr	22106	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	998	Not Stated	North	Backing	Not Stated	Not Stated	Passenger	1986	-	Not Stated	Parked Veh	998	Not Stated	East	Parked	Not Applic	Not Applic	Passenger	2020	-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
9198758	11/9/2020	710	Monday	VERDUGO RD	WAWONA ST	15	South	-118.232	34.12706	Property D	0	0	1	Improper T	Misdemea	Hit Object	Fixed Obje	No Pedestr	22107	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	998	Not Stated	North	Ran Off Ro	Impairmen	Impairmen	Passenger	2000	JEEP	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
9200765	10/15/2020	1515	Thursday	VERDUGO RD	SAGAMORE WAY	40	North	-118.233	34.13021	Complaint	1	0	1	Unsafe Spe	Misdemea	Sideswipe	Parked Mo	No Pedestr	22350	Clear	Not Stated	Dry	No Unusua	Not Stated	Daylight	None	Driver	65	Female	East	Making U-T	Impairmen	Impairmen	Passenger	2020	-	Air Bag De	Parked Veh	50	Male	South	Proceeding	Not Applic	Not Applic	Passenger	2018	-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated
9210173	10/1/2020	5	Thursday	VERDUGO RD	PALMER DR	60	North	-118.234	34.13406	Property D	0	0	1	Improper T	Misdemea	Rear End	Parked Mo	No Pedestr	22107	Clear	Not Stated	Dry	No Unusua	Not Stated	Dark - Stre	None	Driver	998	Not Stated	South	Making U-T	Impairmen	Impairmen	Passenger		-	Not Stated	Parked Veh	998	Not Stated	South	Parked	Not Applic	Not Applic	Passenger	2018	-	Not Stated	Not Stated		Not Stated	Not Stated	Not Stated	Not Stated	Not Stated	Not Stated			Not Stated

case_id	collision_date	collision_t	day_of_w	m_primaryrd	m_secondrd	distance	direction	point_x	point_y	collision_severity
5043352	1/6/2011	1955	Thursday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	350	North	-118.245	34.1155	Property Damage C
5043360	1/17/2011	1325	Monday	FLETCHER DR	ESTARA AVE	40	South	-118.241	34.118	Property Damage C
5107180	3/4/2011	720	Friday	FLETCHER DR	ESTARA AVE	20	West	-118.241	34.118	Property Damage C
5114541	3/6/2011	1945	Sunday	FLETCHER DR	ANDRITA ST	0	Not State	-118.239	34.1191	Property Damage C
5131334	3/13/2011	2215	Sunday	FLETCHER DR	ESTARA AVE	20	South	-118.241	34.118	Complaint of Pain
5142974	4/11/2011	1820	Monday	FLETCHER DR	AVE 32	0	Not State	-118.244	34.1165	Other Visible Injury
5158891	5/6/2011	1345	Friday	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Complaint of Pain
5158958	5/5/2011	1725	Thursday	FLETCHER DR	ESTARA AVE	0	South	-118.241	34.1181	Other Visible Injury
5196470	5/18/2011	1420	Wednesda	FLETCHER DR	DELAY DR	5	East	-118.244	34.1161	Other Visible Injury
5209028	6/1/2011	1005	Wednesda	FLETCHER DR	ESTARA AVE	0	Not State	-118.241	34.1181	Other Visible Injury
5300412	9/12/2011	1530	Monday	FLETCHER DR	ESTARA AVE	150	South	-118.242	34.1178	Complaint of Pain
5321923	9/23/2011	2240	Friday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	0	Not State	-118.246	34.1149	Property Damage C
5321930	9/30/2011	210	Friday	FLETCHER DR	ANDRITA ST	94	South	-118.238	34.1191	Property Damage C
5331781	8/29/2011	1850	Monday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	100	East	-118.246	34.1151	Complaint of Pain
5363318	9/10/2011	1500	Saturday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	130	North	-118.246	34.1151	Property Damage C
5477116	12/31/2011	15	Saturday	FLETCHER DR	AVE 34	70	North	-118.24	34.1187	Property Damage C
5484602	1/9/2012	1930	Monday	FLETCHER DR	ESTARA AVE	30	North	-118.241	34.1181	Complaint of Pain
5499422	1/24/2012	2310	Tuesday	FLETCHER DR	WELDON AVE	0	Not State	-118.236	34.1188	Property Damage C
5516771	2/15/2012	1240	Wednesda	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	0	Not State	-118.246	34.1149	Property Damage C
5535430	3/10/2012	2015	Saturday	FLETCHER DR	AVE 32	67	North	-118.243	34.1166	Severe Injury
5541385	2/26/2012	250	Sunday	FLETCHER DR	ANDRITA ST	100	South	-118.238	34.1191	Property Damage C
5578698	3/17/2012	2310	Saturday	FLETCHER DR	AVE 35	120	North	-118.239	34.1192	Property Damage C
5632411	4/14/2012	1545	Saturday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	80	East	-118.246	34.115	Complaint of Pain
5686641	6/12/2012	2110	Tuesday	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Complaint of Pain
5740667	7/22/2012	915	Sunday	ESTARA AVE	FLETCHER DR	0	Not State	-118.241	34.1181	Severe Injury
5766646	10/18/2012	1410	Thursday	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Property Damage C
5767362	9/22/2012	345	Saturday	FLETCHER DR	WELDON AVE	0	Not State	-118.236	34.1188	Property Damage C
5783074	7/29/2012	250	Sunday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	100	North	-118.246	34.1151	Property Damage C
5819401	8/6/2012	1135	Monday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	200	North	-118.245	34.1152	Complaint of Pain
5833189	10/26/2012	645	Friday	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Complaint of Pain
5934125	3/2/2013	1300	Saturday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	75	East	-118.246	34.115	Property Damage C
5975173	10/24/2012	1245	Wednesda	FLETCHER DR	ESTARA AVE	0	Not State	-118.241	34.1181	Complaint of Pain
6002526	1/14/2013	1820	Monday	FLETCHER DR	AVE 32	4	South	-118.244	34.1165	Complaint of Pain
6002677	1/3/2013	2330	Thursday	FLETCHER DR	ESTARA AVE	185	North	-118.241	34.1184	Property Damage C
6068945	4/16/2013	740	Tuesday	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Severe Injury
6088035	5/22/2013	745	Wednesda	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Property Damage C
6156722	7/22/2013	1805	Monday	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Complaint of Pain
6210139	8/31/2013	1555	Saturday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	70	South	-118.246	34.1147	Other Visible Injury
6230786	9/24/2013	1530	Tuesday	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Complaint of Pain
6299105	12/6/2013	1945	Friday	FLETCHER DR	AVE 32	0	Not State	-118.244	34.1165	Severe Injury
6401712	2/28/2014	1530	Friday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	0	Not State	-118.246	34.1149	Property Damage C
6422102	3/29/2014	840	Saturday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	22	South	-118.246	34.1148	Property Damage C
6476984	4/20/2014	2250	Sunday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	150	East	-118.245	34.1152	Other Visible Injury
6538293	6/26/2014	455	Thursday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	0	Not State	-118.246	34.1149	Complaint of Pain
6588719	8/9/2014	735	Saturday	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	West	-118.246	34.1149	Property Damage C
6598606	7/17/2014	2145	Thursday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	0	Not State	-118.246	34.1149	Complaint of Pain
6605350	3/17/2014	845	Monday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	0	Not State	-118.246	34.1149	Other Visible Injury
6632769	9/9/2014	410	Tuesday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	380	East	-118.245	34.1156	Property Damage C
6634154	9/9/2014	1735	Tuesday	ESTARA AVE	FLETCHER DR	0	Not State	-118.241	34.1181	Other Visible Injury
6634158	9/8/2014	2130	Monday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	0	Not State	-118.246	34.1149	Complaint of Pain
6650758	9/24/2014	800	Wednesda	ESTARA AVE	FLETCHER DR	0	Not State	-118.241	34.1181	Complaint of Pain
6669325	9/30/2014	215	Tuesday	FLETCHER DR	MARGUERITE ST	20	West	-118.236	34.1186	Severe Injury
6676478	9/13/2014	2345	Saturday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	0	Not State	-118.246	34.1149	Complaint of Pain
6712028	11/22/2014	2320	Saturday	FLETCHER DR	WELDON AVE	63	East	-118.236	34.1187	Property Damage C
6714283	11/13/2014	1805	Thursday	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Complaint of Pain
6738714	12/6/2014	2125	Saturday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	0	Not State	-118.246	34.1149	Complaint of Pain
6738920	11/27/2014	1800	Thursday	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Complaint of Pain
6774018	1/3/2015	905	Saturday	FLETCHER DR	AVE 34	50	South	-118.241	34.1185	Complaint of Pain
6792811	1/16/2015	2030	Friday	FLETCHER DR	AVE 34	716	North	-118.238	34.1191	Other Visible Injury
6852275	2/28/2015	1915	Saturday	FLETCHER DR	ESTARA AVE	0	Not State	-118.241	34.1181	Property Damage C
6910854	4/26/2015	1500	Sunday	FLETCHER DR	AVE 35	300	South	-118.238	34.119	Complaint of Pain
6973920	5/30/2015	2200	Saturday	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Complaint of Pain
7017756	6/15/2015	1940	Monday	FLETCHER DR	ESTARA AVE	0	Not State	-118.241	34.1181	Complaint of Pain
7070103	8/20/2015	2215	Thursday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	0	Not State	-118.246	34.1149	Complaint of Pain
7082170	9/13/2015	2500	Sunday	FLETCHER DR	ESTARA AVE	230	West	-118.242	34.1177	Property Damage C
7082386	9/12/2015	1030	Saturday	FLETCHER DR	ESTARA AVE	0	Not State	-118.241	34.1181	Other Visible Injury
7117216	10/22/2015	1100	Thursday	FLETCHER DR	MARGUERITE ST	167	West	-118.236	34.1187	Severe Injury
7117377	11/7/2015	215	Saturday	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Complaint of Pain
7130758	11/12/2015	1800	Thursday	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Complaint of Pain
7130852	11/16/2015	1615	Monday	FLETCHER DR	AVE 34	130	East	-118.24	34.1188	Complaint of Pain
7131087	11/12/2015	1810	Thursday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	0	Not State	-118.246	34.1149	Property Damage C
7146263	12/5/2015	330	Saturday	FLETCHER DR	AVE 32	0	Not State	-118.244	34.1165	Other Visible Injury
7155472	12/16/2015	1725	Wednesda	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Complaint of Pain
7171449	1/24/2016	1800	Sunday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	0	Not State	-118.246	34.1149	Complaint of Pain
7178546	1/2/2016	2331	Saturday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	60	South	-118.246	34.1148	Other Visible Injury
7178550	1/2/2016	2330	Saturday	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	50	South	-118.246	34.1148	Other Visible Injury
7197505	1/20/2016	1835	Wednesda	FLETCHER DR	SAN FERNANDO RD NORTHEAST RDWY	0	Not State	-118.246	34.1149	Complaint of Pain
8001331	3/2/2016	755	Wednesda	SAN FERNANDO RD NORTHEAST RDWY	FLETCHER DR	0	Not State	-118.246	34.1149	Complaint of Pain
8113953	6/22/2016	1300	Wednesda	FLETCHER DR	ANDRITA ST	30	West	-118.239	34.1191	Other Visible Injury
8113985	6/24/2016	1810	Friday	SAN FERNANDO RD	FLETCHER DR	0	Not State	-118.246	34.1149	Complaint of Pain
8114217	6/22/2016	1430	Wednesda	FLETCHER DR	AVE 34	220	East	-118.24	34.119	Property Damage C
8114221	6/22/2016	1431	Wednesda	FLETCHER DR	AVE 34	225	East	-118.24	34.119	Property Damage C
8129970	8/31/2016	2200	Wednesda	SAN FERNANDO RD	FLETCHER DR	0	Not State	-118.246	34.1149	Severe Injury
8138117	9/17/2016	2040	Saturday	FLETCHER DR	AVE 32	67	North	-118.243	34.1166	Property Damage C
8138494	8/17/2016	1715	Wednesda	FLETCHER DR	WELDON AVE	100	South	-118.236	34.1187	Other Visible Injury
8138627	8/28/2016	1700	Sunday	ESTARA AVE	FLETCHER DR	0	Not State	-118.241	34.1181	Other Visible Injury
8304316	12/20/2016	1750	Tuesday	AVE 32	FLETCHER DR	0	Not State	-118.244	34.1165	Property Damage C
8306959	1/11/2017	1245	Wednesda	SAN FERNANDO RD	FLETCHER DR	0	Not State	-118.246	34.1149	Property Damage C
8310629	12/19/2016	1610	Monday	FLETCHER DR	SAN FERNANDO RD	0	Not State	-118.246	34.1149	Complaint of Pain
8310660	12/10/2016	50	Saturday	ESTARA AVE	FLETCHER DR	0	Not State	-118.241	34.1181	Complaint of Pain
8310951	1/1/2017	300	Sunday	FLETCHER DR	DELAY DR	79	East	-118.244	34.1162	Property Damage C
8349659	2/10/2017	605	Friday	FLETCHER DR	AVE 32	60	South	-118.244	34.1164	Complaint of Pain
8365444	4/20/2017	750	Thursday	FLETCHER DR	SAN FERNANDO RD	0	Not State	-118.246	34.1149	Property Damage C
8368352	4/26/2017	1155	Wednesda	FLETCHER DR	SAN FERNANDO RD	3	South	-118.246	34.1149	Other Visible Injury
8389854	4/4/2017	1245	Tuesday	SAN FERNANDO RD	FLETCHER DR	0	Not State	-118.246	34.1149	Other Visible Injury
8395105	5/25/2017	730	Thursday	FLETCHER DR	AVE 34	46	South	-118.241	34.1185	Complaint of Pain
8395186	5/11/2017	1330	Thursday	DELAY DR	FLETCHER DR	0	Not State	-118.244	34.1161	Complaint of Pain
8430329	7/23/2017	1720	Sunday	SAN FERNANDO RD	FLETCHER DR	0	Not State	-118.246	34.1149	Property Damage C
8505077	10/24/2017	640	Tuesday	FLETCHER DR	ESTARA AVE	0	Not State	-118.241	34.1181	Other Visible Injury
8511563	11/21/2017	1715	Tuesday	FLETCHER DR	SAN FERNANDO RD	50	South	-118.246	34.1148	Complaint of Pain
8512984	11/17/2017	1630	Friday	SAN FERNANDO RD	FLETCHER DR	0	Not State	-118.246	34.1149	Property Damage C
8523816	11/18/2017	730	Saturday	FLETCHER DR	SAN FERNANDO RD	20	East	-118.246	34.1149	Complaint of Pain
8524525	12/5/2017	1945	Tuesday	FLETCHER DR	SAN FERNANDO RD	0	Not State	-118.246	34.1149	Property Damage C
8524545	12/17/2017	705	Sunday	FLETCHER DR	SAN FERNANDO RD	470	North	-118.245	34.1157	Complaint of Pain
8525741	12/5/2017	1945	Tuesday	SAN FERNANDO RD	FLETCHER DR	0	Not State	-118.246	34.1149	Property Damage C
8528692	1/4/2018	1030	Thursday	SAN FERNANDO RD	FLETCHER DR	0	Not State	-118.246	34.1149	Property Damage C
8565679	1/27/2018	750	Saturday	FLETCHER DR	ESTARA AVE	10	North	-118.241	34.1181	Complaint of Pain
8575886	3/5/2018	805	Monday	FLETCHER DR	SAN FERNANDO RD	0	Not State	-118.246	34.1149	Complaint of Pain
8584622	3/9/2018	1750	Friday	SAN FERNANDO RD	FLETCHER DR	0	Not State	-118.246	34.1149	Property Damage C
8587684	4/26/2018	1610	Thursday	FLETCHER DR	SAN FERNANDO RD	370	North	-118.245	34.1155	Property Damage C
8593653	3/26/2018	1310	Monday	FLETCHER DR	AVE 32	0	Not State	-118.244	34.1165	Complaint of Pain
8616395	3/21/2018	720	Wednesda	FLETCHER DR	AVE 32	150	East	-118.243	34.1167	Complaint of Pain

Appendix B Traffic Counts

Intersection	Year	Method	Peak Hour	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	PHF	Peak Hour?
Fletcher / Estara	2016	Streetlight	7:00am	131	15	29	46	39	90	15	252	73	127	530	17	n/a	
Fletcher / Estara	2016	Streetlight	7:15am	150	16	19	37	28	92	12	217	81	143	635	16	n/a	Yes
Fletcher / Estara	2016	Streetlight	7:30am	158	17	10	38	28	83	13	197	83	131	643	14	n/a	
Fletcher / Estara	2014	TMC	7:00am	276	101	33	358	270	218	25	136	87	7	222	6	0.75	
Fletcher / Estara	2014	TMC	7:15am	312	114	37	407	307	248	26	140	89	8	254	7	0.84	
Fletcher / Estara	2014	TMC	7:30am	312	114	37	429	323	261	26	140	90	8	257	7	0.87	Yes
Fletcher / Estara	2019	Streetlight	7:00am	180	15	11	61	62	131	57	158	113	28	1052	34	n/a	
Fletcher / Estara	2019	Streetlight	7:15am	202	22	12	67	67	116	57	186	124	35	1096	37	n/a	
Fletcher / Estara	2019	Streetlight	7:30am	199	37	12	65	64	110	50	193	118	41	1101	37	n/a	Yes
Fletcher / Estara	2018	TMC	7:00am	168	56	23	101	78	71	42	222	145	21	724	14	0.83	
Fletcher / Estara	2018	TMC	7:15am	200	73	24	110	83	67	49	261	167	23	699	18	0.89	Yes
Fletcher / Estara	2018	TMC	7:30am	203	73	19	97	77	62	48	262	159	21	702	17	0.87	
Verdugo/Wawona	2016	Streetlight	7:30am	2	492	13	18	678	7	9	4	0	11	0	5	0.94	Yes
Verdugo/Wawona	2019	Streetlight	7:15am	21	403	12	11	815	9	10	0	25	41	0	18	0.91	Yes

Appendix C Synchro Output Sheets

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	140	90	8	257	7	312	114	37	429	323	261
Future Volume (veh/h)	26	140	90	8	257	7	312	114	37	429	323	261
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1964	1964	1964	1885	1885	1885	1909	1909	1909
Adj Flow Rate, veh/h	30	161	103	9	295	8	359	131	43	493	371	300
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	4	4	4	1	1	1	1	1	1	2	2	2
Cap, veh/h	40	155	118	27	359	11	578	196	64	561	397	321
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.82	0.82	0.82	0.82	0.82	0.82
Sat Flow, veh/h	93	1294	984	16	2988	88	656	239	79	643	484	391
Grp Volume(v), veh/h	137	0	157	151	0	161	533	0	0	1164	0	0
Grp Sat Flow(s),veh/h/ln	873	0	1498	1321	0	1771	974	0	0	1518	0	0
Q Serve(g_s), s	4.8	0.0	15.4	1.9	0.0	13.2	0.0	0.0	0.0	54.4	0.0	0.0
Cycle Q Clear(g_c), s	18.0	0.0	15.4	17.4	0.0	13.2	31.9	0.0	0.0	86.3	0.0	0.0
Prop In Lane	0.22		0.66	0.06		0.05	0.67		0.08	0.42		0.26
Lane Grp Cap(c), veh/h	134	0	180	184	0	213	838	0	0	1279	0	0
V/C Ratio(X)	1.02	0.00	0.87	0.82	0.00	0.76	0.64	0.00	0.00	0.91	0.00	0.00
Avail Cap(c_a), veh/h	134	0	180	184	0	213	838	0	0	1279	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	67.7	0.0	64.9	63.7	0.0	63.9	5.3	0.0	0.0	9.8	0.0	0.0
Incr Delay (d2), s/veh	84.3	0.0	34.2	24.8	0.0	14.4	3.7	0.0	0.0	11.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	0.0	7.6	7.1	0.0	6.8	6.5	0.0	0.0	26.6	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	152.0	0.0	99.1	88.6	0.0	78.3	9.0	0.0	0.0	20.9	0.0	0.0
LnGrp LOS	F	A	F	F	A	E	A	A	A	C	A	A
Approach Vol, veh/h		294			312			533			1164	
Approach Delay, s/veh		123.8			83.3			9.0			20.9	
Approach LOS		F			F			A			C	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	127.5	22.5	127.5	22.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	123.0	18.0	123.0	18.0
Max Q Clear Time (g_c+I1), s	33.9	20.0	88.3	19.4
Green Ext Time (p_c), s	7.7	0.0	16.6	0.0

Intersection Summary	
HCM 6th Ctrl Delay	39.7
HCM 6th LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	217	81	143	635	16	150	16	19	37	28	92
Future Volume (veh/h)	12	217	81	143	635	16	150	16	19	37	28	92
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1841	1841	1964	1964	1964	1885	1885	1885	1909	1909	1909
Adj Flow Rate, veh/h	14	249	93	164	730	18	172	18	22	43	32	106
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	4	4	4	1	1	1	1	1	1	2	2	2
Cap, veh/h	97	975	347	291	1098	28	587	63	60	200	169	390
Arrive On Green	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Sat Flow, veh/h	41	2402	854	462	2704	68	1109	156	146	264	415	960
Grp Volume(v), veh/h	190	0	166	440	0	472	212	0	0	181	0	0
Grp Sat Flow(s),veh/h/ln	1775	0	1521	1459	0	1775	1411	0	0	1639	0	0
Q Serve(g_s), s	0.0	0.0	3.5	9.2	0.0	10.3	0.6	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	3.3	0.0	3.5	12.7	0.0	10.3	3.9	0.0	0.0	3.3	0.0	0.0
Prop In Lane	0.07		0.56	0.37		0.04	0.81		0.10	0.24		0.59
Lane Grp Cap(c), veh/h	801	0	618	695	0	720	709	0	0	759	0	0
V/C Ratio(X)	0.24	0.00	0.27	0.63	0.00	0.65	0.30	0.00	0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h	1042	0	840	917	0	980	709	0	0	759	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	9.4	0.0	9.5	12.3	0.0	11.5	9.6	0.0	0.0	9.4	0.0	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.2	1.0	0.0	1.0	1.1	0.0	0.0	0.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	1.0	3.4	0.0	3.4	1.5	0.0	0.0	1.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	9.6	0.0	9.7	13.3	0.0	12.5	10.6	0.0	0.0	10.2	0.0	0.0
LnGrp LOS	A	A	A	B	A	B	B	A	A	B	A	A
Approach Vol, veh/h		356			912			212			181	
Approach Delay, s/veh		9.7			12.9			10.6			10.2	
Approach LOS		A			B			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	24.0	24.0	24.0	24.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	19.5	26.5	19.5	26.5
Max Q Clear Time (g_c+I1), s	5.9	5.5	5.3	14.7
Green Ext Time (p_c), s	1.1	2.1	0.9	4.8

Intersection Summary	
HCM 6th Ctrl Delay	11.6
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			◂↑▸			◂↑▸	
Traffic Volume (veh/h)	9	4	0	11	0	5	2	492	13	18	678	7
Future Volume (veh/h)	9	4	0	11	0	5	2	492	13	18	678	7
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2263	2263	2263	1870	1870	1870	1864	1864	1864	1909	1909	1909
Adj Flow Rate, veh/h	10	4	0	12	0	5	2	523	14	19	721	7
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	272	21	0	260	0	17	130	2210	59	152	2275	22
Arrive On Green	0.04	0.04	0.00	0.04	0.00	0.04	0.64	0.64	0.64	0.64	0.64	0.64
Sat Flow, veh/h	1376	550	0	1070	0	446	2	3447	92	27	3547	34
Grp Volume(v), veh/h	14	0	0	17	0	0	283	0	256	390	0	357
Grp Sat Flow(s),veh/h/ln	1926	0	0	1516	0	0	1861	0	1680	1678	0	1731
Q Serve(g_s), s	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.8	0.0	0.0	2.6
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.3	0.0	0.0	1.8	0.0	1.8	2.6	0.0	2.6
Prop In Lane	0.71		0.00	0.71		0.29	0.01		0.05	0.05		0.02
Lane Grp Cap(c), veh/h	293	0	0	277	0	0	1323	0	1077	1338	0	1110
V/C Ratio(X)	0.05	0.00	0.00	0.06	0.00	0.00	0.21	0.00	0.24	0.29	0.00	0.32
Avail Cap(c_a), veh/h	1401	0	0	1156	0	0	1323	0	1077	1338	0	1110
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.1	0.0	0.0	13.1	0.0	0.0	2.1	0.0	2.1	2.3	0.0	2.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.4	0.0	0.5	0.6	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.2	0.2	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.1	0.0	0.0	13.2	0.0	0.0	2.5	0.0	2.7	2.8	0.0	3.0
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		14			17			539			747	
Approach Delay, s/veh		13.1			13.2			2.6			2.9	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		22.5		5.6		22.5		5.6				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		18.0		18.0		18.0		18.0				
Max Q Clear Time (g_c+I1), s		3.8		2.2		4.6		2.3				
Green Ext Time (p_c), s		2.7		0.0		3.8		0.0				
Intersection Summary												
HCM 6th Ctrl Delay			3.0									
HCM 6th LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	261	167	23	699	18	200	73	24	110	83	67
Future Volume (veh/h)	49	261	167	23	699	18	200	73	24	110	83	67
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1885	1844	1964	1889	1885	1885	1885	1909	1909	1909
Adj Flow Rate, veh/h	55	293	188	26	785	20	225	82	27	124	93	75
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	4	1	9	1	6	1	1	1	2	2	2
Cap, veh/h	210	873	758	462	932	759	434	149	42	307	227	154
Arrive On Green	0.47	0.47	0.47	0.47	0.47	0.47	0.37	0.37	0.37	0.37	0.37	0.37
Sat Flow, veh/h	687	1841	1598	901	1964	1601	891	402	114	590	613	415
Grp Volume(v), veh/h	55	293	188	26	785	20	334	0	0	292	0	0
Grp Sat Flow(s),veh/h/ln	687	1841	1598	901	1964	1601	1406	0	0	1618	0	0
Q Serve(g_s), s	4.4	5.8	4.1	1.1	20.3	0.4	3.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	24.7	5.8	4.1	6.9	20.3	0.4	11.0	0.0	0.0	7.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.67		0.08	0.42		0.26
Lane Grp Cap(c), veh/h	210	873	758	462	932	759	625	0	0	688	0	0
V/C Ratio(X)	0.26	0.34	0.25	0.06	0.84	0.03	0.53	0.00	0.00	0.42	0.00	0.00
Avail Cap(c_a), veh/h	233	936	812	492	998	814	625	0	0	688	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	24.2	9.5	9.1	11.7	13.4	8.1	14.8	0.0	0.0	13.8	0.0	0.0
Incr Delay (d2), s/veh	0.7	0.2	0.2	0.1	6.3	0.0	3.3	0.0	0.0	1.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	2.0	1.2	0.2	8.9	0.1	3.8	0.0	0.0	3.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	24.8	9.8	9.3	11.7	19.7	8.1	18.1	0.0	0.0	15.7	0.0	0.0
LnGrp LOS	C	A	A	B	B	A	B	A	A	B	A	A
Approach Vol, veh/h		536			831			334			292	
Approach Delay, s/veh		11.1			19.1			18.1			15.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	2	4	6	8
Phs Duration (G+Y+Rc), s	26.0	32.0	26.0	32.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	21.5	29.5	21.5	29.5
Max Q Clear Time (g_c+I1), s	13.0	26.7	9.5	22.3
Green Ext Time (p_c), s	1.4	0.8	1.4	3.3

Intersection Summary	
HCM 6th Ctrl Delay	16.3
HCM 6th LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	193	118	41	1101	37	199	37	12	65	64	110
Future Volume (veh/h)	50	193	118	41	1101	37	199	37	12	65	64	110
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1841	1885	1844	1964	1889	1885	1885	1885	1909	1909	1909
Adj Flow Rate, veh/h	56	217	133	46	1237	42	224	42	13	73	72	124
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	0	4	1	9	1	6	1	1	1	2	2	2
Cap, veh/h	60	1158	1005	649	1235	1007	310	48	15	158	161	240
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	439	1841	1598	1016	1964	1601	864	162	50	406	544	812
Grp Volume(v), veh/h	56	217	133	46	1237	42	279	0	0	269	0	0
Grp Sat Flow(s),veh/h/ln	439	1841	1598	1016	1964	1601	1076	0	0	1762	0	0
Q Serve(g_s), s	0.0	5.9	4.0	2.4	75.5	1.2	15.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	75.5	5.9	4.0	8.3	75.5	1.2	30.8	0.0	0.0	15.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.80		0.05	0.27		0.46
Lane Grp Cap(c), veh/h	60	1158	1005	649	1235	1007	372	0	0	559	0	0
V/C Ratio(X)	0.93	0.19	0.13	0.07	1.00	0.04	0.75	0.00	0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h	60	1158	1005	649	1235	1007	372	0	0	559	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	60.0	9.4	9.0	11.1	22.2	8.5	42.3	0.0	0.0	35.1	0.0	0.0
Incr Delay (d2), s/veh	92.3	0.1	0.1	0.0	25.9	0.0	12.9	0.0	0.0	2.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	2.4	1.4	0.5	40.4	0.4	9.3	0.0	0.0	7.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	152.3	9.4	9.1	11.2	48.2	8.5	55.3	0.0	0.0	38.0	0.0	0.0
LnGrp LOS	F	A	A	B	F	A	E	A	A	D	A	A
Approach Vol, veh/h		406			1325			279			269	
Approach Delay, s/veh		29.0			45.6			55.3			38.0	
Approach LOS		C			D			E			D	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		40.0		80.0		40.0		80.0				
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5				
Max Green Setting (Gmax), s		35.5		75.5		35.5		75.5				
Max Q Clear Time (g_c+I1), s		32.8		77.5		17.0		77.5				
Green Ext Time (p_c), s		0.5		0.0		1.6		0.0				

Intersection Summary			
HCM 6th Ctrl Delay			42.9
HCM 6th LOS			D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	0	25	41	0	18	21	403	12	11	815	9
Future Volume (veh/h)	10	0	25	41	0	18	21	403	12	11	815	9
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	2263	2263	2263	1870	1870	1870	1864	1864	1864	1909	1909	1909
Adj Flow Rate, veh/h	11	0	27	45	0	20	23	443	13	12	896	10
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	203	7	135	304	0	45	164	1981	57	131	2154	24
Arrive On Green	0.10	0.00	0.10	0.10	0.00	0.10	0.60	0.60	0.60	0.60	0.60	0.60
Sat Flow, veh/h	494	76	1399	1042	0	463	53	3288	94	12	3575	40
Grp Volume(v), veh/h	38	0	0	65	0	0	248	0	231	481	0	437
Grp Sat Flow(s),veh/h/ln	1969	0	0	1505	0	0	1756	0	1680	1697	0	1730
Q Serve(g_s), s	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	1.9	0.0	0.0	4.0
Cycle Q Clear(g_c), s	0.5	0.0	0.0	1.1	0.0	0.0	1.8	0.0	1.9	4.0	0.0	4.0
Prop In Lane	0.29		0.71	0.69		0.31	0.09		0.06	0.02		0.02
Lane Grp Cap(c), veh/h	345	0	0	349	0	0	1190	0	1012	1267	0	1043
V/C Ratio(X)	0.11	0.00	0.00	0.19	0.00	0.00	0.21	0.00	0.23	0.38	0.00	0.42
Avail Cap(c_a), veh/h	1279	0	0	1078	0	0	1190	0	1012	1267	0	1043
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.4	0.0	0.0	12.7	0.0	0.0	2.7	0.0	2.7	3.2	0.0	3.2
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.3	0.0	0.0	0.4	0.0	0.5	0.9	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.2	0.4	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	12.6	0.0	0.0	12.9	0.0	0.0	3.1	0.0	3.3	4.0	0.0	4.4
LnGrp LOS	B	A	A	B	A	A	A	A	A	A	A	A
Approach Vol, veh/h		38			65			479			918	
Approach Delay, s/veh		12.6			12.9			3.2			4.2	
Approach LOS		B			B			A			A	
Timer - Assigned Phs		2			4		6	8				
Phs Duration (G+Y+Rc), s		22.5			7.4		22.5	7.4				
Change Period (Y+Rc), s		4.5			4.5		4.5	4.5				
Max Green Setting (Gmax), s		18.0			18.0		18.0	18.0				
Max Q Clear Time (g_c+I1), s		3.9			2.5		6.0	3.1				
Green Ext Time (p_c), s		2.4			0.1		4.5	0.2				
Intersection Summary												
HCM 6th Ctrl Delay			4.5									
HCM 6th LOS			A									