Watch Out! Bike Collisions in Riverside County *

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Abstract

Pedestrian and Bicycle Collisions go hand in hand with existing infrastructure. Riverside County has been designed with a car-centric approach, by reviewing collisions and the infrastructure in place it is possible to propose planning solutions to reduce the number of collisions. This project explores collision types in relation to the present bike routes infrastructure and lack thereof. Future urban planning could present a solution for reducing the number of collisions. The presence of better safety infrastructure has the potential to greatly increase the use of bicycle transportation in comparison to the infrastructure that presently exists where bicyclists are forced to ride the shoulder, go around parked vehicles, and complete other dangerous maneuvers to reach their destination. If we can't ensure responsible driving the least we can do is provide safe infrastructure to protect our residents.


Image 1. No Bike Route Rubidoux Blvd. & Avalon St.


Image 2. No Bike Route Cajalco Rd. & Clark St.


Image 3. Class III S Lincoln Ave. & Citron St.

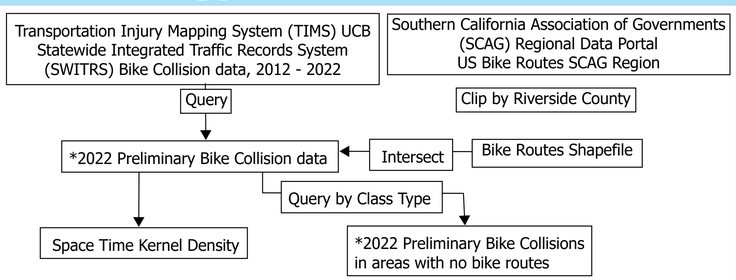
Image 1 & 2. The intersections were the locations of 2 of 3 fatal bike collisions in 2022 in areas without a bike lane.

Image 3. This Class III bike route was the location of 1 of 12 deaths in 2022.

Purpose

The purpose of this project is to use SCAG bike routes data combined with SWITRS data provided by TIMS, UCB to highlight the prevalence of bicycle collisions not only in areas where there are no bike lanes but also the need for better bike lane infrastructure.

Methodology



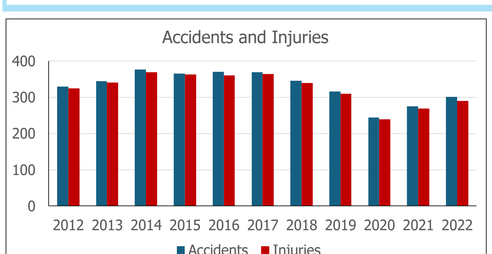


Figure 1. "Accidents and Injuries" bar chart displays the count of bicycle accidents and injuries from 2012 to 2022. There was a decline in bicycle collisions in 2020, with the count of accidents returning to the pre-pandemic level in 2022. SWITRS data for 2022 is preliminary.

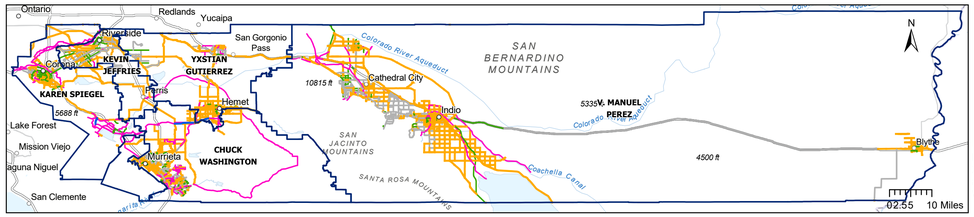
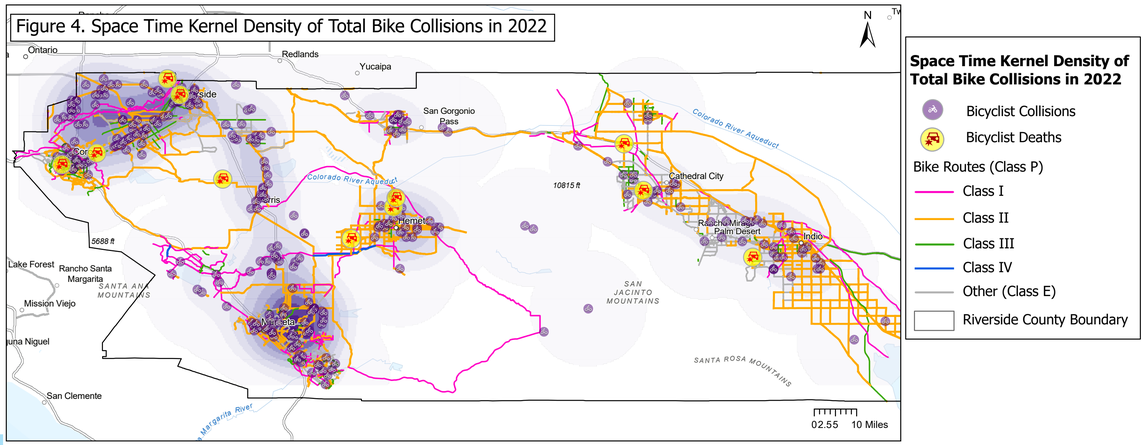


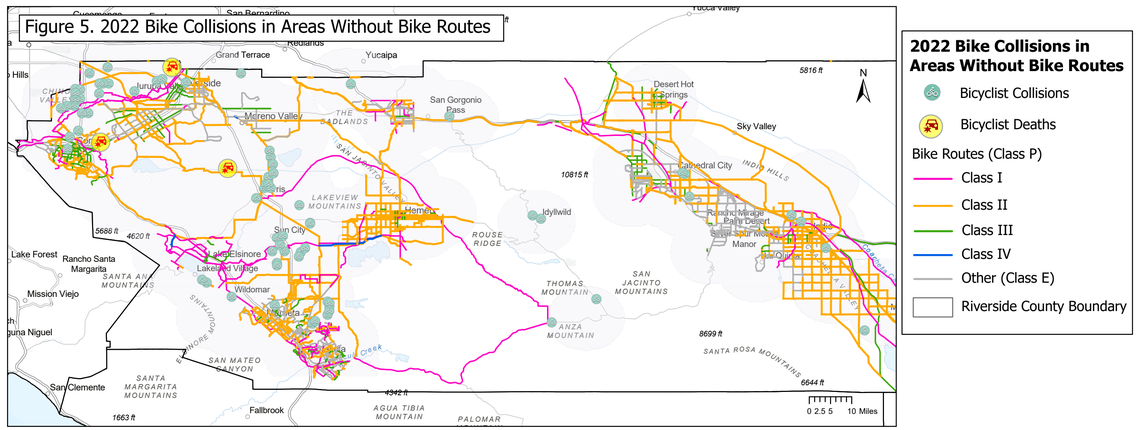
Figure 2. Overview of Bike Routes class types that exist within Riverside County, overlayed by the Supervisorial District Boundaries.

Supervisor	District	2022 Bike Injuries
WASHINGTON	3	77
SPIEGEL	2	54
JEFFRIES	1	58
PEREZ	4	50
GUTIERREZ	5	45

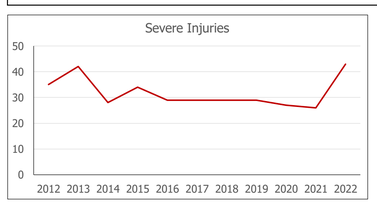
Figure 3. Count of Bike Injuries in 2022 by Supervisorial District, data aggregated using the Summarize Within Tool in ArcGIS Pro 3.2.

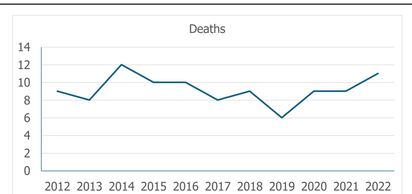


In 2022 there were 301 total bicycle collisions, 43 severe collisions, and 12* collisions that resulted in bicyclist deaths.



In 2022, there were 80 bicycle collisions that occurred outside of established bike routes, there were at least 3 bike collisions that resulted in bicyclists deaths. There were 17 bike collisions that resulted in severe injuries.





The Covid-19 pandemic that began in 2020 was an unprecedented event that reduced traffic flow, this could explain the decline in bike collisions in 2020.

Figure 6. The "Severe Injuries" line chart displays the count of bicycle collisions determined to be severe injuries from 2012 to 2022.

Figure 7. "Deaths" is a line chart displaying the total count of bicyclist deaths from 2012 to 2022. There was a decline in bicyclist deaths in 2019, followed up an uptick in bicyclist deaths.

Results

The bike route infrastructure in Riverside County needs to be improved from Class II and Class III type bike lanes, characterized by off shoulder lanes distinguished with a white line on the side of the road, to Class I and Class IV bike lanes that are separate from car lanes and can provide safety barriers to increase the safety of bicyclists.

- Few bike collisions on Class I and Class VI routes.
- Areas with more limited bike infrastructure result in more severe bike collision outcomes.
- Collisions in areas without bike routes are more severe
- There were fewer overall bike collisions in 2020
- The cities of Riverside, Corona, Jurupa Valley, Eastvale, and Norco had high counts of bike collisions

Safety of Bike Facilities

Image Credit: Walk Bike Cupertino

Discussion

Population changes, traffic, and human behavior cannot be controlled but bike infrastructure can be. It is pertinent that the types of infrastructure being invested in will support safe bikeways. There is no doubt that well-built infrastructure provides more assurance to users. Motor vehicle drivers prefer a paved road with marked signs for safety. Pedestrians and motor vehicles do not share the same road. Bicyclists want the same. As we look to a greener future, investing in proper infrastructure will help increase bike use as a means of transportation. Class I and Class IV bike lanes should be the standard.

Future Analysis:

- bicycle collisions by bike route class types
- rates by year
- severity of bike collisions by bike route class types

References

SWITRS via TIMS SafeTREC UC Berkeley https://tims.berkeley.edu/
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Bike Routes - SCAG Region https://maps.scag.ca.gov/scaggis/rest/services/OpenData/BikeRoutelinescag/MapServer/0
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