How Bike Ridership Data Can Improve Bike Safety in Los Angeles

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16. Abstract Biking is a crucial mobility option for cities as it is dramatically more space-efficient than cars. Los Angeles, however, has failed over the last ten years to increase the viability of biking, as the number of cyclist deaths and serious injuries has not changed, while ridership has stagnated, and may be decreasing. One reason for this may be that LA's bike infrastructure planning does not take into account where people are actually biking. This project examines the many benefits that an understanding of bike ridership patterns can provide for bike infrastructure planning. In order to estimate LA's bike ridership, several data sources are analyzed through spatial, temporal, and longitudinal lenses. One key source of data was recorded trip data from Metro Bike Share, Los Angeles's rentable bike share program. I find that bike share users exhibit travel patterns that closely resemble those of other cyclists within the same areas, suggesting that bike share data can serve as a useful proxy for broader ridership trends. Further, this report shows how bike ridership data can enable cities to invest proactively in areas where ridership is growing, build adaptively around shifting time-of-day trends, prioritize important connectivity bottlenecks, and identify interventions that will impact the greatest number of cyclists. For two examples, Koreatown exhibits the most nighttime ridership and areas around UCLA and USC exhibit the fastest-growing ridership compared to all other LA neighborhoods. Finally, ridership volume is a key factor in understanding cyclist risk, and in strategically leveraging the "safety-in-numbers" phenomenon for cyclists.		
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Recognition

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Executive Summary

"With technology accelerating the pace of change, it will be essential for LADOT to identify new ways to ensure it understands demand and create mechanisms for integrating these shifts into its operations"
– LADOT, *Urban Mobility in the Digital Age*, 2016

Over the last decade, the Los Angeles Department of Transportation (LADOT) has made steady improvements in LA's bike infrastructure, including the creation of many on-street bike lanes. As these projects can be expensive and road space in Los Angeles is at a premium, it is critical to select effective locations for bike lanes, in order to ensure they are impactful. But what methods should be used to determine where bike lanes should be built? When making decisions about infrastructure for cars, the City relies on an abundance of analytical tools measuring car traffic and modeling vehicle throughput. Yet to this day, the City has little capability to understand its bike ridership, in part because cyclists are notoriously difficult to track at the scale of a city. As a consequence, **LADOT does not use information around bike ridership as a factor in deciding where to build bike infrastructure**, instead relying primarily on the locations of past traffic collisions where cyclists were injured. However, an understanding of where and when people are biking is overwhelmingly useful for planning bike infrastructure. In this report, I offer strategies to fix this critical information gap by analyzing data sources which are already available to the City. Then, using the findings from my analyses, I demonstrate a variety of ways that understanding bike ridership can improve the City's ability to plan and prioritize bike infrastructure projects, toward the ultimate goal of a safer Los Angeles.

Estimating Ridership Volume

Since a complete knowledge of bike ridership cannot be known, we must rely on estimations. In Part 1 of this paper, I explore how different data sources can help us with such estimations through temporal, spatial, and longitudinal analyses. These data sources include trips from Los Angeles's rentable bike share system, Metro Bike Share, as well as LADOT's on-street bike counters, third-party e-scooter trips, and past traffic collision data involving cyclists.

Applying Ridership Volume

In Part 2, I discuss the numerous advantages that an understanding of bike ridership provides. I argue that the City should cater infrastructure toward areas that have already demonstrated the preconditions for bike demand in order to multiply the effectiveness of their efforts. Then, by highlighting four individual neighborhoods, I showcase how localized bike ridership insights can play a valuable role in the planning of bike infrastructure going forward.

Key Findings

My analyses have resulted in findings around a few key neighborhoods. Firstly, I found that bike share usage in LA's college areas, such as around UCLA and USC, is both relatively high and growing the fastest. Secondly, I've identified areas, like Koreatown and Hollywood, that have notably high usage at night, which is importantly when cyclists are most at risk. Thirdly, there are neighborhoods like Westlake and Downtown that exhibit high interconnectivity but lack critical bike infrastructure to support these connections.

Based on the results of my analyses, I offer four primary recommendations for the City:

1. **The Vision Zero team should add information around bike ridership volume as a determinant for the locations of bike infrastructure projects.**

   Leveraging many available data sources, such as bike share data, third-party e-scooter and bike counter data, can give the City insights around ridership patterns that can be critical toward planning bike infrastructure. These insights include where investments will affect the highest number of cyclists, where risk is the highest, where ridership is growing the fastest, and how to measure the real impact after the fact.

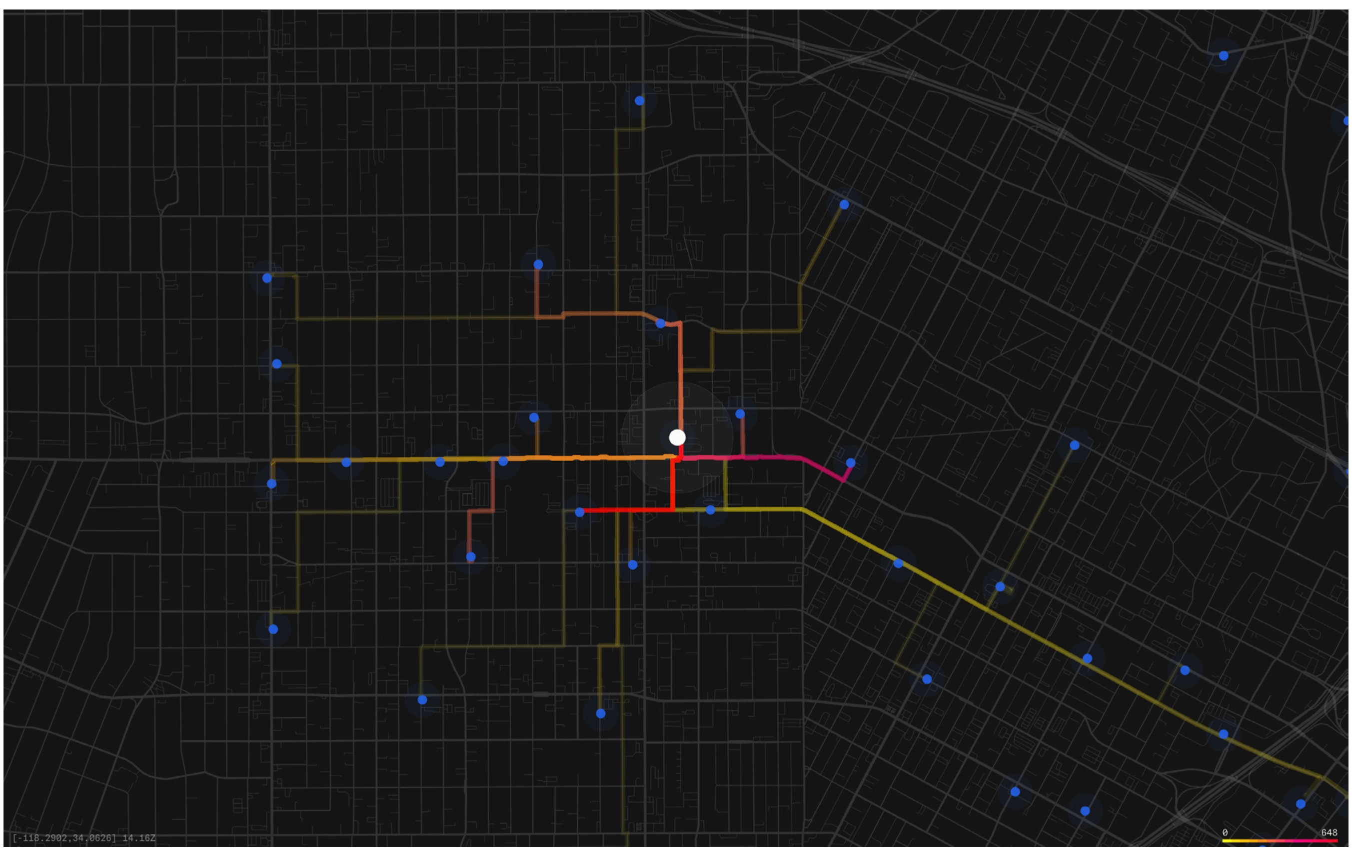
2. **The City should utilize bike ridership volume in order to solve context-dependent problems within neighborhoods.**

   Each neighborhood requires unique problem-solving to make cycling safer. For example, knowledge around temporal bike ridership patterns, such as high nighttime ridership, or high-volume connectivity chokepoints, can help the City apply tailored solutions.

3. **LADOT should increase its capacity to further understand ridership by further investing in counting infrastructure.**
A better understanding of citywide bike ridership would allow the City to develop more granular insights, which can increase departmental efficiency and allow for more informed decisions around investments and project prioritizations.

4. **LADOT should accelerate its bike lane creation with the explicit goal of increasing ridership.**
Increasing the viability of biking as a mode of transportation has vast social benefits and will lead to a healthier, less congested, less polluted, less deadly Los Angeles.

This report was supplemented in part by a tool I developed for visualizing Metro Bike Share station data. The screenshot below shows the popularity of routes connecting to the station on Wilshire and Vermont in Koreatown. This tool can be accessed here: **bikeshare.swellgarfo.com**



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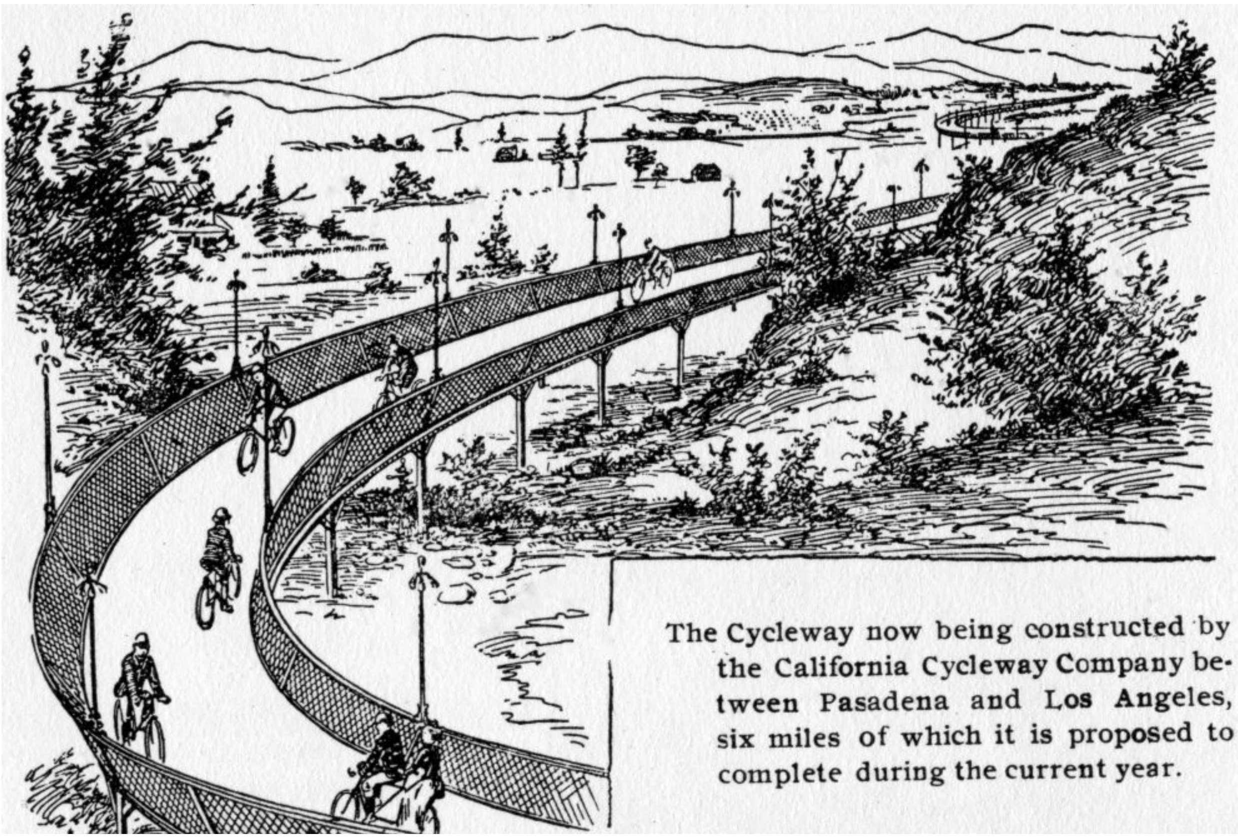
Introduction

Biking in Los Angeles is too dangerous. In February 2026, while writing this report, 36-year-old Regan Cole-Graham was biking with her family in Playa del Rey when she was struck from behind by a driver, killing both her and her unborn daughter. This incident served as a grave reminder of the human costs associated with underinvestments in road safety. In 2022, cars were the number one killer of anyone in LA County under the age of 30[1]. In both 2023 and 2024 more pedestrians were killed on Vermont Avenue than were killed in the entire State of Vermont[2]. To make matters worse, car-related deaths are on the rise in Los Angeles[3], even while cars have gotten safer for those inside them[4]. And as cars continue to grow larger[5] and accelerate faster[6], and as drivers become more and more distracted[7], there is no indication that this danger will subside. Simply put, cars create dangerous conditions in cities for pedestrians and cyclists (Elvik, 2009; Ahangari et al., 2017; Ferenchak, 2023; Litman, 2018). In the words of Enrique Peñalosa, former Mayor of Bogota: "We can have a city that is very friendly to cars, or a city that is very friendly to people. We cannot have both."[8] As a result, today's Los Angeles is stuck in gridlock as it tries to maintain its car-centric road networks while also improving road safety, two goals that seem to contradict each other.

Shifting people's transportation mode choice away from driving is a difficult but necessary undertaking towards safer city streets. Fortunately, many global cities, such as Paris, London, and Montreal, have shown successful strategies towards reducing car usage, each time relying heavily on the increase of bike ridership (Lanvin et al., 2025; Bhuyan et al., 2021; Kuper, 2026). When bike trips replace car trips, the resulting city is happier, healthier, less polluted, and less dangerous (Wild et al., 2019; Woodcock et al., 2009; Xu, 2019; Elvik, 2009). However, a large-scale increase of bike ridership is not likely to happen if biking is unsafe (Bauman et al., 2008; Yang et al., 2021). This is the case in Los Angeles, where, despite several infrastructure projects, cyclists have continued to be killed or severely injured at the same rate for the last ten years. Worse yet, there is data that suggests that bike ridership in LA is decreasing (Figure 13). It is now critical to ask why LA's bike infrastructure projects have not effectively fostered increases in bike ridership, nor significantly reduced cyclist deaths and serious injuries, and what new strategies might be necessary. As it stands, Los Angeles faces the most car-related deaths of any city in America[9], and these tragic deaths will continue to be common until we can accept the dire need for increases in bike ridership.

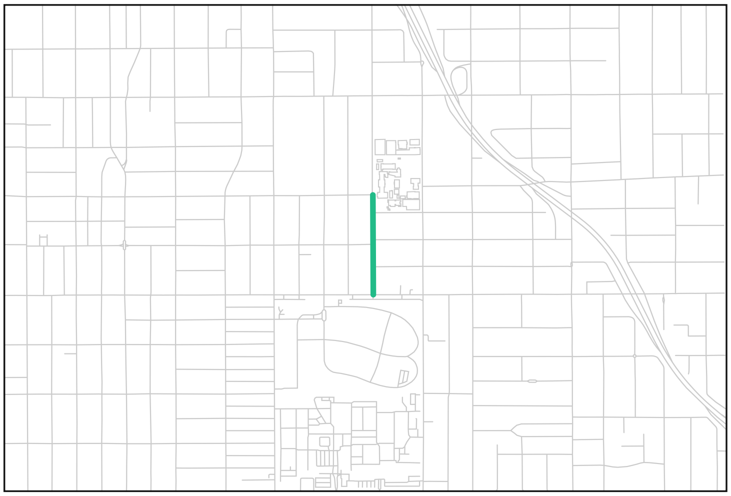


Above: An artist's depiction of the elevated California Cycleway, which began construction in 1899.
Source: southpasadenan.com

Bikeability in Los Angeles

Generally, two of the most common concerns when deciding whether to bike are safety and weather conditions (Hoe & Kaloustian, 2014), meaning that for most of the year, Angelenos have only one concern. When compared to cities like San Francisco or Seattle, Los Angeles is relatively flat, and compared to Paris or Montreal, Angelenos enjoy famously sunny weather year-round. Because of this, Los Angeles has a tremendous topographic and geographic advantage for being a bike-friendly city—yet its bike ridership per capita is significantly lower than each of these other cities (Winters et al., 2016; Buehler & Goel, 2022; Goel et al., 2022). However, this lack of bike ridership is not something innate to Angelenos, and in fact, Los Angeles was once famous for its pleasant bicycling and even had the world's first elevated bike highway[10]. Since then, the topography, climate, and geographic layout of the LA region have not changed dramatically, suggesting that the contemporary lack of bike ridership is instead the result of changes in the built environment.

Figure 1. Hollywood South-East Bike Lane Network Connectivity



Bike lanes are more useful when they form connected networks, and less useful when isolated. Below is a diagram of the bike lane network for the south east part of Hollywood, which consists of a single lane on Bronson Ave which connects a middle school to a cemetery.

Bike Lanes

0.25 mi

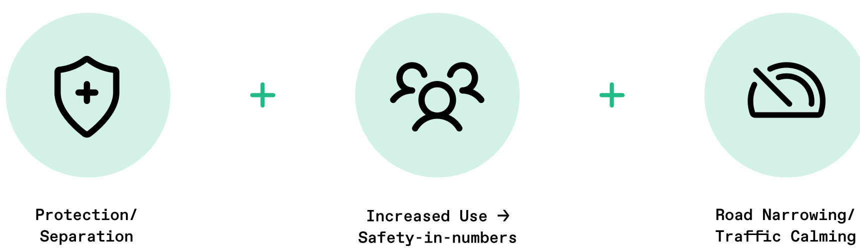
Since the widespread adoption of cars, Los Angeles has prioritized car infrastructure projects over investments in all other forms of transportation (Chamberlain & Riggs, 2016). As a result, bike lanes are entirely absent in many parts of the city and often streets with bike lanes are not connected to a larger network (Figure 1), forcing people on bikes to constantly travel along busy streets with fast-moving cars or leave their bikes at home. Making biking conditions worse, the city's street pavement quality and on-street lighting have fallen into disrepair[11]; currently 25% of all street lights need to be fixed[12].

There is, however, some momentum towards a more bikeable city. In the past decade Los Angeles has adopted several major policy efforts to increase bike ridership and improve safety. The year 2015 saw the adoption of the City's Vision Zero initiative, taking part in the global "Vision Zero" movement toward the goal of ending traffic deaths in cities. In 2016 the City formally approved its 20-year transportation plan (known as the Mobility Plan 2035), which proposed significant enhancements in bike networks. In 2024, Los Angeles passed Measure HLA, requiring the City to implement protected bike lanes on many miles of major streets outlined in its Mobility Plan. Additionally, LA's short-term rentable public bike share system, Metro Bike Share, was launched in 2016. Bike share systems are important because they dramatically lower the barrier of entry to biking, and have been shown to increase bike usage and safety (Xu, 2020; Graves et al., 2014; Hosford et al., 2019). However, these programs have found more success when directly aided with bike lanes (NACTO, 2016; Buck & Buehler 2012; Caspi & Noland, 2019) and data discussed further below suggests that growth may not be sustainable without them. Ultimately, Los Angeles has set the stage for a dramatic increase in bikeability in the coming years, but only through sustained investment in bike infrastructure, and to be specific: bike lanes.

The Three Functions of Bike Lanes

> "There's no better investment than in bike lanes.
> If you want a better city, start with a bike lane."[13]
> *–Janette Sadik-Khan, former head of NYC DOT*

In 2015, the City of Paris presented their ambitious 5-year cycling plan, *Plan Vélo*, pledging €150 million toward bike infrastructure, primarily in the form of bike lanes[14]. In 2021, they doubled down on this investment, pledging an additional €250 million. But what is it about bike lanes that justifies such remarkable spending? The answer may lie in the fact that bike lanes increase safety in three distinct ways. Firstly, they separate bikers from cars, reducing the chance of conflict. Secondly, they incentivize ridership (Dill & Carr, 2003; Yang et al., 2019; Habib et al., 2014; Krizek et al., 2009), which makes biking safer through the safety-in-numbers effect (Jacobsen, 2003; Elvik, 2009; Jacobsen, 2015). This will be discussed further in Part II of this report. Thirdly, they can serve as traffic calming measures by narrowing roads and slowing down cars (Younes et al., 2024; Hamidi et al., 2023). Because of this last point, bike lanes also make streets safer for pedestrians; in New York, for example, adding 30 miles of bike lanes saw a 22% reduction of *pedestrian* injuries[15]. Actually, bike lanes make roads safer for **all users**, even car drivers (Marshall & Ferenchak, 2019). In other words: a bike lane that never sees a single biker still has a positive impact on everyday safety. The fact that they make an alternative mode of transportation dramatically more viable is an additional feature. Notably, for the second safety feature—ridership incentivization—several studies have shown that bike lane **connectivity** has more of an impact than the increase in bike lanes length (Marques, 2017; Buehler & Dill, 2016).



There are four classifications of bikeways defined by CalTrans: off-street bike paths, painted (unprotected) bike lanes, painted shared-lane markings (known as "sharrows"), and protected bike lanes[16]. Each of these bikeways exhibit different levels of impact on the three overlapping safety mechanisms I've identified. For example, off-street bike paths don't narrow roads because they are not built on top of them. However, because shared-laned markers simply remind drivers to share the road without providing any actual separation, they exhibit none of the three functions (Ferenchak & Marshall, 2019; Ferenchak & Marshall, 2026), which is why, in the context of this report, I am not considering them bike infrastructure. When deciding on bike infrastructure projects, it is important for planners to consider each intervention's influence on these overlapping safety mechanisms.

Achieving any one of these three safety functions individually is important for a city; the ability for a bike lane to do all three of them simultaneously should not be understated. In addition to safety benefits, they promote active, green transportation, resulting in healthier populations and decreased urban air pollution (Fraser & Lock, 2011). Thus, a city's agency involved with bike lane planning can potentially have a major influence on the safety and health of a city and has a responsibility to make bold, well-informed decisions. I will now discuss this agency for Los Angeles and their methodology for selecting bike lane projects.

Figure 2. Information Page about Protected Bike Lanes from LADOT's Vision Zero Safety Toolkit

Vision Zero Safety Toolkit

Protected Bike Lane

What is it?

94%

CRASH REDUCTION FACTOR
Protected bike lanes to reduce bike-vehicle crashes by 94%.[1]

A protected bike lane physically separates people biking from faster-moving traffic by locating parking, bollards, or concrete buffers between the bike lane and other moving lanes.

What is its purpose and benefits?

» Encourages bicycle usage.
» Reduces bike-car conflicts.
» Encourages lower motor vehicle speeds.
» Provides enough space to prevent "dooring."

Where should this safety tool be applied?

» Along streets with high motor vehicle volumes and/or speeds.
» Along streets with high bicycle volumes.

Costs

LOW | **MED** | HIGH

Timeframe

SHORT | **MED** | LONG

Effectiveness

LOW | MED | **HIGH**

Vision Zero

In 2015, Los Angeles's then-Mayor Eric Garcetti and the Los Angeles Department of Transportation launched the City's Vision Zero initiative, with the goal of eliminating traffic deaths in Los Angeles by 2025. As a part of the initiative, LADOT began identifying bicycle network gaps and conceptualizing new bike infrastructure projects. Based on the methodology of San Francisco's own Vision Zero team, LADOT used the data from traffic crashes over the previous five years to develop a map of what they called a "High-Injury Network" or "HIN". The HIN highlighted streets with high concentrations of severe or fatal traffic collisions, with a particular emphasis on people walking or biking. In 2017, the Vision Zero team further identified 40 "Priority Corridors" that fell along the High-Injury Network, and has updated these corridors multiple times. After ten years, however, the Vision Zero initiative has failed to achieve its stated goal, and in that time there has been movement in the wrong direction[17]. Given such outcomes, it is reasonable to question how the City's Vision Zero methodology can be improved. In 2023, the City spent $500,000 on an independent audit of their Vision Zero efforts[18], which identified key areas for improvement, such as standardizing crash metadata and separating crash data categorically by mode, so that the High-Injury Network could be improved[19]. Since Los Angeles's initial commitment to Vision Zero, traffic collision data has been the primary methodological tool for determining where investments are most needed. The City's 2017 Vision Zero Action Plan states: "the HIN is the guiding document for prioritizing our efforts and the framework for achieving zero traffic deaths by 2025". However, the present report questions whether traffic collisions should be the primary determinant of bike infrastructure needs at all. Intuitively, it makes sense to build directly where severe accidents have occurred, but in practice, such efforts have not led the City closer to its goal of zero traffic deaths.

So what other strategies might be considered? A clue can be found in LADOT's own Vision Zero Safety Toolkit, which states that protected bike lanes should be placed "along streets with high bicycle volumes" (Figure 2). Indeed, another important metric for bike infrastructure is *where people are biking*. At the time of writing this, however, the City has never incorporated bike ridership volume as a factor when deciding where to build bike lanes, in large part because citywide bike traffic is difficult to track. But knowledge about where and when people are biking is tremendously helpful for a number of reasons. Analyzing ridership over time can reveal where biking is gaining popularity, making it possible to build infrastructure proactively, supporting shifting trends. Analyzing ridership based on time-of-day can enable time-specific improvements, such as extra shade during the day or enhanced lighting at night where it is most needed. Ridership numbers also allows us to calculate cyclist risk, as risk is a calculation of accidents *per* bike rider. Finally, and perhaps most importantly, we can identify where improvements will simply benefit the greatest number of cyclists. There should be no doubt that an understanding of bike ridership volume can play an essential role in planning bike infrastructure. The question, then, is how such an understanding can be acquired.

Part I:

Estimating Bike Ridership in Los Angeles

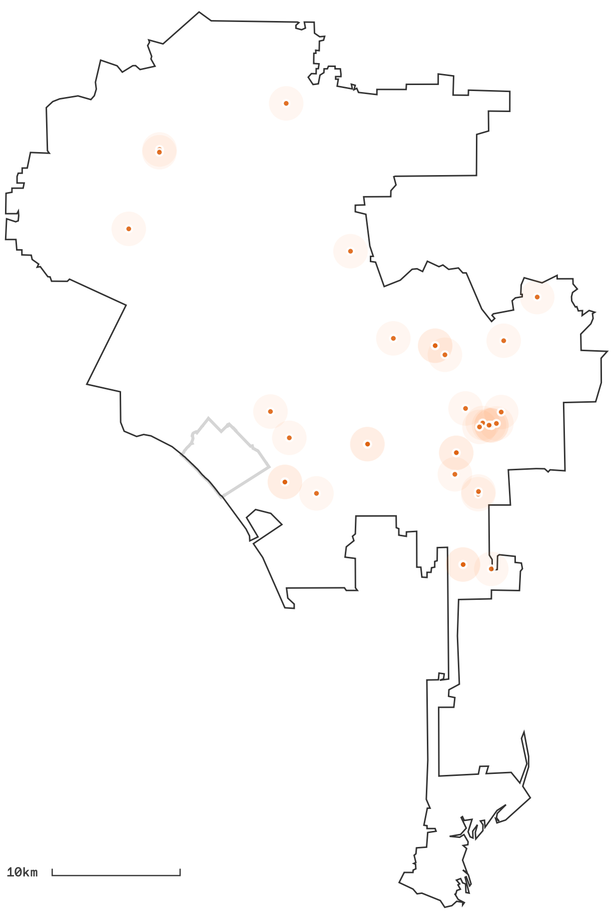


Figure 3a. Locations of LADOT's Permanent Bike Counters (34)

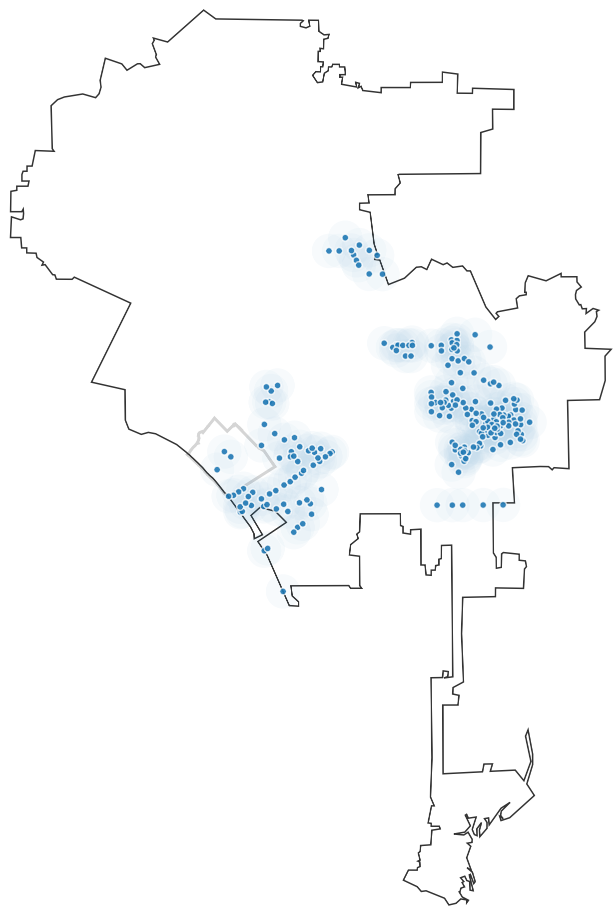


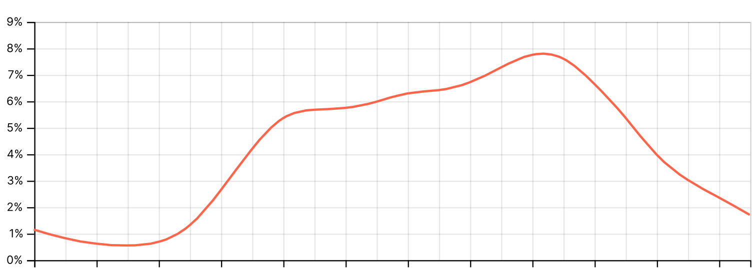
Figure 3b. Locations of Metro Bike Share Stations (225)

Automatic Bike Counters

Above: LADOT's Permanent Bike Counter attached to a light post on the South side of Venice Boulevard.

When Los Angeles launched its Vision Zero campaign in 2015, it was prohibitively difficult to track citywide bike ridership effectively. Even now, more than a decade later, tracking bike ridership remains an ongoing problem for urban planners (Kone et al., 2025). To address this, in 2020 LADOT began installing permanent automatic bike counters on streets and bike facilities throughout the City, making it possible for the first time, to establish ground truth for the number of cyclists passing through a specific point of a street. At the time of writing this, LADOT has installed 34 counters, collecting 24/7 cyclist data which is published to an online dashboard[20]. Since these bike counters are distributed throughout Los Angeles, the data can be aggregated in order to form general insights, for example, the approximate hourly share of bike usage across the city. Figure 4, as seen below, charts the timestamps of all 8.6 million bike counts from the permanent counters over three years. It should be noted, however, that these counters are not evenly distributed across Los Angeles (Figure 3a), and since ridership behavior varies by location, the shape of the graph will be biased toward areas where more permanent counters are installed. Still, this information is useful to get a rough picture of LA's hourly bike volume.

Figure 4. Aggregate Hourly Percentage Breakdown of All LA Bike Counters (2023-2025)



By aggregating the bike count data from all 34 LADOT permanent counters, which consists of 8.6 million data points, we can get a rough idea of the generalized hourly bike usage in Los Angeles. Note that actual usage varies based on season, location, and weekends vs weekdays.

While aggregating the data collected from these bike counters gives us a general idea of ridership at the city-level, each counter is fixed to a single point, and thus does not enable us to understand cyclists' origin-destination flows, nor can we necessarily extrapolate bike patterns of the greater surrounding area. For this reason, we must turn to other sources of data to answer these questions.

In the time since the launch of Vision Zero, Los Angeles has seen rapid changes in transportation technology in the realm of rentable bikes and electric scooters, which are collectively known as micromobility. In 2016, LA launched its shared bike system, Metro Bike Share (MBS), and in 2017 the first shared e-scooter platform debuted in Santa Monica, paving the way for e-scooters to become a popular micromobility option globally. Because these platforms track usage digitally via GPS, they can provide a wealth of temporal and spatial ridership data, creating a new opportunity to quantitatively understand ridership patterns at scale. In simpler terms, this data consists of millions of instances when someone biked somewhere, where they started, where they went, and at what time. Although these technologies are relatively new, several studies have already been done on the topic of using them for city-wide bike volume estimation (Kaiser et al., 2025; Olmos et al., 2020; Bao et al., 2017; Weast, 2019). While other studies focus on the complex challenge of mathematically modeling ridership, the focus of this report is to show the power of ridership data even at the neighborhood level.

Bike Collisions as a Proxy

So far, I have made the case for the usefulness of bike ridership data over bike-involved traffic collision data in determining bike infrastructure needs. But one might wonder: are bike accidents actually a *de facto* proxy for bike volume? Do the locations of accidents already tell us where there is high ridership? While it has been shown that an increase in bike ridership leads to an increase in accidents (Elvik & Bjørnskau, 2017), we cannot automatically assume the converse is true, which is that a higher concentration of bike accidents implies higher bike ridership. In fact, the data seems to refute this. For one example, in 2024, the Ballona Creek Bike Path was the most used corridor of all 34 corridors tracked by LADOT's bike counters, reporting nearly twice as many cyclists as any street in Downtown. And yet in the last six years, there was not a single reported cyclist Killed or Severely Injured (KSI) within a half-mile of this bike path (Figure 5). Meanwhile in that time, the Adams Boulevard bike lane reported just 10% of the bike ridership compared to that of Ballona Creek, and yet nine cyclists were killed or severely injured within a half-mile of this bike lane (Figure 6). Turning to Metro Bike Share, we see a similar pattern: the most used bike share station in 2025 was the one at the Santa Monica E Line Station. Despite seeing the highest number of bike share trips of any station in the city, no KSI's were recorded within a half-mile or even a mile radius of this station (Figure 5). These examples illustrate that high ridership can and does exist without proximity to KSI's, and therefore suggest that severe bike accidents cannot tell us where high ridership occurs.

Figure 5. Locations of Cyclist KSI's vs Most Popular Bike Route and MBS Station (2025)

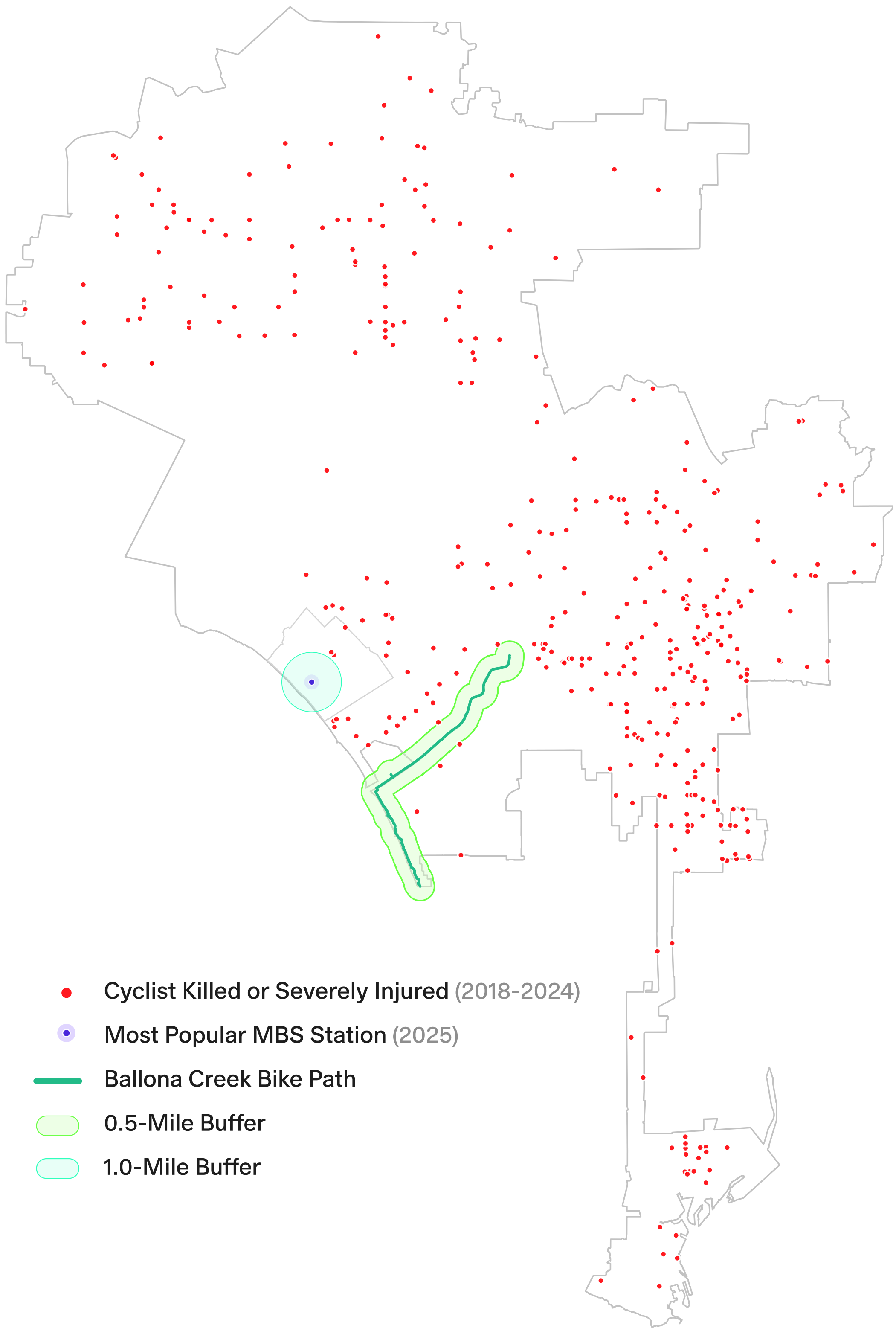
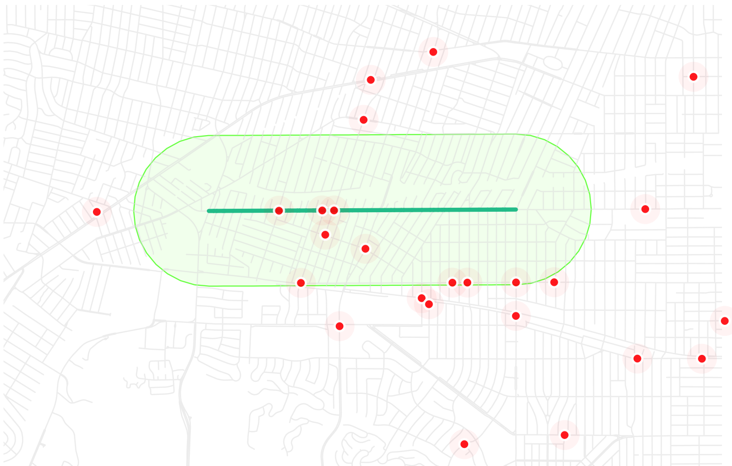


Figure 6. Cyclists Killed or Severely Injured around the Adams Bike Lane (2018-2024)

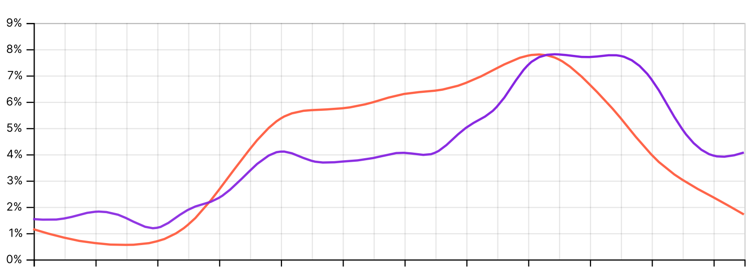


The Ballona Creek Bike Path saw **10 times the ridership** as the Adams Boulevard bike lane, and yet saw zero cyclists killed or severely injured killed within a half-mile over this same period.

Temporal Analysis

Another approach to answering the question at hand is checking whether accidents align with ridership according to the time of day. If the hourly occurrences of bike accidents correlated with hourly bike ridership, we would assume that the hourly share of each would exhibit a similar curve. However, in Figure 7 we see that graphing the hourly share of KSI's over the last 10 years and hourly share of general bike ridership yields two different, although somewhat similar, results. While both have peaks around 5pm, the KSI rate remains high afterwards, while ridership decreases. Also, from the morning until 5pm, the share of serious crashes is notably lower than the share of ridership, indicating that bikers experience a lower risk at this time.

Figure 7. Hourly Share of Bike Usage (2023-2025) vs Hourly Share of Cyclist KSI (2014-2024)



If these two lines were the same, it would imply cycling accidents could be a useful predictor for ridership volume, and that risk was even across all hours of the day.

Pearson r: 0.762
R^2: 0.581

Implications

Since there are (fortunately) only about 130 cyclist KSI's each year, spatial patterns are difficult to deduce, and the relationship between ridership and cyclist KSI's is not obvious. Still, the implication of these analyses is that **mapping cyclist deaths and injuries is likely to overlook important high-volume bike corridors**. Because accident volume does not tell the whole story, other cities have recently begun to rethink Vision Zero methodologies to capture areas even where crash numbers may be low—instead recognizing the importance of **measuring risk**. This finding is well summarized by the Miami Valley *Safe Streets for All Action Plan*:

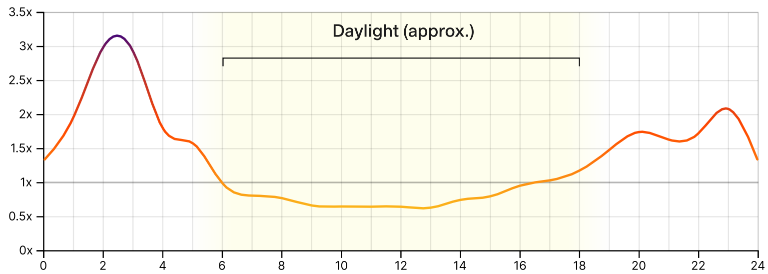
> "**A comprehensive safety plan must look not only at where crashes have occurred, but also at where the risk of future crashes is elevated, even in locations with few or no recorded crashes. Relying solely on crash history can leave gaps, because the absence of crashes does not necessarily mean a location is without risk**. Many locations have roadway, traffic, or land-use characteristics that create inherent risk, but crashes may not yet have occurred due to chance, low exposure, recent development, or other temporary conditions. Understanding where these risks exist allows agencies to act proactively rather than waiting for severe crashes to happen."[21]
>
> *–Miami Valley Regional Planning Commission, 2026*

Calculating Cyclist Risk

$$Bike\ Risk = \frac{Bike\ Accidents}{Bike\ Ridership}$$

Contrary to what might be a first instinct, the hours when the most cyclists are killed or severely injured are not the hours where cyclists are most at risk. This is because risk is a measurement of *likelihood*, and can only be calculated in relation to level of exposure, which in our case, is bike ridership volume. However, since we have a rough hourly breakdown of bike usage across Los Angeles, and we know the number of KSI's per hour, we are able to compute the hourly relative risk. Being able to mathematically determine the time of day which cyclists have the highest likelihood of getting killed or severely injured is a critically important insight and would not be possible without knowing bike ridership volume (Strauss et al., 2015). In Figure 8, I graph the hourly relative risk by dividing the share of cyclist KSI's each hour by the share of ridership in that hour—essentially dividing the purple line by the red line in Figure 5. The shape of this graph reveals important insights around risk.

Figure 8. Hourly Relative Risk for Cyclists (2014-2024)



This chart shows relative risk by adjusting the number cyclists that were killed or severely injured by hourly share of general ridership. Over this period, there were 1,503 cyclist KSI's, but if the risk had always been at the level of 2AM, we can estimate there would've been 4,500 KSI's.

Looking at Figure 8, we can see that hours with daylight had a lower relative risk despite much higher ridership. More specifically, the chart shows that all hours roughly without consistent daylight (from 7pm-5am) had at least *twice* the risk compared to the least risky hours between 9am-2pm. The chart also shows that by far the riskiest hour to bike is from 2-3am. Given 1,503 cyclist KSI's spanning ten years, it's worth noting that this 2am-3am window is also the time in Los Angeles when most bars typically close, which further outlines the urgency of alternative modes of transportation to driving.

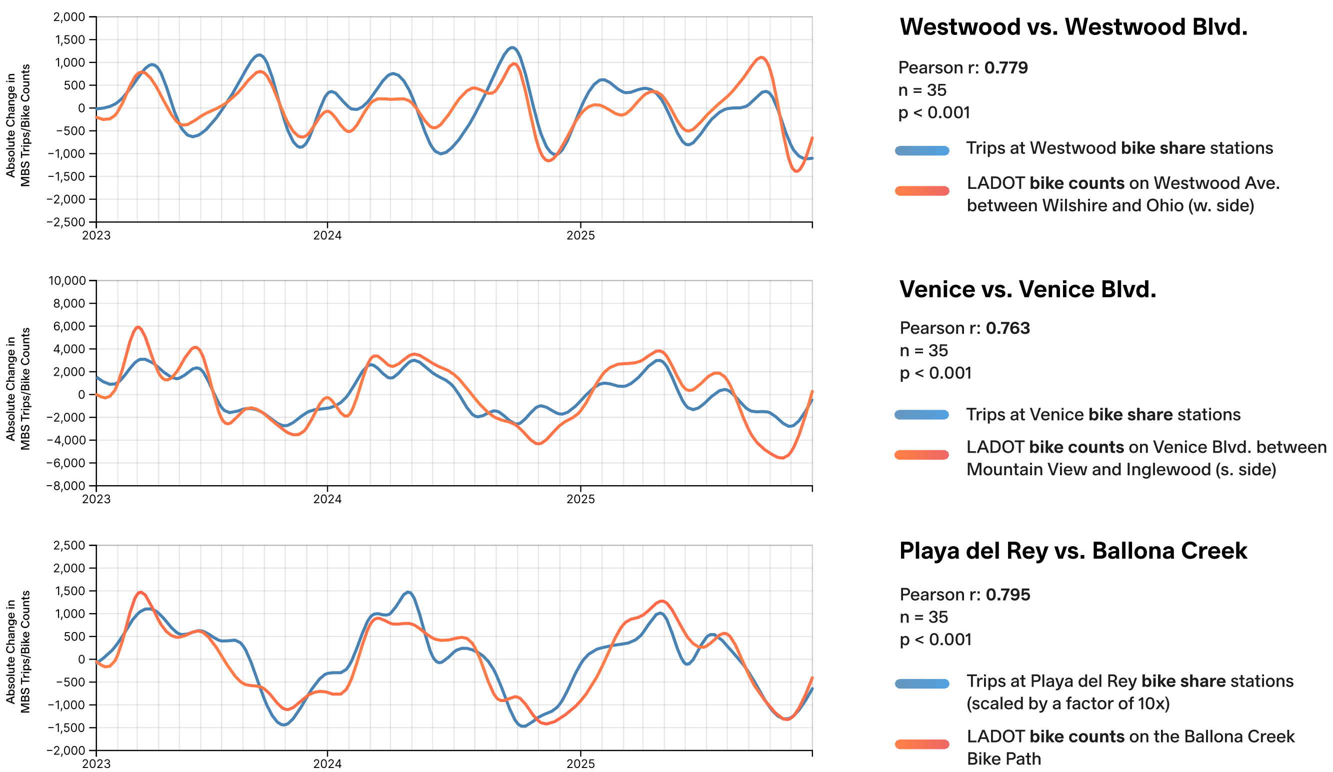
Because computed hourly risk requires knowledge of hourly volumes, it follows that calculating spatial risk also requires the same knowledge of ridership; therefore, locations of injuries on their own explain nothing about spatialized bike risk. In other words, a road with many injuries might still be less risky than a road with only a few injuries, if the former had higher bike ridership. This point is critical, as Vision Zero has relied on the High-Injury Network which does not factor in ridership and therefore is missing half of the equation for understanding the risk bikers face along the network. For this reason, some cities, such as Boston and San Antonio, have begun supplementing Vision Zero methodology with a "High-Risk Network" on top of a High-Injury Network[22].

Aside: A more technical formula for risk is *severity* multiplied by accidents divided exposure. When calculating the risk *of a KSI*, deaths and severe injuries are weighted equally as severity is held constant. In reality, severe injuries and deaths are indeed different levels of severity and should be weighted accordingly. To account for this, I ran two additional analyses, first weighting death as 2 times a severe injury, and then 5 times a severe injury. In both cases, the shape of the graph largely remained the same, meaning deaths and severe injuries are similarly distributed and suggests grouping them together is reasonable for the purposes of understanding hourly bike risk.

Bike Share as a Proxy

Now, I turn to the question: how can Metro Bike Share data help gain an understanding of LA's bike ridership? Alternatively, what assumptions can we make about general bike ridership patterns in an area based on the area's bike share patterns? Several studies have shown that bike share users tend to differ sociodemographically from non-bike share cyclists (Buck et al., 2013; Fitch et al., 2021), but other studies have shown that they share similar behavioral patterns (Ivanovic et al., 2023). To explore these similarities in the context of Los Angeles, I compared the ridership counts from the LADOT bike counters with the bike share usage in their neighborhoods. As most counters began collecting data in 2021 and 2022, I used the last three full years of data, namely from 2023-2025, and compared month-to-month changes in order to control for differences in absolute volume.

Figure 9. Monthly Change in Ridership: Bike Share vs Bike Counter (2023-2025)

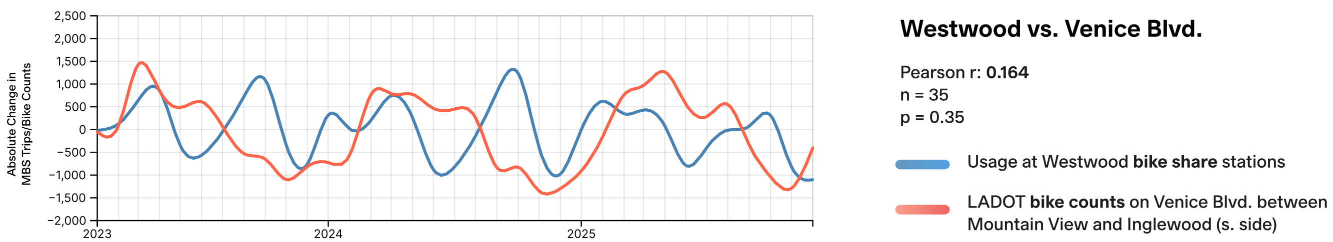


Even though the Westwood bike share stations were located in a different area than the bike counter (Figure 19), there was a highly significant positive correlation (Pearson r=0.779, p<.001) between the reported bike counts on Westwood Boulevard and bike share station usage in the Westwood neighborhood (Figure 9). This result was reproduced when comparing the bike counts on Venice Boulevard with station usage in the Venice neighborhood (r=0.763, p<.001) and the Ballona Creek bike counts with the Playa del Rey neighborhood (r=0.795, p<.001) (Figure 9). These results show that the months where total bike ridership increased along a specific corridor, bike share usage in the stations of the surrounding neighborhood increased proportionally.

Variable Overlap ("Are we just measuring the same thing twice?")

It is important to note that bike share users are a subset of all cyclists, and can and likely do contribute to the bike counter numbers. Because of this, correlation coefficients may be inflated and should be interpreted with caution. However, in the case of Ballona Creek and Playa del Rey, the bike counter recorded 10 times the number of bikes compared to bike share trips, and still shared a high correlation. Therefore, even when bike share trips are only a small fraction of overall cycling, bike share users exhibit similar patterns as non-biker share users in the area.

Figure 10. Monthly Change in Ridership: Different Neighborhoods (2023-2025)



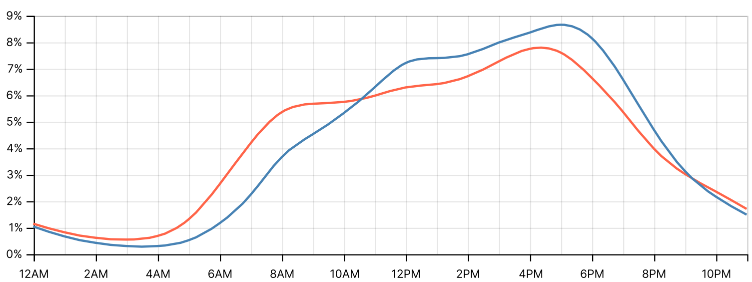
Interestingly, when comparing across *different* neighborhoods, for example, bike counts on Venice Boulevard and the bike share usage in Westwood, the correlation was low (r=0.164) (Figure 10). While studies have found that weather plays a large role in determining bike share usage (Eren & Uz, 2020; El-Assi et al., 2017), the fact that Venice and Westwood had a low correlation despite being only 4 miles apart and having similar climates suggests that weather does not play a key factor in determining fluctuations in monthly bike demand. It is then more likely that bike demand has to do with localized seasonal personnel changes, such as increases in tourism or student activity, however, this is an area for further research.

These analyses provide two valuable findings. First, factors that affect bike share usage are highly similar to the factors that affect overall bike ridership at the neighborhood level. This finding is consistent with results found by Ivanovic et. al (2023). Second, patterns in ridership are highly localized and distinct across neighborhoods. Therefore, it would appear that bike share users are not only a subset of bikers in the neighborhood, but their behavior is also representative of the neighborhood's overall cycling population. Thus, it is reasonable to use bike share as a proxy for overall bike ridership at the neighborhood level.

Time-of-day Analysis

To understand the temporal similarities between the groups, I compared hourly percentage shares between Metro Bike Share usage and the permanent counter aggregate (Figure 11). This comparison showed that overall Metro Bike Share usage has a significant temporal correlation (r=0.959) with general Los Angeles bike usage, and a notably stronger relationship than comparing hourly KSI rates (Figure 7). This adds another dimension to the argument that bike share users and general area cyclists behave similarly and that bike share usage can be useful toward understanding bike behavior.

Figure 11. Bike Counter Hourly Usage Share (2023-2025) vs Hourly MBS Usage Share (2025)



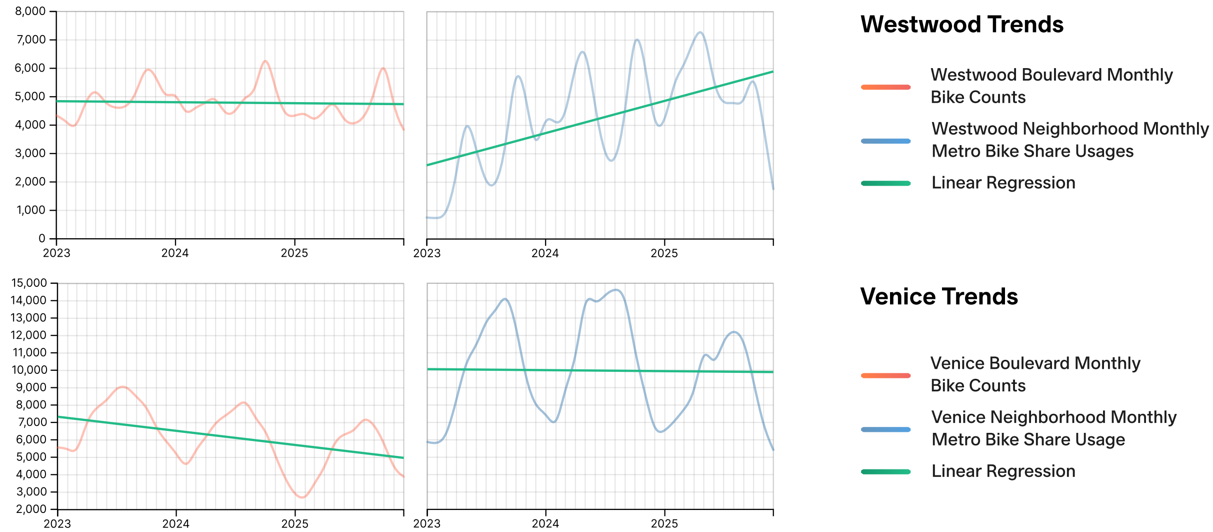
The hourly Metro Bike Share usage and and hourly bike counters have similar shapes, with Metro Bike Share leaning toward the evening.

Pearson r: 0.959
R^2: 0.920

Comparing Long-term Trends

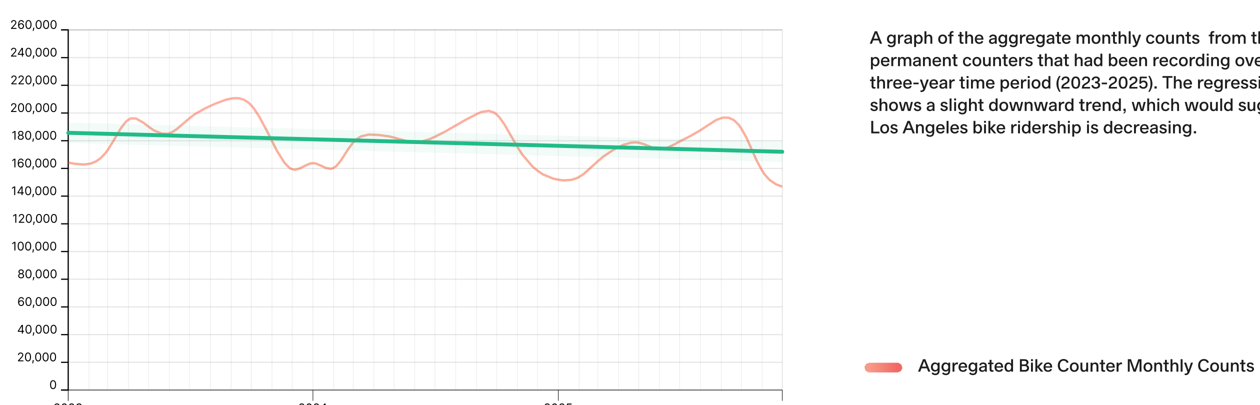
It is also useful to examine the long-term trends of these two groups. To do this, I compared the growth between MBS neighborhood usage and the corresponding bike counters over the same 3-year period. In Figure 11 we see that some neighborhoods, such as Westwood, saw clear increases in MBS usage while permanent bike counter data remained mostly stable. Venice, on the other hand, saw stable MBS usage and a decrease in bike counter counts. Three takeaways can be gained from this analysis: firstly, it serves as a reminder that correlations in month-over-month changes, as we saw in Figure 9, do not imply correlated long-term growth. Secondly, it is clear that in Los Angeles there are differences in growth trends between bike share users and non-bike share users. In the case of Westwood, bike share growth without changes in bike counts might suggest that the growth came from cyclists replacing non-bike share trips with bike share trips, rather than new cyclists being added. However, multiple studies refute this, finding that this replacement is generally a small percentage (Fitch et al., 2021, Ricci, 2015).

Figure 12. Bike Counter vs Metro Bike Share Long-term Growth Trends (2023-2025)



Another explanation is that, despite similar behavioral characteristics, bike volume captured on Westwood Boulevard is a different, unrelated subset of bikers than to MBS users. I find this to be unlikely due to the high volume of bike share ridership between the Metro E Line and Westwood village. Yet another possible explanation, then, is that bike share growth may offset a *decrease* in general ridership. In other words: would Westwood bike counts have decreased *if not for* bike share growth? This theory is supported by the difference in growth trends seen in Venice, where instead the bike share usage remained stable, while the bike counts decreased (Figure 12). Therefore, a third takeaway from this analysis is that it is possible bike usage in Los Angeles has stopped growing in the last few years and could even be decreasing (Figure 13). If this is the case, it outlines the urgency for ambitious investments in bike infrastructure across the city.

Figure 13. Bike Counter Citywide Aggregate Trend (2023-2025)



A graph of the aggregate monthly counts from the 22 permanent counters that had been recording over this three-year time period (2023-2025). The regression shows a slight downward trend, which would suggest Los Angeles bike ridership is decreasing.

Additional Micromobility Data

For additional ridership insight, LADOT has provided me with 3 years of third-party e-scooter data, comprising roughly 70% of all trips within the city of LA. Studies have shown that bikes and e-scooter have common behavioral characteristics (Gkavra & Susilo, 2025) but may have different trip purposes (Bieliński & Ważna, 2020). However, unlike Metro Bike Share, e-scooters are not dock-based, and therefore riders have the freedom to go exactly to their destinations, allowing for hyperlocalized insight into micromobility flows.

Figure 14. E-scooter Usage by H3 Hexagon (Resolution 9) (2023-2025)

A web visualization I made of LA's e-scooter uses, grouped by H3 Hexagon. The website allows you to view the changes based on time of day. Found here: https://maps.swellgarfo.com/scooter

Section Summary

This section outlines potential ways to gain an understanding of neighborhood-level and citywide bike ridership in Los Angeles. In doing so, I have uncovered important findings about different relationships and trends in bike ridership and bike ridership data. Further research could include additional data sources, such as crowd-sourced apps like Strava and also attempt to more precisely model ridership routes to understand infrastructure needs at street-level granularity. The next section will show how to apply the following findings:

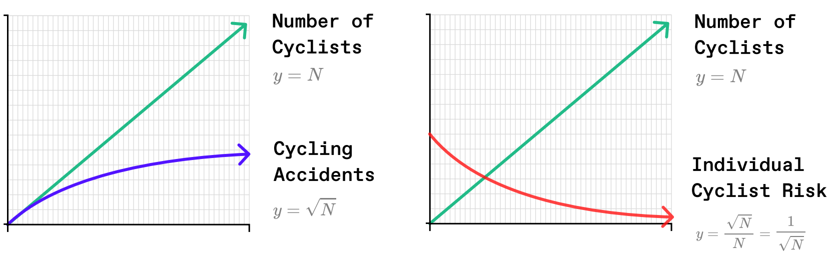
1. Mapping bike-related collisions can overlook areas of high bike ridership.
2. Cyclists in Los Angeles face at least twice the risk when biking at night, and a particularly high risk around 2 a.m.
3. Metro Bike Share users and non-MBS cyclists share similar behavioral characteristics and determinants.
4. The similarities of Metro Bike Share users and non-MBS cyclists are localized, and differ across parts of the city.
5. There are differences in long-term growth trends between bike share use and general bike ridership, and data may suggest that Los Angeles bike ridership is decreasing.

Part II:

Applying Bike Ridership Volume

Bike Ridership and Infrastructure Needs

Figure 15. The Nonlinear Relationship Between Increased Ridership and Accidents



Several studies have shown that increases in cyclists do not lead to a proportional increase in cycling accidents. Instead, it has been estimated that accidents increase according to the square-root of the increase in cyclists. It has also been suggested that in the long run, a decrease in total accidents is possible. (Jacobson, 2003, 2015; Elvik, 2009; Elvik and Bjørnskau, 2017)

If we can indeed achieve a better understanding of when and where people are cycling, how should such findings be used in the planning of infrastructure? Is it the existence of high ridership or the existence of low ridership that suggests bike infrastructure is needed? Both are valid standpoints, but the stance of this paper is that the City should work towards furthering bike growth in areas with already demonstrated high bike demand. This position is based on the safety-in-numbers effect observed by civil engineer Peter Jacobsen (2003), and confirmed in later studies (Jacobsen, 2015; Marques, 2017; Elvik & Bjørnskau, 2017; Nordback et al., 2014), stating that an increase in bike riders does not lead to a proportional increase in accidents in the short-term (Figure 15). Instead, bike accidents increase by a much lower percentage (Elvik & Bjørnskau 2017; Marques, 2017). One theory, offered by Jacobsen, is that motorists are more likely to be on the lookout for bicyclists if they've seen one recently, which is also known as driver "expectancy" (Hills, 1980). Further, it has been speculated that long-term increases in bike usage could actually lead to an overall decrease in bike-involved car collisions, if bike trips replace car trips (Elvik, 2009). This might explain why it is possible for cities to achieve remarkably high per-capita ridership while experiencing near zero or even zero bike deaths, as is the case for Oslo or Helsinki[23]. All this to say, **if increasing bike ridership increases bike safety, then infrastructure that incentivizes bike ridership, is itself safety infrastructure**. In other words, the three safety benefits of bike lanes are multiplicative, not additive.

Figure 16. The "Virtuous Cycle" of Bike Ridership

If more bikers on the road makes biking safer, and safer biking causes more people to bike, doesn't that create a loop? The answer is yes—this phenomenon has been called a "virtuous cycle"[24], as the safety-in-numbers effect creates a positive feedback loop for bikers (Figure 16). This is a powerful phenomenon and should not be overlooked when evaluating bike infrastructure. In other fields, such as economics or technology, similar self-reinforcing loops are known as "network effects"—where a service becomes more useful as more people use it—and are widely seen as one of the most valuable dynamics in business[25].

Still, safety-in-numbers can also improve safety in areas with low ridership. However, while low ridership may reflect a lack of demand due to safety concerns, it may also be a result of geographical constraints or structural barriers that necessitate high car ownership rates. As there are many factors that influence bike demand (Lanvin et al., 2025), and neighborhoods consist of a complex mixture of such factors, we should focus our efforts on areas with preexisting ridership, as these areas have already demonstrated favorable conditions or high structural necessity for biking. These areas offer the greatest opportunity to leverage the safety-in-numbers phenomenon and kickstart the "virtuous cycle" as seen in Figure 16. They are also the areas where investments will impact the greatest number of people right away. Therefore, while a city-wide increase in bike ridership is the long-term goal, this paper argues that prioritizing ridership expansion within areas with proven bike demand is the more effective strategy for promoting ridership and safety compared to areas of low ridership. That being said, both standpoints are only made possible after an understanding of ridership is acquired, further outlining the importance of measuring bike ridership.

Case Studies: Neighborhood Analyses

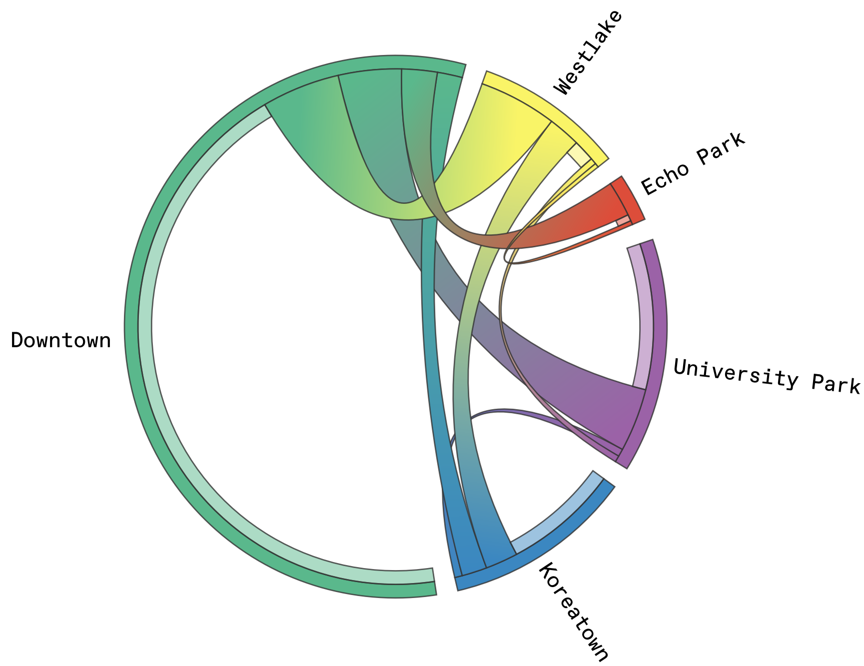
The City of Los Angeles is remarkably diverse across population density, income, and ethnographic make-up. There are low slung, suburban areas like Hancock Park next to extremely population-dense and transit rich areas like Koreatown, and there are wealthy neighborhoods like Silver Lake bordering lower-income neighborhoods like Westlake. Because cyclists' behaviors vary spatially, and given the wide variance between LA neighborhoods, this report uses neighborhood-level analyses in order to examine trends at a smaller scale and provide more tailored suggestions. As the City maintains no official neighborhood boundaries, I used the boundaries defined by the LA Times 2016 project *Mapping Los Angeles*[26]. Given these boundaries, I categorized the 225 Metro Bike Share stations into 22 corresponding neighborhoods, allowing conclusions to be formed about neighborhood-level bike share usage and connectivity.

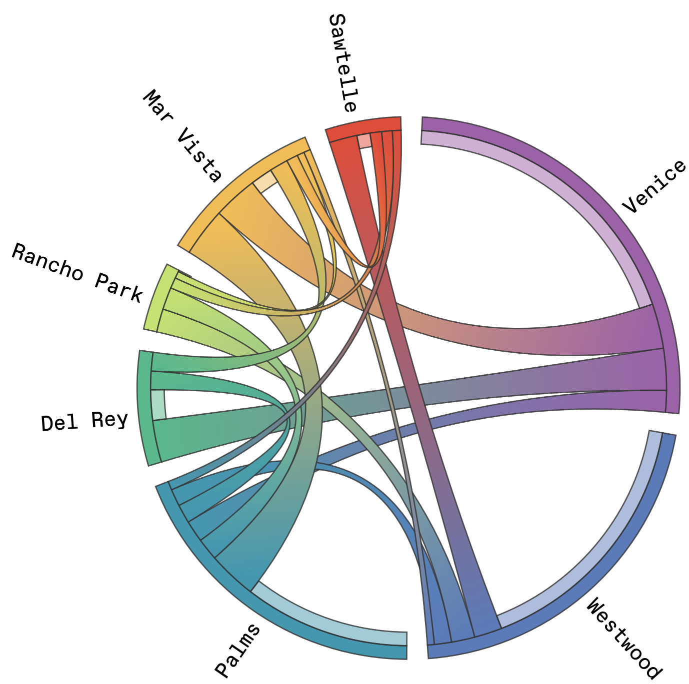
Because Part 1 demonstrated that bike share users behave similarly to general cyclists in a neighborhood, insights around bike share patterns can be suggestive of overall ridership patterns at the neighborhood level. There are three main analytical tools that I used for insights. Firstly, I analyzed neighborhood bike usage trends over time, identifying which areas have the most rapidly growing ridership, and which have ridership counts which are stagnant or decreasing. This analysis enables planners to proactively build bike infrastructure to meet growing demand. Secondly, I assessed bike flows between neighborhoods. Knowledge of which neighborhoods have high interconnectivity enables planners to build informed bike infrastructure catered towards specific chokepoints. Lastly, I compared neighborhood trends for specific times of the day. Neighborhoods with high nighttime ridership may represent areas of heightened bike risk, although the relationship between safety-in-numbers and nighttime risk is not known.

A Note on Neighborhood Analysis Equity

As a large part of this paper is based on Metro Bike Share activity, this report focuses on neighborhoods containing Metro Bike Share stations. Due to this, the neighborhood analyses and findings are necessarily biased toward preexisting infrastructure. As infrastructure is not fairly distributed, such analyses risk reinforcing structural inequities. That being said, I believe that despite known biases, research that focuses on increasing bike safety will eventually serve to benefit the city as a whole in the long-term.

Figure 17. MBS Inter-neighborhood Flows for Selected Neighborhoods (2025)





These chord diagrams show bidirectional bike share flows between neighborhoods and relative usage. Self-connections are designated by a lighter arc, and connections are ordered from largest to smallest. For example, Downtown connected to itself the most, and Westlake the second most. Alternatively, Sawtelle connected with Westwood more than it connected with itself.

Figure 18. 5-year Station-adjusted MBS Growth, Ordered (2021-2025)

Westwood

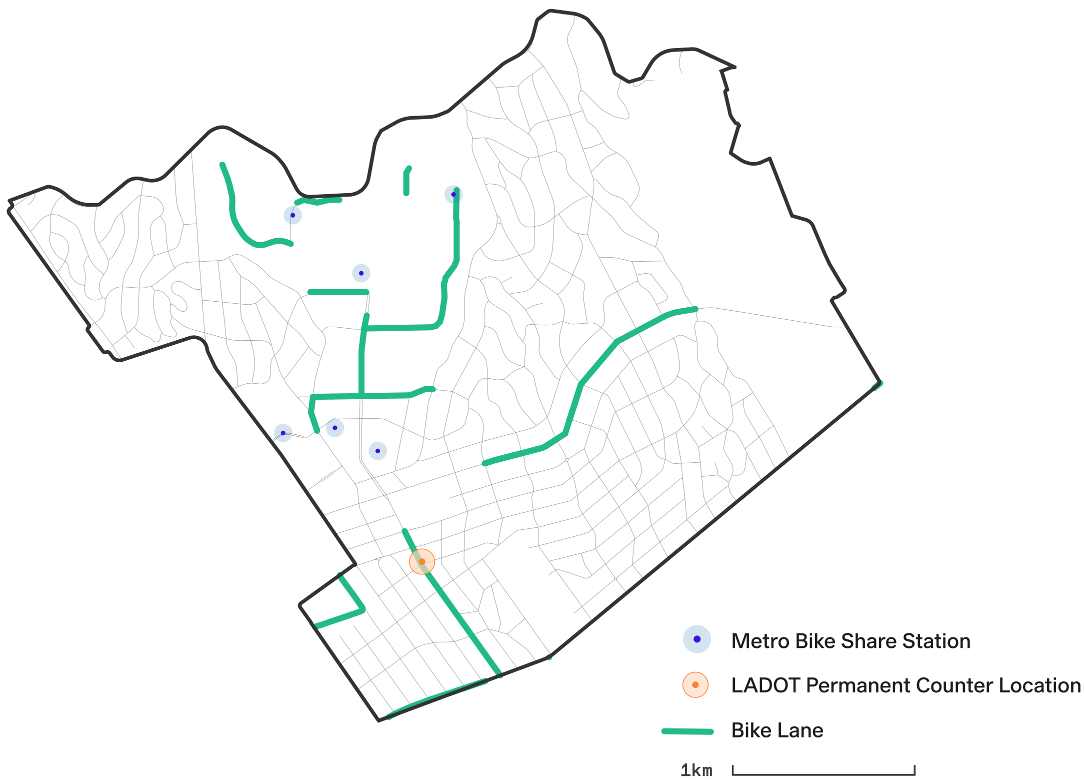


Figure 19. Bike Lanes, Bike Counters and Bike Share Stations in Westwood

Brief Context

Westwood is the neighborhood that contains UCLA and Westwood Village (UCLA's central college town). Outside the campus area, there are areas that are mostly single-family houses, and the Los Angeles Country Club. There is high bus connectivity as the neighborhood includes the major corridors of Wilshire Boulevard, Westwood Boulevard, and Sunset Boulevard.

Current Bike Infrastructure

Westwood has several scattered bike lanes largely concentrated around the UCLA campus. There is very little connectivity between bike lanes, resulting in a disjointed network, if it can be called that. There are 101 MBS docks between 6 MBS stations, three of which are on UCLA campus. The other three are in Westwood Village.

Current Projects/ Plans

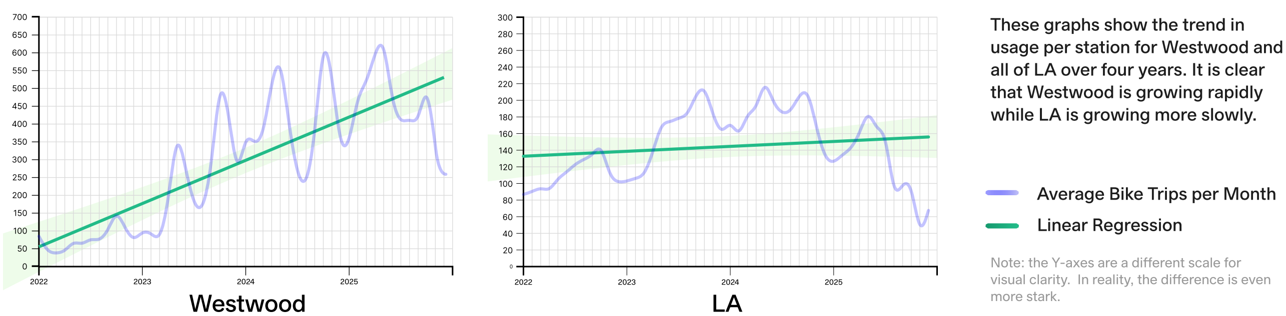
LADOT currently has two bike improvement plans for the Westwood neighborhood. Firstly, they plan to add bike infrastructure all the way between the Westwood/Rancho Park E line station and Le Conte avenue, the start of UCLA campus[27]. Secondly, they plan to add a protected bike lane on Ohio Ave from Westwood Boulevard south to Westgate Avenue[28].

Key Findings

In the last four years, Westwood was by far the fastest growing neighborhood in terms of bike share usage (Figure 20). It had the highest number of uses per station in 2025, 3.6x more than the LA Average (Appendix 5). Thirdly, it also had the second highest e-scooter usage after Downtown (Appendix 6).

The closest Metro Station is 2 miles away and exhibits high connectivity with Westwood: 50% of riders from the Rancho Park/Westwood E Line station went to stations in the Westwood neighborhood (Figure 21). The nearby Sawtelle neighborhood also had high connectivity with Westwood: 26.7% of Sawtelle MBS trips connected with Westwood.

Figure 20. Trend in Bike Share Usage Per Station (2022-2025)



These graphs show the trend in usage per station for Westwood and all of LA over four years. It is clear that Westwood is growing rapidly while LA is growing more slowly.

Note: the Y-axes are a different scale for visual clarity. In reality, the difference is even more stark.

Discussion

Westwood has high bike share usage, which has grown rapidly over the four years. The growth is especially interesting considering the fact that the population and the size of the UCLA student body remained stable during this period. Since similar results were seen in the University Park neighborhood (containing USC), there seems to be an indication that students have not only a high interest in biking, as other studies have suggested (Swiers & Gee, 2017; Schoner & Levinson, 2014), but that this interest is rising sharply. The bike share usage in college areas could also be partially explained by the subsidized student pricing for MBS passes[29]. While this may explain the high usage relative to other neighborhoods, it does not explain the rapid growth over a five-year period, as the same student pricing has been available for that entire period. Additionally, e-scooter usage is high in both Westwood and University Park, despite not having student pricing. More likely, accelerated micromobility usage is a result of high bus connectivity, high population density, and the student demographic. Indeed, students and young adults are less likely to own a car (Belgiawan et al., 2014; Klein & Smart, 2017), are increasingly less likely to have a drivers license (Polzin et al., 2014), and are driving less (Zhong & Lee, 2017).

Figure 21. Westwood/Expo MBS Station Neighborhood Connectivity (2025)

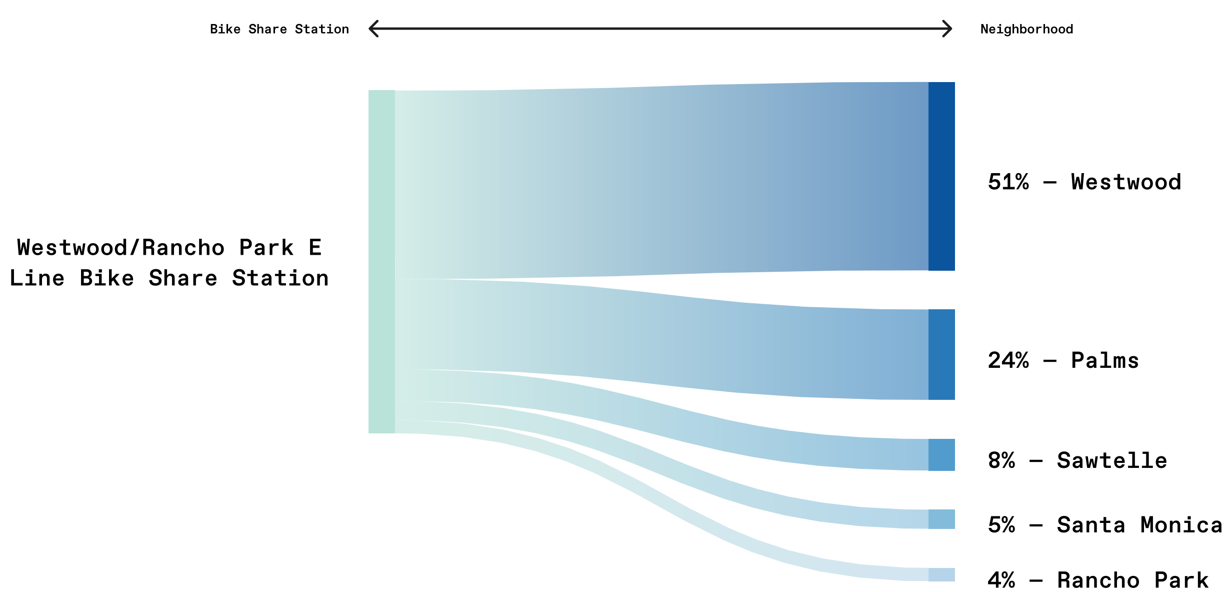
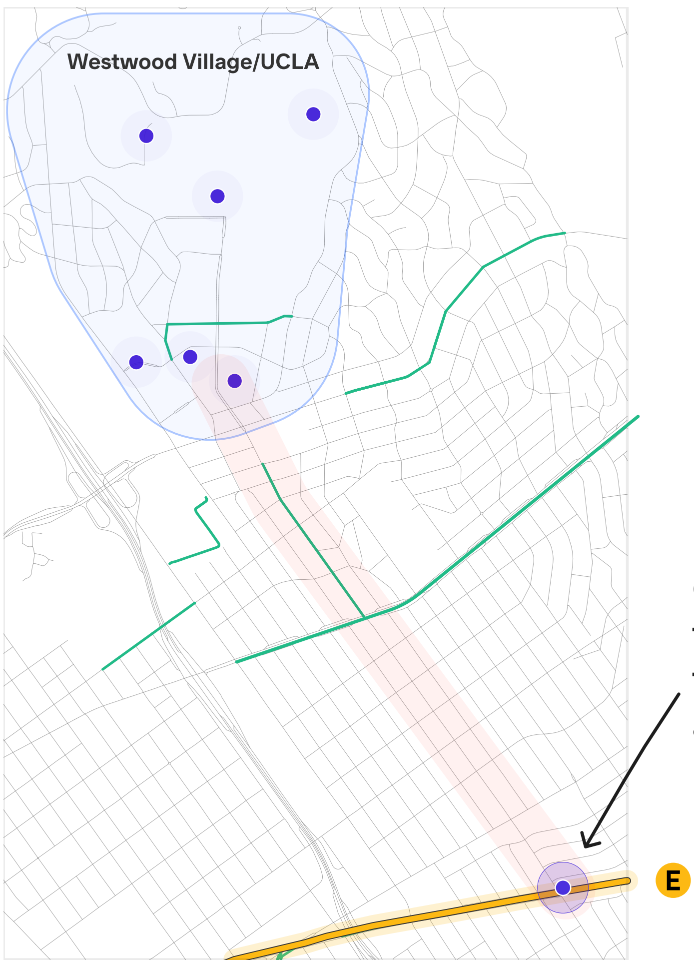


Figure 22. Visualization of the Connection between Westwood Bike Share Stations and the Metro E Line



Over 50% of bike share trips from this station ride to Westwood, 2 miles away, with very little bike lane coverage.

Westwood
Recommendations

1. **Build key neighborhood connectors, especially to the Metro E Line.** The data strongly supports the City's decision to build a bike lane connecting the Metro E Line station with UCLA campus, as well as an Ohio Avenue bike facility between Westwood and the Sawtelle neighborhood. Both of these projects create key neighborhood connections to previously disconnected bike lanes, and the Westwood bike lane will play a key role in increasing multimodal network connectivity over the 2-mile gap between the Metro and Westwood Village (Figure 22).

2. **Expand the bike lane network.** Due to the high popularity of micromobility in Westwood, I recommend adding bike infrastructure that connects the currently existing MBS stations within the area. The rapidly growing bike share usage, coupled with high usage per station and high e-scooter usage suggests the potential for much higher latent demand within the Westwood demographic. Strategic, timely bike infrastructure projects can foster this demand, helping it grow.

3. **Increase MBS coverage and docks.** Having the highest MBS uses per dock and high uses per station suggests that there is unmet demand for bike share specifically, which justifies the installation of additional bike stations and increasing the number of docks per station. As the stations Gateway Plaza, Broxton & Weyburn, and Glendon & Kinross all have remarkably high usage, even compared across the entire MBS system[30], a bike share station on Westwood Boulevard between the three stations might be warranted. Additionally, adding stations along Westwood Boulevard, south of Wilshire could capitalize on the new bike lanes being built.

Koreatown

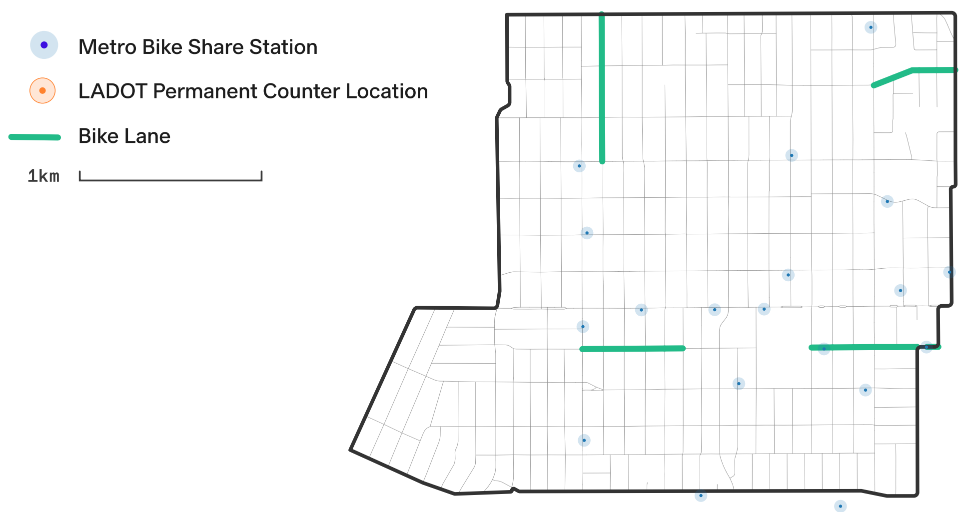


Figure 23. Bike Lanes, Bike Counters and Bike Share Stations in Koreatown

Brief Context

Koreatown is a dense, centrally located neighborhood known for its prevalence of Korean-American shops and restaurants. It has the highest population density of any neighborhood in Los Angeles*, and is remarkably diverse, with an estimated 80% nonwhite population, including roughly 50% Latino and 25% Asian.

Current Bike Infrastructure

Koreatown has 4 bike lanes with no connectivity between them. There are 19 bike share stations and 266 bike share docks. There are no bike counters. For the purpose of this report, the southernmost stations at Ardmore & Olympic and Berendo & Olympic have been included in this neighborhood although they technically fall within the bounds of Harvard Heights and Pico-Union, respectively.

Current Projects/ Plans

No bike lane projects are currently planned. There is a current project aimed to connect Koreatown and Pico-Union with a low-stress, all-ages walking and biking route, but this project will include no bike lanes[31].

* Based on LA Times boundaries, Westlake ranks marginally higher than Koreatown (Appendix 8), however, the two are so similiar that results depend on the exact borders. Functionally, their population density is the same, and uniquely high.

Key Findings

In 2025, Koreatown had high bike share and e-scooter usage. Relative to other neighborhoods, Koreatown's bike ridership was notably skewed towards nighttime usage. Of all LA neighborhoods analyzed, Koreatown had the highest percentage of usage between the hours of 6pm-12am and twice the LA avereage usage between the hours of 12am-6am (Figure 24). By examining the difference in e-scooter usage by census block between the morning and the evening, we can infer that a lot of this increased nighttime activity happens in the north-eastern side of the neighborhood, concentrated along Vermont Ave and 6th Ave (Figure 25).

Additionally, the two most popular Metro Bike Share stations were the Shatto Pl & Wilshire and the Wiltern stations, which are the two closest bike share stations to the Metro D Line Stations on Western and on Vermont. E-scooter analysis also confirms that these are the two most popular areas. This suggests that people in Koreatown enjoy a high degree of multimodal connectivity.

Figure 24. Koreatown vs LA: Percentage of Bike Share Usage by Time Period (2021-2025)

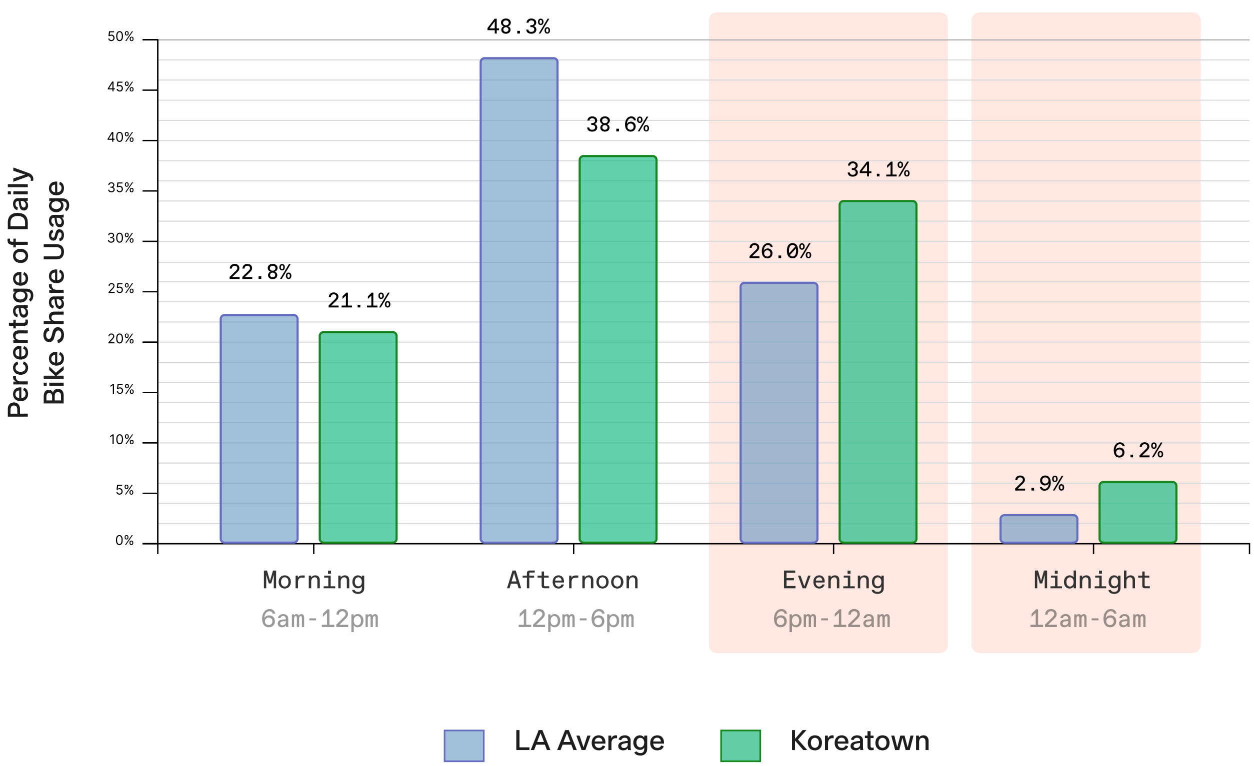
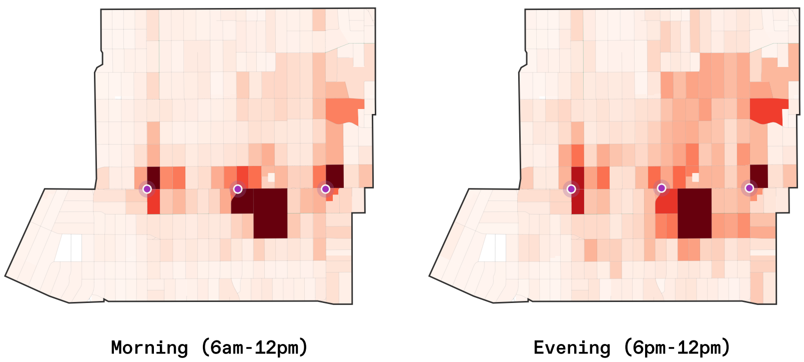


Figure 25. Change in Koreatown E-Scooter Usage by Census Block, Morning vs Evening (2023-2025)



These maps visualize the spatial change in e-scooter activity in Koreatown between morning and night. Morning usage tends to center heavily around metro stations, while at night there is a noticeable increase in activity in the north east section along Vermont Ave.

Metro Station

E-scooter usage is provided at the census-block level, which provides a more precision compared to bike share data, which is bound to station locations. To counteract replenishment placement bias, only the trip ends are used.

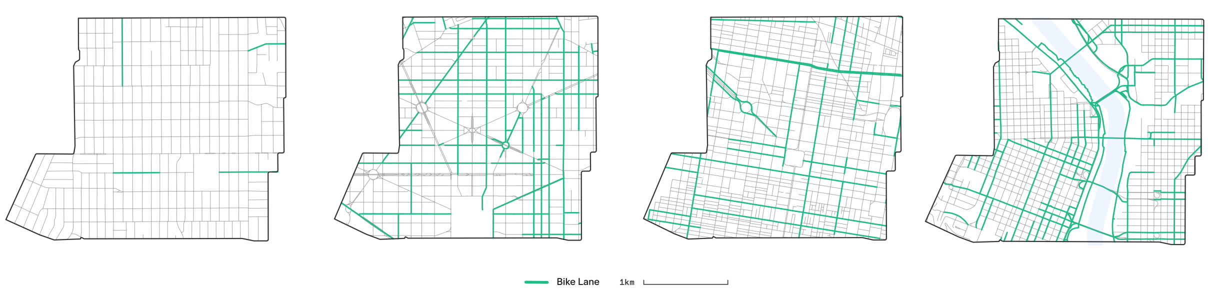
Figure 26. Koreatown Bike Network compared to Major U.S. City Centers

Koreatown, Los Angeles
pop. ~107,000 (2020)

Koreatown overlayed onto Central Washington D.C.
pop. ~72,000 (2020)

Koreatown overlayed onto Central Philadelphia
pop. ~81,000 (2020)

Koreatown overlayed onto Central Portland
pop. ~31,000 (2020)



Koreatown
Recommendations

1. **Ambitiously build a Koreatown bike network.** With the goal of leveraging safety-in-numbers and taking advantage of cycling network effects in Los Angeles, Koreatown is the top candidate for an ambitious bike lane network due to its high micromobility usage, high population density, low car-ownership rate and high transit connectivity (Ghaffar et al., 2023). Actually, due to its exceptionally high population density *nationally*, it is difficult to find an area in the entire United States that more urgently necessitates bike lane expansion. While there is no consensus around for recommended bike lane length in an area (Yang et al., 2021), Figure 26 overlays the boundaries of Koreatown onto major U.S. city centers, which all have lower population densities than Koreatown. From this figure it would seem that people in Koreatown are enduring dangerous mobility conditions compared to similarly dense urban areas nationally. The fact that Koreatown bike share usage is still relatively high in spite of this suggests that latent demand might be orders of magnitude higher. In that case, with proper investment Koreatown could become an all-important model for the future of LA bikeability. Thus, I recommend an ambitious increase in bike lane length, on the scale of a **twenty-fold** increase. This degree of expansion would reach parity with Montreal's Plateau neighborhood[32], which is an example of a real-world bike network deemed appropriate for a neighborhood with the population density of Koreatown. Crucially, such an unprecedented expansion will require thinking beyond single corridor-level bike lane improvements and recognizing the importance of bike lanes as comprehensive networks (Marques, 2017; Ferenchak & Marshall, 2026).

2. **Protected, well-lit bike lanes on 6th St. and Vermont Ave.** Koreatown is a popular area for restaurants, bars, and nightlife, and thus has high micromobility usage at night. Figure 25 suggests that the increased nighttime usage is concentrated on the central eastern side of the neighborhood, namely along 6th street and the stretch of Vermont between 3rd and Wilshire. Because cyclists are more at risk at night, these stretches should be prioritized for bike safety, with a focus on nighttime visibility. It's worth noting that this stretch of Vermont was

labeled as part of the planned Bike Lane Network in the 2035 Mobility Plan, however, after twenty years no progress has been made.

3. **Build around Metro Stations.** Because Koreatown benefits from intermodal connectivity with the Metro, the areas directly surrounding the metro stations should be prioritized for bike infrastructure. Not only are these key nodes for the bike share network, but they also see high pedestrian traffic and bike lanes have the benefit of slowing traffic and reducing pedestrian injuries as well. Figure 28 shows the visual difference between a bikeable, pedestrian-friendly intersection compared to the car-centric roadways around the Vermont and Wilshire Metro station, a key transit hub for the neighborhood and the city.

Figure 27. Koreatown MBS Bidirectional Neighborhood Connectivity (2025)

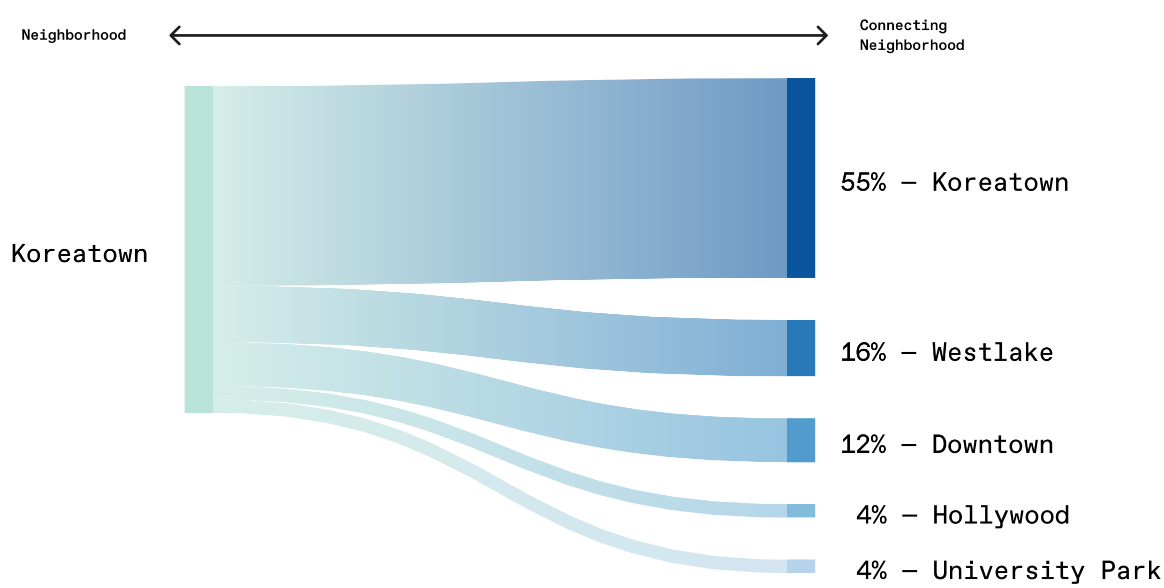
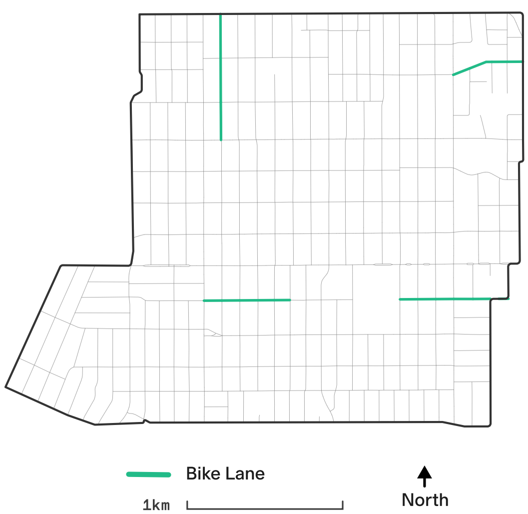


Figure 28: Koreatown's major transit hub, as well as its most popular bike share and e-scooter intersection vs a grocery store in the Plateau neighborhood of Montreal. Source: Google Maps

Figure 29. Visual Comparison of Koreatown and Montreal's Plateau Bike Lane Networks

Koreatown, Los Angeles
pop. ~107,000 (2020)



Bike Lane Density:
0.36km/km^2

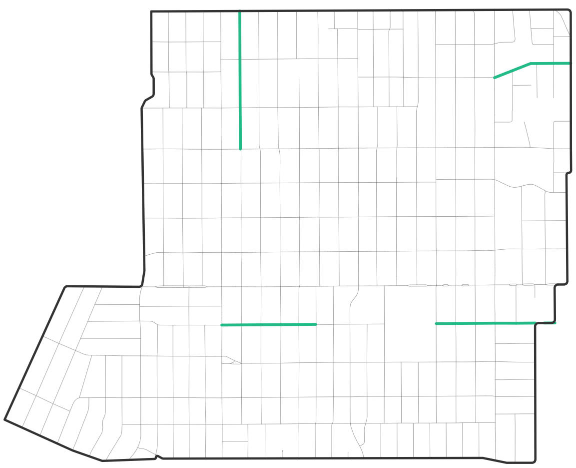
Plateau-Mont-Royal, Montreal
pop. ~105,000 (2021)

Bike Lane Density:
6.38km/km^2

Koreatown has a similar area and population density as Montreal's Plateau neighborhood (Koreatown is about 20% denser), but only has 5% of the bike lanes. Using Montreal as a benchmark can help us visualize the difference in magnitude of bike lanes that other cities have allocated for a neighborhood with the density of Koreatown.

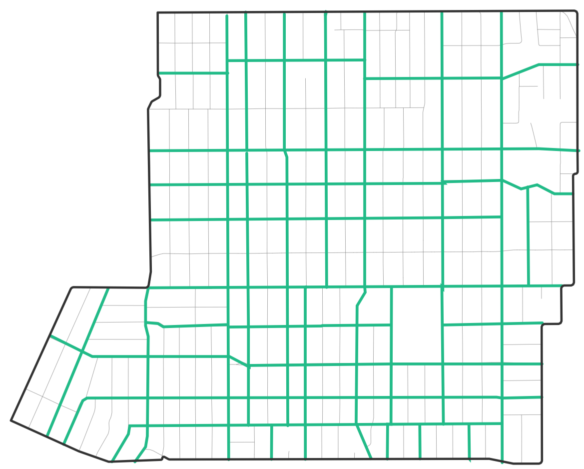
Figure 30. Koreatown with the Bike Lane Density of Montreal's Plateau Neighborhood

Koreatown, Currently



Bike Lane Density:
0.36km/km^2

Koreatown with the Plateau's Bike Lane Density



Bike Lane Density:
6.33km/km^2

Note: Locations of bike lanes are for visualization purposes, were placed randomly, and are not suggestions.

Westlake

Figure 31. Bike Lanes, Bike Counters and Bike Share Stations in Westlake

Brief Context

Westlake is tied for most dense neighborhood in Los Angeles, 3 times denser than the citywide average. Its size and population are both similar to Koreatown, which borders it to the west. On the southeast, it borders Downtown, separated by the 110 Freeway.

Current Bike Infrastructure

Westlake has 5 bike lanes with no connectivity between them. Metro Bike Share has 174 docks in Westlake across 12 stations. There is an unprotected bike lane on 7th street that runs through the entire neighborhood, serving as a connector between Westlake, Koreatown and Downtown.

Current Projects/ Plans

No bike infrastructure projects are currently planned within the Westlake boundaries. However, because I've included the two bike share stations directly to the south of the neighborhood which would otherwise have been classified as Pico-Union, I will include the ongoing project that would add protected bike lanes on Pico, just south of Westlake[33].

Key Findings

Over half (52.2%) of the bike share trips in Westlake either started or ended in Downtown (Figure 32). Westlake also exhibits a strong connection with Koreatown; it connected with these two neighborhoods more than it connected with itself. The most popular trip between these two neighborhoods is between Rampart & Wilshire and Shatto Pl & Wilshire, yet neither of the suggested Google Maps biking directions includes a bike lane (Figure 34). The most popular trip between Westlake and Downtown was 12th & Valencia to Pico & Flower (Figure 35), which is also not serviced by a bike lane.

Figure 32. Westlake MBS Bidirectional Neighborhood Connectivity (2025)

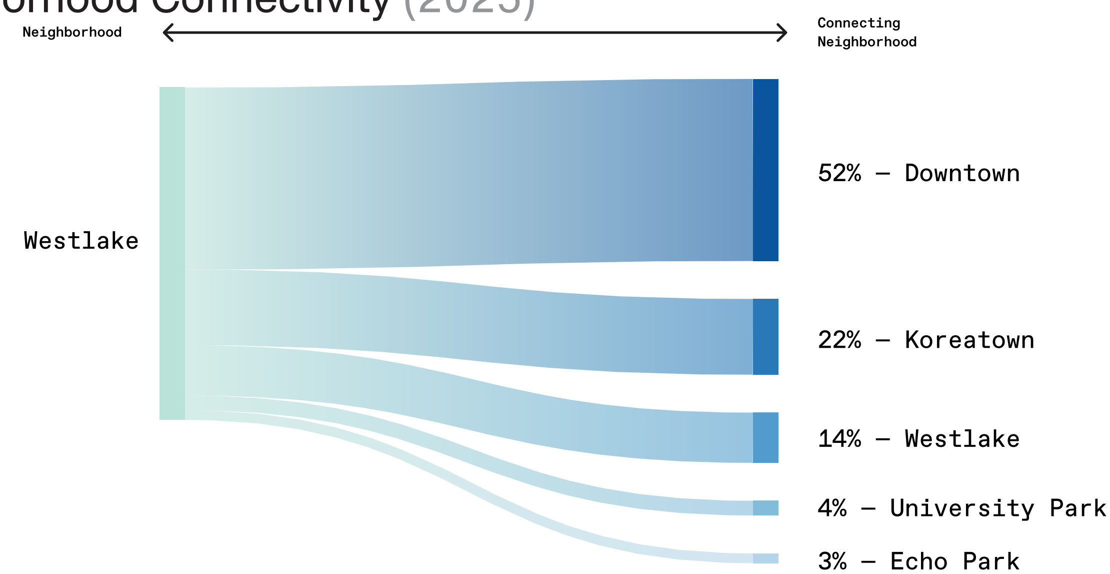
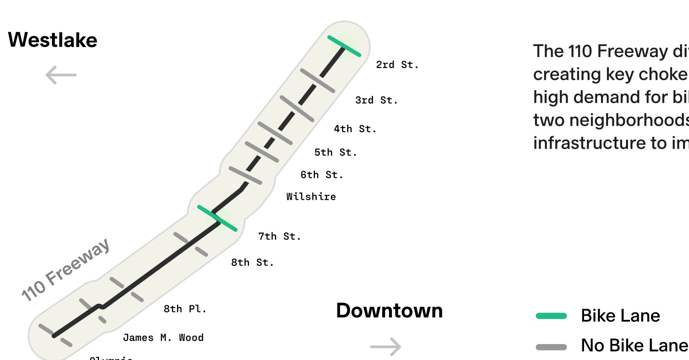


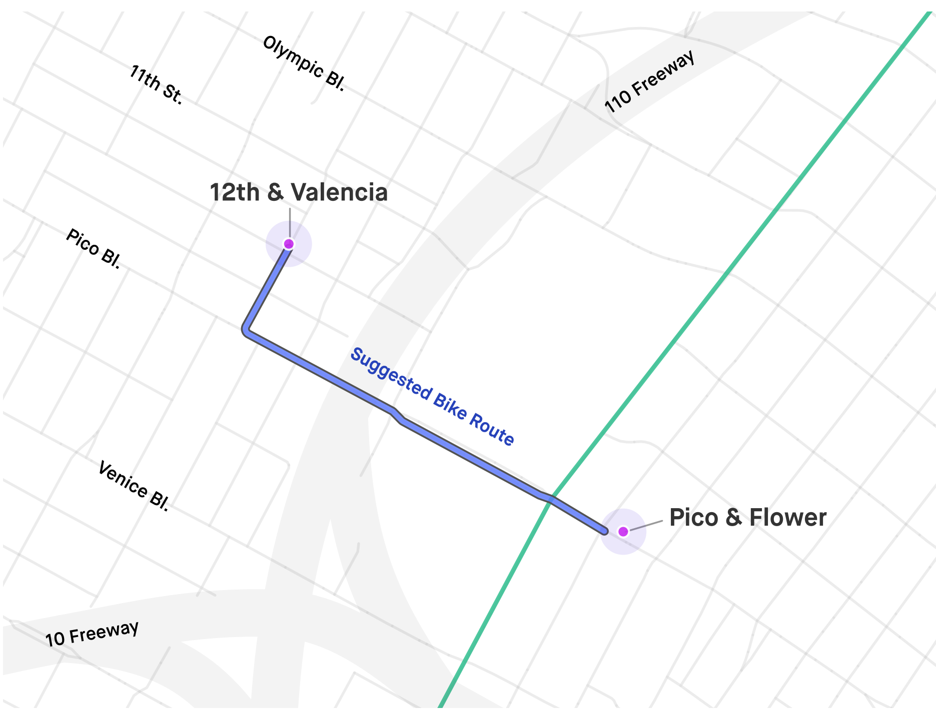
Figure 33. Bike Lane Connectivity Between Westlake and Downtown



The 110 Freeway divides Westlake and Downtown, creating key chokepoints for cyclists. Since there is a high demand for bike connectivity between these two neighborhoods, we should create bike infrastructure to improve these connections.

Figure 34. The Most Popular Bike Share Connection Between Westlake and Koreatown with Google Maps Suggested Bike Routes

Figure 35. The Most Popular Bike Share Connection Between Westlake and Downtown with Google Maps Suggested Bike Route



Westlake
Recommendations

1. **Increase Quality Connections with Downtown.** Because there is such high demand for connectivity between Westlake and Downtown, I recommend focusing on improving bike lane connections between these neighborhoods, which are notably divided by the 110 Freeway (Figure 33). Firstly, this consists of improving the bike lane infrastructure on 7th St, as this exists already as a critical bottleneck due to the nature of the border of these neighborhoods. It has been shown that addressing these bottlenecks can be a cost-effective way of upgrading network efficiency and accessibility (Pfaender et al., 2025). Secondly, Olympic, 11th and Pico Boulevard all present opportunities to improve this inter-neighborhood connectivity. Thus, the data strongly supports the City's decision to create a bike corridor along this stretch of Pico Boulevard.

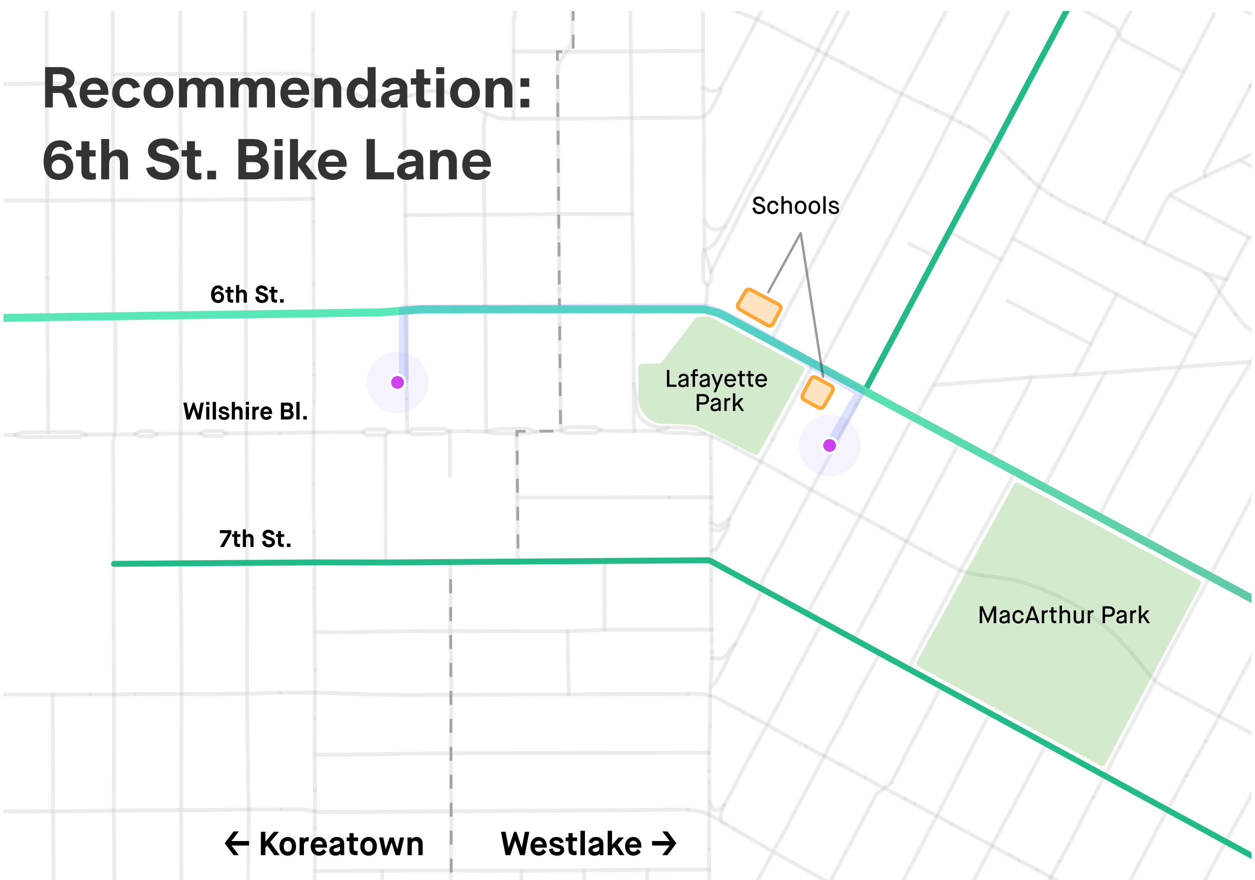
2. **Add a Bike Lane on 6th street.** Because the most-common bike share trip to Koreatown (Figure 34) is not served by bike lanes on either side, I recommend adding a bike lane on 6th street to improve the connection between neighborhoods. Adding a bike lane here pairs nicely with Lafayette Park, MacArthur Park, and multiple schools (Figure 36). It also coincides with my second recommendation for Koreatown in the previous case study.

3. **Expand Bikeshare Stations.** I also recommend the addition of several bike share stations, because bike share usage is notably lower than expected given the area's high e-scooter usage. The first location I would suggest is on Alvarado Street in front of the Westlake/MacArthur Park Metro station. Although there is already a bike share station on the other side of the block, it sees meager use[34]. Adding a bike share station that is more prominently accessible to the metro station, or moving the current station to a more central location will improve positive synergies with Metro's B and D Lines. The second location I recommend is at the intersection of 6th and Bixel. This area has high e-scooter usage and yet it is not serviced by a bike share station. There is a 227-unit housing complex planned to be built on this corner, with fewer residential parking spaces than units, so there will be a direct need for car alternatives[35]. Also, this station would be close to Downtown, further improving interconnectivity.

Additional Notes

Koreatown and Westlake both have similar population density, both of which are unique on a national scale. However, in the previous section I have discussed Koreatown as a top candidate for ambitious bike infrastructure increases. The reason I have said this about Koreatown and Westlake is this: Koreatown already has about twice the bikeshare and e-scooter usage as Westlake (Appendix 5 and 6), signalling a notably higher starting point for capitalizing off preexisting demand. Secondly, 55% of bike share trips that start in Koreatown also end in Koreatown (Figure 27), while that number is only 14% of trips in Westlake, suggesting that in terms of micromobility usage, Koreatown is more of a destination in itself. However, this could also have to do with the fact that there are simply more bike share stations in Koreatown. That being said, I do also think that the conditions in Westlake also warrant the creation of a connected bike lane network.

Figure 36. Visualization of Suggested 6th Street Bike Lane and the Nearby Amenities



Hollywood

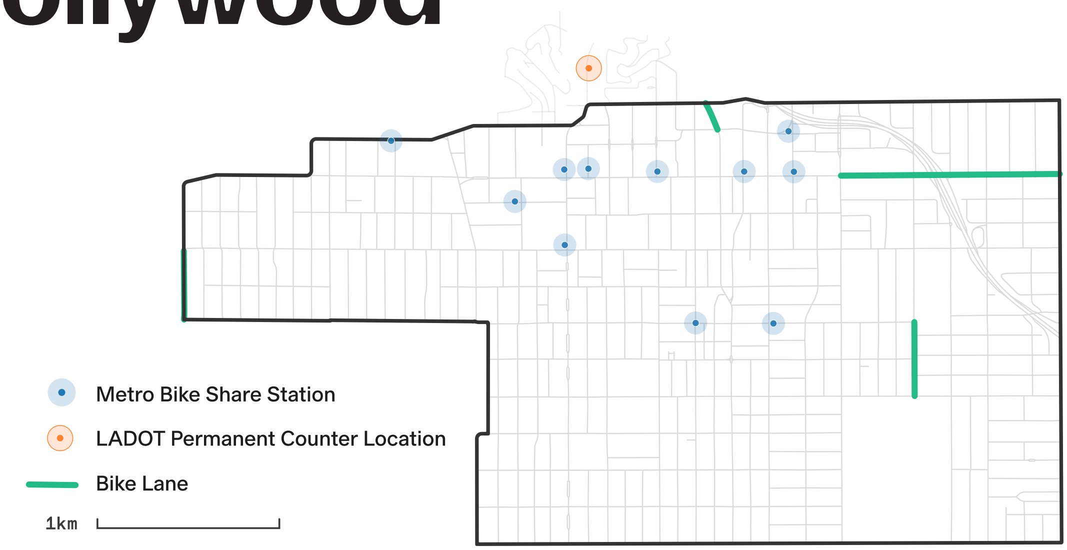


Figure 37. Bike Lanes, Bike Counters and Bike Share Stations in Hollywood

Brief Context

Hollywood is a historic neighborhood, famous around the world for its connection to the movies The stretch of Hollywood Boulevard is known as the "Walk of Fame" is a popular tourist destination, and every year it hosts numerous movie premieres and the Oscars. It is also a popular nightlife spot, with a host of clubs, bars and music venues.

Current Bike Infrastructure

Hollywood has 1.5 bike lanes. There are no bike lane connections. There are 11 Metro Bike Share stations and 167 docks. Notably, Hollywood bike share stations are the furthest west of all the "east side" stations, meaning there is a significant gap in bike share stations to the north, south, and west (Figure 42).

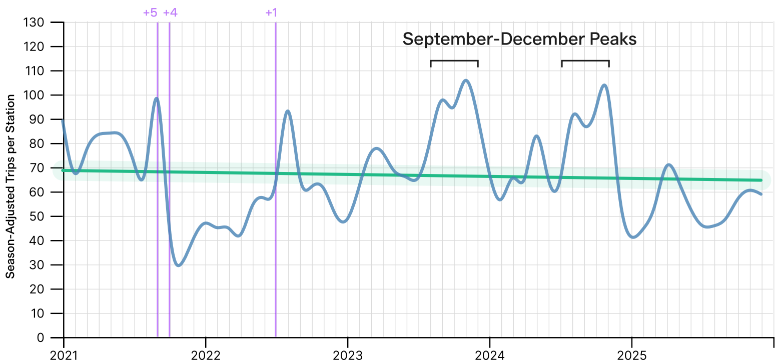
Current Projects/ Plans

A westward extension of protected bike lanes on Hollywood Boulevard from the current terminus at Gower Street to Sycamore Ave is planned[36].

Key Findings

Out of all the neighborhoods studied, Hollywood had the highest percentage of usage after midnight (12am-6am). Yet it ranked as one of the lowest in uses per station and uses per dock, suggesting that, in contrast to Westwood, there is lower demand for bicycling compared to the supply of bike share stations. Despite middling bike share usage, however, Hollywood had a high e-scooter usage (Appendix 7). Lastly, Hollywood was notably the only neighborhood with negative growth in MBS station-adjusted usage over five years (Figure 18).

Figure 38. Hollywood Bike Share Adjusted Usage Per Station (2021-2025)



This chart shows a general downtrend in Hollywood bike share usage, although usage is highly seasonal. Still, 2025 saw a dramatic downturn from the previous 2 years, particularly during the fall months where usage peaks.

Season-Adjusted Monthly MBS Trips per Station

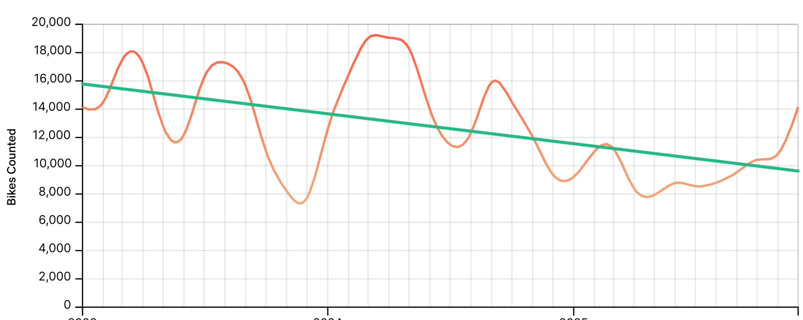
Linear Regression

New Stations Added

Discussion

Hollywood is interesting because it potentially represents a bike share system's failure to sustain usage without a bike lane network (Xu, 2020; Bauman et al., 2008). However, there is also the possibility that Hollywood is losing popularity as a tourist destination in general. According to one Hollywood vendor, foot traffic dropped nearly 50% in the summer of 2025[37] likely as part of a general trend of declining tourism in California[38]. In Figure 38, we see that this seasonal loss seems to be reflected in bike share usage patterns, however, the bike counter data represents a more clear decline in ridership (Figure 39).

Figure 39. Hollywood Bike Counter 3-year Trend (2023-2025)



The bike counter on Highland Avenue suggests a downward trend in cycling in the area over the last three years.

LADOT bike counts on Highland Avenue between Milner Ave & Franklin Ave

Hollywood
Recommendations

1. **Diversify Metro Bike Share Station Location.** Due to the declining ridership rate, Hollywood would not seem to be a priority for fostering bike growth. However, the majority of bike share stations are based around the central tourist area, which has been declining in popularity. The fact remains that this neighborhood has both relatively low car ownership rate, high population density, and high e-scooter usage, suggesting an opportunity for bike growth in other parts of the neighborhood. I recommend distributing bike share stations into the surrounding area, improving the neighborhood's last-mile connectivity. For specific locations, Figure 40 shows how bike share usage may correlate with e-scooter usage and therefore locations of e-scooter trips can help identify important areas of unmet micromobility demand.

2. **Enhance Metro Bike Share Station Accessibility on Hollywood and Highland.** Despite the intersection of Hollywood and Highland being both a central node on the Walk of Fame and also having a well-used Metro station, its bike share usage is relatively low. For example, the bike share station next to the nearby Hollywood/Vine station saw 80% more bike share usage while having 30% less Metro ridership than Hollywood/Highland. It is likely that the discrepancy is due to dangerous road conditions or poor wayfinding (NACTO, 2016, Brown & Oort 2026) . Therefore, I recommend the Hollywood & Highland bike share station be relocated to a less stressful and isolated location, and/or more infrastructure be built around the station, with the goal of achieving similar usage numbers to the Hollywood & Argyle station (Figure 41). Both of these MBS stations are key because they provide a direct connection between the Metro B Line and surrounding MBS stations.

3. **Expand MBS Station Coverage to the South and West.** Because Hollywood is at the western edge of the eastern bike share stations, the neighborhood could benefit from expansion west into West Hollywood and south into the Fairfax area/the Grove, and importantly towards the new Metro D Line Stations along Wilshire Boulevard. This recent opening saw three new MBS stations added to each new Metro Station, however, these bike share stations lack nearby stations, greatly limiting their usability (Figure 42).

Additional Note: Even though these recommendations are for Metro Bike Share, increases in bike share use and bike share station coverage can lead to increased cycling area-wide (Hosford et al., 2019) and importantly, bike share users both contribute to and benefit from safety-in-numbers.

Figure 40. MBS Stations Overlaid onto E-Scooter Usage by Census Block (2023-2025)

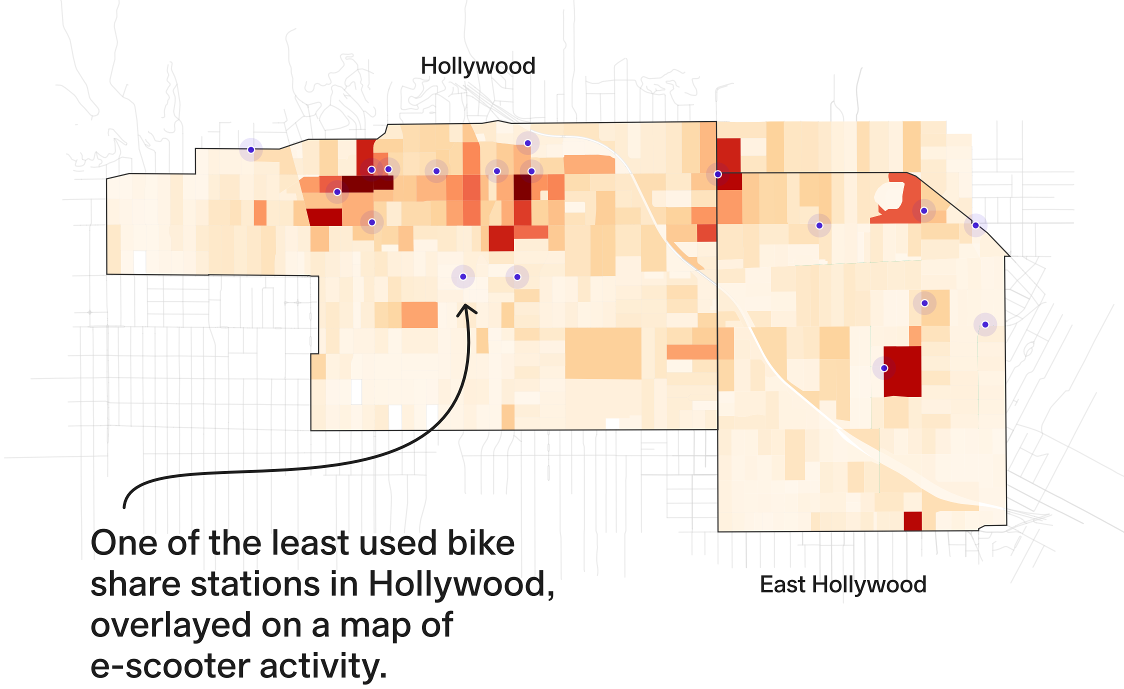
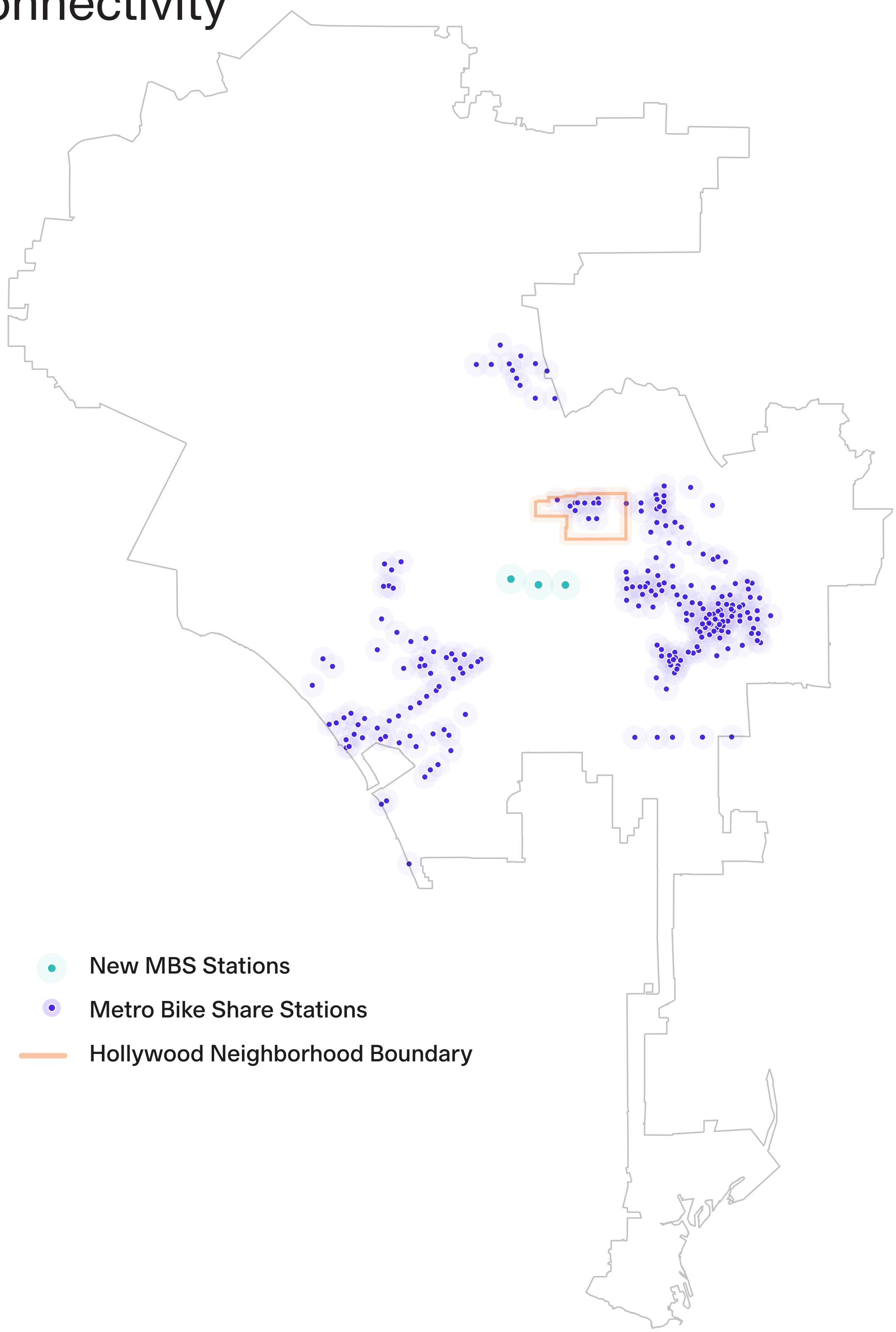


Figure 41: The Two Hollywood Metro Station Bike Share Stations

Two bike share stations that connect to the Metro: Hollywood & Highland (left) and Hollywood & Argyle (right). Both locations are near rail stations but the low traffic volume and speed along Argyle Avenue makes the latter a more inviting and accessible place to connect to and from bike share.

Figure 42. New MBS Stations and the Opportunity for Further Hollywood Connectivity



Evaluating Investment Impact

An important step of implementing bike infrastructure comes after the actual implementation, namely in the ex post evaluation of impacts. This step allows the City to further refine their strategies and methodologies based on real outcomes. As the goal of Vision Zero is to reduce traffic deaths, impacts can be judged through changes in citywide traffic deaths. For cyclist safety, the impact of bike infrastructure is measured by decreases in cyclist deaths and severe injuries. However, cyclist injuries are rare and spatially diffuse, largely complicating efforts to quantify the efficacy of specific interventions. Additionally, a reliance on end-of-the-year statistics slows down impact evaluations dramatically.

Alternatively, with the explicit goal of increasing bike ridership as a road safety mechanism, investment impact can be measured directly through increases in bike ridership. Unlike cyclist injuries, this metric can be measured constantly and provide information directly localized to individual interventions. This has tremendous potential to increase the efficiency in optimizing bike infrastructure project planning as the granularity of information is orders of magnitude higher and less noisy than cyclists' deaths and severe injuries. In summary, the enhanced ability to understand return on investment is another benefit toward building infrastructure around bike ridership.

Conclusion

This paper aims to demonstrate two key ideas. Firstly, that bike ridership patterns in Los Angeles can be better understood through existing data sources. Secondly, that an increased understanding of bike ridership can be critically useful towards bike infrastructure planning and ultimately citywide bike safety. To accomplish this, I analyzed the value of several data sets, namely LADOT's permanent bike counters, traffic collision data, and Metro Bike Share usage, for understanding neighborhood bike ridership. I found that mapping bike-related traffic collisions, which is the City's current strategy, can overlook areas of high bike ridership and also fails to estimate spatial risk. Secondly, I found that Metro Bike Share users and general area bike riders share significantly similar behavioral characteristics and ridership determinants. This finding is consistent with the findings of Ivanovic (2023). Thirdly, I found that ridership behavior is highly localized and can differ between different neighborhoods, even ones close in proximity. The nature of these differences is not explored and is worth further examination. Finally, data suggests that Los Angeles ridership may have stopped increasing, signalling a change in the trend of increased cycling over the past few decades[39].

In the second part of this paper, I show the advantages of prioritizing expanding bike networks in areas with preexisting ridership, due to the higher return on investment based on the network effects of ridership increases. Then, I explore the utility of the findings from analyzing neighborhood bike ridership patterns across multiple dimensions. While these recommendations differ based on location, there were several key findings. Firstly, I found that college areas exhibit rapidly growing demand for micromobility relative to other neighborhoods in Los Angeles. This rapid micromobility growth on college campuses has been seen elsewhere (Aliari et al., 2020; Kutela & Tang, 2019) and may indicate a larger, national trend[40]. Secondly, I found that Koreatown is a pivotal neighborhood for rapid bike lane network expansion, and its bike lane need is uniquely high, even when comparing areas across the entire country. Thirdly, I found that there is high demand for multimodal connectivity in Los Angeles. Because of this, in every neighborhood studied, areas directly around Metro stations represented key opportunities for infrastructure improvements, as they have both high micromobility usage and tend to have increased foot traffic. Lastly, I argue that focusing on bike ridership as a metric offers opportunities for a more granular review of the impact of investments after implementation.

Based on my findings, I offer four primary recommendations for the city:

Recommendation 1: The Vision Zero team should add information around bike ridership volume as a determinant for the locations of bike infrastructure projects.

Leveraging many available data sources, such as bike share data, third-party e-scooter and bike counter data, can give the City insights around ridership patterns that can be critical toward planning bike infrastructure. These insights include where investments will affect the highest number of cyclists, where risk is the highest, where ridership is growing the fastest, and how to measure the real impact after the fact.

Recommendation 2: The City should utilize bike ridership patterns in order to solve context-dependent problems within neighborhoods.

Bike ridership patterns differ between neighborhoods, and each neighborhood requires unique problem-solving to make cycling safer. Localized knowledge around ridership patterns and key connectivity chokepoints is essential for the City to apply tailored solutions.

Recommendation 3: LADOT should increase its capacity to understand ridership by further investing in counting infrastructure.

Understanding and applying knowledge of citywide bike ridership can have widespread benefits within the City, which can ultimately maximize the utility of limited staff time and capital investments. Increasing tracking methods, such as the installation of more bike counters, can enable increased departmental efficiency and offer important data for the other recommendations.

Recommendation 4: LADOT should accelerate its bike lane creation with the explicit goal of increasing ridership.

The benefits of increased bike ridership are immense and far-reaching, and the outcomes of interventions can be measured directly. The apparent stagnation of bike ridership growth should be addressed with urgency, as people riding bikes are essential to a healthier, less congested, less polluted, less deadly Los Angeles.

Policy Implications

The findings from this report represent several important policy implications. Firstly, there are ample ways to make informed decisions around the location and prioritization of bike infrastructure, but knowledge of bike ridership is a fundamental part of these decisions. Thus, a city's capacity to understand and extract insights from its bike ridership should be a priority for planning departments. Secondly, bike lanes are powerful, multifunctional investments into road safety and should not be underestimated by planners. Thirdly, areas with high bike ridership but low bike infrastructure should be prioritized for bike lane networks, as high ridership despite poor biking conditions is a signal for higher latent demand. Finally, planners should supplement their goal of decreasing bike accidents with a focus on increasing bike ridership, in pursuit of building safer, healthier, happier cities. While this study has been about Los Angeles, other cities may benefit from the strategies outlined in this report.

Beyond Zero

This paper has argued that the City should shift its focus from building bike infrastructure around accidents to building around ridership. But, for example, there is high ridership along the beach bike path, with minimal accidents (Figure 5). Why would we ever invest in bike infrastructure in areas that are *already* safe? The answer is that bike infrastructure is not only about safety. It also serves to enhance the experience and viability of biking, opening up a key mobility option for urban dwellers. Thus, another benefit of this shift in focus is the implicit reframing of the narrative away from bike danger.

Under the current Vision Zero methodology, investments are conceptually framed around deaths and injuries, which both causes the City to be reactive and narrows the issue around a very small minority of incidents. Within this paradigm, it is easy then to forget the myriad benefits of biking. Biking is fun. Commuters who bike are among the happiest commuters (Wild & Woodward, 2019) and the healthiest (Friel et al., 2024). Biking can be a social, all-ages, community building enterprise that reaches far beyond its utility as a mode of transportation (Te Brömmelstroet et al., 2017; Aldred, 2015; Den Hoed, 2024). Undoubtedly, tragedies can galvanize people toward change. But the magnitude of change required can't wait on tragedies. Instead, listening to and building around where people *like* to bike can universalize the issue, with more potential to spark outside interest and excitement around biking. This new framing has the added benefit of paving the way for planners to make decisions even after the City has achieved significant accident reductions. To quote Amanda Eakin, the Chair of the SFMTA Board of Directors: "we could reach Vision Zero and still fall far short of the city I think we want to be. [...] **streets can be so much more than just safe**."[41]

Final Thoughts

After ten years of unmet goals, Los Angeles should ask itself whether significant reductions in pedestrian and cyclist deaths are actually achievable directly, through road safety improvements, without a large-scale mode shift away from cars. Indeed, the only U.S. cities that have seen significant traffic reductions from Vision Zero policies are also those with the highest public transit usage, 3-5x higher than Los Angeles (Ferenchak, 2023; Ahangari et al., 2017). If traffic deaths are simply a byproduct of a systemic reliance on cars (Litman, 2018), then achieving Vision Zero's stated goal of zero traffic deaths will require a change that is more conceptual than infrastructural. Historically, Los Angeles has designed its roads with the directive of maximizing the convenience for car travel at the expense of all other forms of transportation. We must now consider that we might be better served by doing the opposite. This has been successful in some European cities, which have imposed policies targeted at intentionally making driving intentionally *less* convenient, making people drive less (Pucher & Dijkstra, 2000; Furlong et al., 2025). Because bike lanes don't just separate bikers, they separate bikers *from cars*. Protected bike lanes protect bikers *from cars*. Thus, it is possible that the fight for bike and pedestrian safety is entirely synonymous with the fight toward a large-scale modal shift away from cars. In this case, better metrics to track progress towards Vision Zero's goal might be decreases in city-wide car ownership rate or increases in per-capita bus trips. And yet another key metric would be the increase of bike ridership.

Data

Metro Bike Share
Metro Bike Share (MBS) trip data was sourced from the MBS website (https://bikeshare.metro.net/about/data/) and includes trip data since the program's launch on July 7, 2016. MBS station data was also accessed on the same page, which includes names, coordinates, launch date, and dock counts. A third party website made by me (https://bikeshare.swellgarfo.com/) was used to further visualize and understand station usage. Note: some of the station neighborhoods were reclassified according to Appendix 10.

Los Angeles Neighborhood Boundaries
The neighborhood boundaries used to categorize neighborhoods were the ones suggested in the LA Times' 2016 Mapping L.A. project (https://maps.latimes.com/neighborhoods/). The neighborhood boundaries GeoJSON was accessed on GitHub.

TIMS Accident Data
The accident data used was taken from Berkley's Transportation Injury Mapping System (TIMS) database (https://tims.berkeley.edu/). This data includes the times and locations of traffic accidents across California. The data also separates whether cyclists or pedestrians were involved, the number of them, and the level of severity of injury.

LADOT Permanent Bike Counter Data
The LADOT Permanent Counter monthly bike counts were found here: (https://losangelesdot.eco-counter.com/). As the website is built using the JavaScript framework next.js, the data was prepolutated during server-side rendering, allowing the monthly counts and hourly breakdowns in JSON form to be scraped with a node.js script using JSDom.

The 22 counters that were used for the 3-year aggregate data (Figure 10) were: Hill St bw Temple St & 1st St, Hoover St bw 30th St & 32nd St (w. side), MLK Jr Blvd bw South Park Dr & 40th Pl, Highland Ave bw Milner Ave & Franklin Ave, Adams Blvd bw Burnside Ave & Dunsmuir Ave (s. side), Chandler between Fair Ave to Blakeslee Ave (n. side), San Fernando Bike Path, Exposition Bike Path, Ballona Creek Bike Path, 7th St between Hill St to Broadway St (n. side), Broadway between 97th St to 98th St (e. side), Reseda Blvd bw Vinceness St & Prairie St (e. side), Reseda Blvd between Prairie St to Dearborn Ave (w. side), Figueroa between 8th St to 9th St (e. side), Figueroa St between 11th St and Olympic Blvd (w. side), Eagle Rock Blvd between Fair Park Ave and Yosemite Blvd (w. side), Olive St bw 7th St & 8th St, Fountain Ave between L Ron Hubbard Way to New Hampshire Ave (s. side), Venice Blvd bw Mountain View Ave & Inglewood Blvd (n. side), Venice Blvd bw Mountain View Ave & Inglewood Blvd (s. side), Westwood Blvd bw Wilshire Blvd and Ohio Ave (w. side), and Spring St bw 5th St & 6th St.

Third-party e-scooter Data

The third-party e-scooter data used for this analysis was provided by LADOT and is not publicly available. This data consists of approximately 70% of all e-scooter trips starting or ending in the City of Los Angeles from companies including Lime, Bird, Veo, and GCOO. The data time breakdowns by day segment and origin/destinations at the precision of census block. GIS was used to convert census block data to coordinates.

ACS Household Data

To calculate population density and car ownership rates by the specific neighborhoods bounds in my analyses, I used American Community Survey (ACS) 5-year estimates (2024) that can be found at the census website (https://www.census.gov/). The data was provided at the census block level, so GIS processing was required to separate census blocks into neighborhood boundaries. When census blocks were divided into two different neighborhoods, the values were also divided based on the percentage of their area lying within each neighborhood. Specifically, partial census block values were adjusted based on their clipped area divided by their original area.

Metro Station-level Ridership Counts

Station-level ridership counts are only available via public records requests. A reddit user (u/misken67) requests the data every year and releases the monthly ridership counts.

Additional Bike Lanes

Bike lane shape files used in Figure 26 and Figure 29 were found through each City's respective Open Data Portals. GIS was used to clip the bike lanes to the shape of the neighborhood and calculate area and bike lane length per km^2.

- Montreal: https://open.canada.ca/
- Portland: https://gis-pdx.opendata.arcgis.com/
- Washington D.C.: https://opendata.dc.gov/
- Philadelphia: https://opendataphilly.org/datasets/bike-network/

Limitations

Working with Metro Bike Share data, at its current level of usage, means analyzing a relatively small number of trips. As a result, insights are derived from a limited sample size and are therefore more susceptible to noise. Additionally, this report has categorized Metro Bike Share stations into corresponding neighborhoods and made statements about those neighborhoods. While these categorizations are useful for analyses, and I have demonstrated a significant relationship between neighborhood bike usage and MBS bike usage, the analyses are extrapolations based on one way of categorizing Los Angeles. Using different neighborhood boundaries or spatial divisions might yield significantly different results. Lastly, many areas of Los Angeles have been left out of this analysis due to not having bike share stations. As Metro Bike Share expands, the same strategies used in this report will become even more useful.

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Appendices

Appendix 1: MBS Uses per Station by Neighborhood (2021-2025) ordered by regression slope

Neighborhood Name	2025 Monthly Average	Regression Slope	rSquared
Westwood	378.425	0.036	0.58234264
University Park	153.025	0.021	0.57812458
Del Rey	82.68	0.019	0.6747746
Exposition Park	131.552	0.017	0.53416669
Koreatown	85.498	0.016	0.39460067
Downtown	159.14	0.015	0.46334795
Mar Vista	81.128	0.013	0.47081481
Sawtelle	123.908	0.012	0.34724358
Rancho Park	112.222	0.012	0.43129632
Palms	105.345	0.012	0.36749687
Los Feliz	48.02	0.012	0.44111497
East Hollywood	58.987	0.011	0.42802418
Venice	277.703	0.008	0.2461658
LA	103.705	0.008	0.17343533
Chinatown	82.657	0.008	0.27023742
Echo Park	79.731	0.008	0.28278804
North Hollywood	32.32	0.008	0.1450254
Westlake	70.337	0.007	0.14302606
Playa del Rey	286.866	0.004	0.07997342
Silver Lake	54.417	0.003	0.05550657
Playa Vista	77.202	0	0.00052756
Hollywood	53.441	-0.001	0.00289141

Appendix 2: MBS Evening Uses Per Station by Neighborhood (2021-2025) ordered by regression slope

Neighborhood Name	2025 Monthly Average	Regression Slope	rSquared
Westwood	85.616	0.031	0.44891217
Del Rey	18.456	0.025	0.56320961
Sawtelle	33.723	0.024	0.48588116
University Park	39.347	0.02	0.50184942
Koreatown	28.937	0.018	0.52224422
Exposition Park	39.41	0.017	0.3681247
Downtown	45.694	0.014	0.54801446
Rancho Park	31.246	0.014	0.26066359
Los Feliz	13.277	0.011	0.2648162
Mar Vista	15.543	0.011	0.26574944
East Hollywood	17.837	0.01	0.39323869
Palms	28.33	0.01	0.2655946
Echo Park	20.239	0.009	0.21353468
LA	27.392	0.008	0.16666119
North Hollywood	8.474	0.007	0.08527344
Chinatown	20.315	0.007	0.18196553
Westlake	18.827	0.007	0.15557173
Venice	58.336	0.007	0.05938489
Playa Vista	19.595	0.007	0.08454722
Silver Lake	16.076	0.007	0.11461467
North Hollywood	8.474	0.007	0.08527344
Playa del Rey	55.245	0.004	0.01232621
Hollywood	15.738	-0.007	0.09148704

Appendix 3: MBS Percentage of Evening Usage (2021-2025), ordered by 2025 Monthly Average

Neighborhood Name	2025 Monthly Average	Regression Slope	rSquared
Koreatown	34.103%	0.095	0.14062316
East Hollywood	30.422%	-0.003	0.00010638
Exposition Park	30.215%	-0.027	0.00331547
Silver Lake	29.760%	0.135	0.1026411
Hollywood	29.268%	-0.174	0.30736131
Downtown	28.788%	-0.018	0.01811052
Rancho Park	28.034%	0.076	0.0276385
Los Feliz	27.673%	-0.013	0.00152478
Palms	27.181%	-0.071	0.09830186
Sawtelle	27.135%	0.345	0.47910563
Westlake	26.682%	0.005	0.00068394
North Hollywood	26.486%	0.016	0.00144479
LA	25.990%	-0.005	0.00081511
University Park	25.562%	-0.048	0.01640051
Playa Vista	25.370%	0.165	0.14857817
Echo Park	25.200%	0.039	0.01426689
Chinatown	24.447%	-0.016	0.00223209
Westwood	22.253%	-0.091	0.05231543
Del Rey	22.158%	0.192	0.22491371
Venice	20.282%	-0.011	0.00078988
Mar Vista	18.999%	-0.054	0.04422315
Playa del Rey	18.419%	0.013	0.00067053

Appendix 4: MBS Percentage of After-midnight Usage (2021-2025), ordered by 2025 Monthly Average

Neighborhood Name	2025 Monthly Average	Regression Slope	rSquared
Hollywood	8.661%	0.108	0.46700675
Westlake	6.833%	0.06	0.44813571
Koreatown	6.229%	0.05	0.30583311
East Hollywood	4.552%	0.026	0.061901
Exposition Park	4.307%	-0.056	0.05541088
Echo Park	3.897%	0.032	0.08953404
Mar Vista	3.794%	0.048	0.33368423
North Hollywood	3.696%	0.006	0.00257139
Downtown	3.465%	0.01	0.1125939
Silver Lake	3.376%	-0.016	0.03149223
Chinatown	3.149%	0.015	0.0299742
Rancho Park	3.136%	-0.066	0.10879288
LA	2.935%	0.012	0.33135386
Los Feliz	2.914%	-0.028	0.06465147
Palms	2.725%	0.009	0.01755815
Sawtelle	2.655%	0.044	0.17106556
University Park	2.478%	0.008	0.01652219
Del Rey	1.982%	0.034	0.28431076
Westwood	1.829%	-0.03	0.06913084
Playa del Rey	1.526%	0.016	0.18752185
Playa Vista	1.414%	0.012	0.01969204
Venice	1.196%	0.01	0.28514547

Appendix 5: MBS 2025 Station Statistics by Neighborhood, ordered by Uses/ Station

Note: a "trip" constitutes two station "uses", one at the origin station and one at the end station.

Name	Total Uses	Stations	Docks	Uses/Station	Uses/dock
Westwood	54,757	6	101	9,126.17	542.15
Venice	95,678	15	271	6,378.53	353.06
Playa del Rey	18,023	3	30	6,007.67	600.77
University Park	52,390	13	168	4,030.00	311.85
Downtown	227,536	57	1,095	3,991.86	207.80
LA	798,644	225	3,439	3,549.53	232.23
Exposition Park	6,836	2	29	3,418.00	235.72
Sawtelle	9,657	3	49	3,219.00	197.08
Rancho Park	5,969	2	34	2,984.50	175.56
Palms	41,375	15	189	2,758.33	218.92
Koreatown	42,991	19	266	2,262.68	161.62
Mar Vista	15,405	7	80	2,200.71	192.56
Chinatown	8,800	4	60	2,200.00	146.67
Del Rey	16,406	8	93	2,050.75	176.41
Echo Park	10,124	5	57	2,024.80	177.61
Westlake	22,190	12	174	1,849.17	127.53
Playa Vista	5,407	3	49	1,802.33	110.35
East Hollywood	10,457	7	80	1,493.86	130.71
Vermont-Slauson	7,414	5	75	1,482.80	98.85
Silver Lake	8,639	6	88	1,439.83	98.17
Hollywood	15,080	11	167	1,370.91	90.30
Los Feliz	8,348	7	74	1,192.57	112.81
North Hollywood	9,025	12	162	752.08	55.71

Appendix 6: Monthly e-Scooter Usage by Neighborhood (2025)

Neighborhood Name	2025 Monthly Average
LA	**279,070.17**
Downtown	48,167.92
Westwood	33,055.92
Koreatown	30,760.08
University Park	26,202.00
Hollywood	24,261.33
Westlake	17,751.92
East Hollywood	10,513.33
Venice	9,698.92
Exposition Park	8,348.75
North Hollywood	6,414.58
Pico-Union	4,656.42
Sawtelle	4,117.50
Echo Park	3,249.83
Palms	2,543.25
Los Feliz	2,377.17
Chinatown	2,040.33
Historic South-Central	2,021.50
Harvard Heights	1,632.33
Silver Lake	1,447.92
Del Rey	860.92
Valley Village	588.75
Rancho Park	525.42
Mar Vista	510.75
Playa del Rey	436.00
Toluca Lake	242.83
Playa Vista	56.25
Boyle Heights	40.92
South Park	27.67
Central-Alameda	21.75
Vermont-Slauson	10.00

Appendix 7: LADOT Permanent Counter Data (2021-2025) ordered by regression slope

Permanent Counter Location	slope	R^2	Average Yearly Ridership	Years
Avalon between 50th St and 51st St (w. side)	0.464	0.542	41,735	5
Westwood Blvd bw Wilshire Blvd and Ohio Ave (w. side)	0.358	0.545	43,763	4
Reseda Blvd between Prairie St to Dearborn Ave (w. side)	0.332	0.891	31,210	5
Reseda Blvd bw Vinceness St & Prairie St (e. side)	0.317	0.801	11,592	5
Spring St bw 5th St & 6th St	0.311	0.396	161,508	4
7th St between Hill St to Broadway St (n. side)	0.225	0.373	154,059	5
Fountain Ave between L Ron Hubbard Way to New Hampshire Ave (s. side)	0.206	0.911	66,031	4
Los Angeles River Bike Path	0.204	0.273	261,975	5
Ballona Creek Bike Path	0.185	0.432	**277,264**	5
Figueroa between 8th St to 9th St (e. side)	0.181	0.364	154,779	5
Chandler between Fair Ave to Blakeslee Ave (n. side)	0.161	0.418	60,749	5
Exposition Bike Path	0.144	0.338	45,933	5
Figueroa St between 11th St and Olympic Blvd (w. side)	0.121	0.707	155,335	4
Eagle Rock Blvd between Fair Park Ave and Yosemite Blvd (w. side)	0.114	0.471	31,575	4
Hoover St bw 30th St & 32nd St (w. side)	0.093	0.37	213,479	5
Broadway between 97th St to 98th St (e. side)	0.093	0.083	9,967	5
Orange Line Bike Path	0.082	0.087	56,154	4
Highland Ave bw Milner Ave & Franklin Ave	0.075	0.125	139,627	5
Avalon between 48th St and 49th St (e. side)	0.05	0.02	20,251	5
Venice Blvd bw Mountain View Ave & Inglewood Blvd (n. side)	0.046	0.126	113,870	4
7th St between Hill St to Broadway St (s. side)	0.02	0.003	142,464	5
MLK Jr Blvd bw South Park Dr & 40th Pl	0.02	0.025	19,967	5
Hoover between 30th St to 32nd St (e. side)	-0.002	0	89,318	5
Olive St bw 7th St & 8th St	-0.031	0.034	40,294	4
Venice Blvd bw Mountain View Ave & Inglewood Blvd (s. side)	-0.037	0.087	71,730	4
Adams Blvd bw Burnside Ave & Dunsmuir Ave (s. side)	-0.048	0.025	29,986	5
Hill St bw Temple St & 1st St	-0.058	0.075	23,885	5
Broadway between 97th St to 98th St (w. side)	-0.144	0.071	10,239	5
San Fernando Bike Path	-0.181	0.145	14,230	5
Alvarado St between 6th St and 7th St (w. side)	-0.347	0.55	70,699	4
Central Ave bw 101st St & 102nd St (w. side)	-0.365	0.225	1,125	3
Adams Blvd bw Dunsmuir Ave & Cochran Ave (n. side)	-0.409	0.381	5,747	5

Appendix 8: Population Density by Neighborhood, Top 25 of 114 (2020)

Ranking	Neighborhood	Population	Area (km²)	Pop. Density
1	Westlake	115177	7.0404	16359.433
2	Koreatown	106970	7.0147	15249.385
3	East Hollywood	72607	6.2096	11692.590
4	Pico-Union	43130	4.2540	10138.724
5	Harvard Heights	20357	2.0121	10117.210
6	University Park	29165	3.0213	9652.955
7	South Park	33749	3.6316	9293.187
8	Palms	46307	4.9988	9263.646
9	Central-Alameda	51773	5.6751	9122.773
10	Larchmont	11470	1.2594	9107.390
11	Hollywood	82207	9.1406	8993.605
12	Adams-Normandie	18114	2.0779	8717.202
13	Vermont Knolls	25737	2.9745	8652.455
14	Arlington Heights	22746	2.6737	8507.277
15	Vermont-Slauson	31031	3.7492	8276.737
16	Chinatown	19454	2.3852	8155.961
17	Watts	41857	5.1761	8086.686
18	Vermont Square	52924	6.5454	8085.670
19	Harvard Park	13158	1.6669	7893.306
20	Panorama City	74331	9.4476	7867.682
21	Exposition Park	36021	4.7649	7559.571
22	Pico-Robertson	19997	2.6463	7556.365
23	Broadway-Manchester	30360	4.0245	7543.917
24	Green Meadows	43284	5.7618	7512.257
25	Historic South-Central	49045	6.6081	7421.922
	LA Average	**4257377**	**1215.1962**	**3503.448237**

Appendix 9: Car Ownership Rate by Neighborhood: Lowest 25 of 116 (2020)

Neighborhood	Car Ownership Rate (%)
University Park	62.21
Downtown	67.84
Westlake	69.29
Chinatown	73.22
Pico-Union	73.99
Adams-Normandie	76.05
Koreatown	76.26
East Hollywood	77.36
Hollywood	78.21
Watts	79.50
Harvard Heights	79.77
Exposition Park	80.37
Historic South-Central	80.79
Lincoln Heights	81.11
Hyde Park	81.21
Elysian Park	81.82
Arlington Heights	82.07
Vermont Knolls	82.63
Baldwin Hills/Crenshaw	83.12
Vermont Vista	84.38
Westwood	84.44
Broadway-Manchester	84.58
Boyle Heights	84.64
Harvard Park	84.69
Chesterfield Square	84.74
LA Average	**88.14**

Appendix 10: MBS Station Neighborhood Reclassifications

Because I used the LA Times neighborhood boundaries, it divided some MBS stations a bit awkwardly. For various reasons, it made sense to reclassify some neighborhoods into other neighborhoods, usually because the original neighborhood had too few stations and the data would be based off too small a sample size. Otherwise, like in the case of 7th & Westmoreland, I used reclassification as I felt another neighborhood was more appropriate, because it is on the border.

Station ID	Station Name	Original Neighborhood	Original Neighborhood Stations	Converted Neighborhood
3020	Hill & Washington	Historic South-Central	3	Downtown
4227	Grand / LATTC	Historic South-Central	3	Downtown
4300	Union & Olympic	Pico-Union	3	Westlake
4405	Berendo & Olympic	Pico-Union	3	Koreatown
4448	23rd St & Flower	Historic South-Central	3	Downtown
4449	12th & Valencia	Pico-Union	3	Westlake
4455	Rowena & Hyperion	Los Feliz	8	Silver Lake
4456	Ardmore & Olympic	Harvard Heights	1	Koreatown
4540	1st & Utah	Boyle Heights	1	Downtown
4595	Chandler & Colfax	Valley Village	2	North Hollywood
4596	Chandler & Laurel Canyon	Valley Village	2	North Hollywood
4603	Riverside & Cahuenga	Toluca Lake	2	North Hollywood
4605	Mariota & Riverside	Toluca Lake	2	North Hollywood
4628	7th & Westmoreland	Westlake	11	Koreatown
4696	Avalon & Slauson	South Park	1	Vermont-Slauson
4697	Compton & Slauson	Central-Alameda	1	Vermont-Slauson
4700	Denker & Slauson	Harvard Park	1	Vermont-Slauson

Endnotes

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2 According to TIMS data both 2023 and 2024 saw 8 pedestrian deaths on Vermont Avenue. Compare to 5 and 6 found in the Annual Reports provided by the Vermont State Highway Safety Office Agency of Transportation here: https://shso.vermont.gov/content/reports-and-data

3 In the last decade, there has been a steady increase in annual traffic fatalities in Los Angeles County. In 2013 there were 625 traffic fatalities, compared to 2023 where there were 807. The data can be viewed here: https://www-fars.nhtsa.dot.gov/States/StatesCrashesAndAllVictims.aspx

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8 Video Interview by the Open Planning Project (2006), seen here: https://www.youtube.com/watch?v=AmyQgeHKkuI

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14 https://www.paris.fr/en/pages/a-new-cycling-plan-for-a-100-bikeable-city-28350

15 From the NYC DOT's September 2014 "Protected Bicycle Lanes in NYC" Analysis, found here: https://www.nyc.gov/html/dot/downloads/pdf/2014-09-03-bicycle-path-data-analysis.pdf

16 California Department of Transportation. (2025, January 1). Highway design manual: Chapter 1000—Bicycle transportation design. https://dot.ca.gov/-/media/dot-media/programs/design/documents/chp1000-a11y.pdf

17 Schneider, M. (2024, January 25). L.A. resolved to end traffic deaths. So why have they almost doubled? Los Angeles Times. https://www.latimes.com/opinion/story/2024-01-25/los-angeles-traffic-deaths-pedestrian-safety

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San Antonio Vision Zero Action Plan found here: http://sa.gov/Directory/Departments/Transportation/Initiatives/Vision-Zero/Maps

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40 Although some papers suggest that this trend is purely economic and not cultural (Klein and Smart, 2017).

41 Quote taken from the SFMTA blog, emphasis mine. https://www.sfmta.com/blog/our-vision-goes-beyond-zero