

Street Trauma Prevention: Implementing Vision Zero at the Berkeley Fire Department

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At Fulton and Bancroft, Berkeley firefighters extricated a critically injured cyclist from under a vehicle, Feb 2, 2016.¹ Photo: David Yee for *Berkeleyside*

SUMMARY

This paper points to the substantial toll of traffic-related street trauma in the City of Berkeley and recommends that the Berkeley Fire Department (Department) expand its traditional response mission to include a “street trauma prevention” component. This recommendation builds on the successes of the Department’s fire prevention activities in preventing fire-related injuries and deaths and applies it to the problem of street trauma. Applying a prevention approach to the problem of street trauma could substantially reduce its impacts on the public as well as on Department operations and the long-term mental health of firefighters. If adopted, the recommendation would allow the Department to be a more effective partner in reducing injury and death resulting from street trauma.

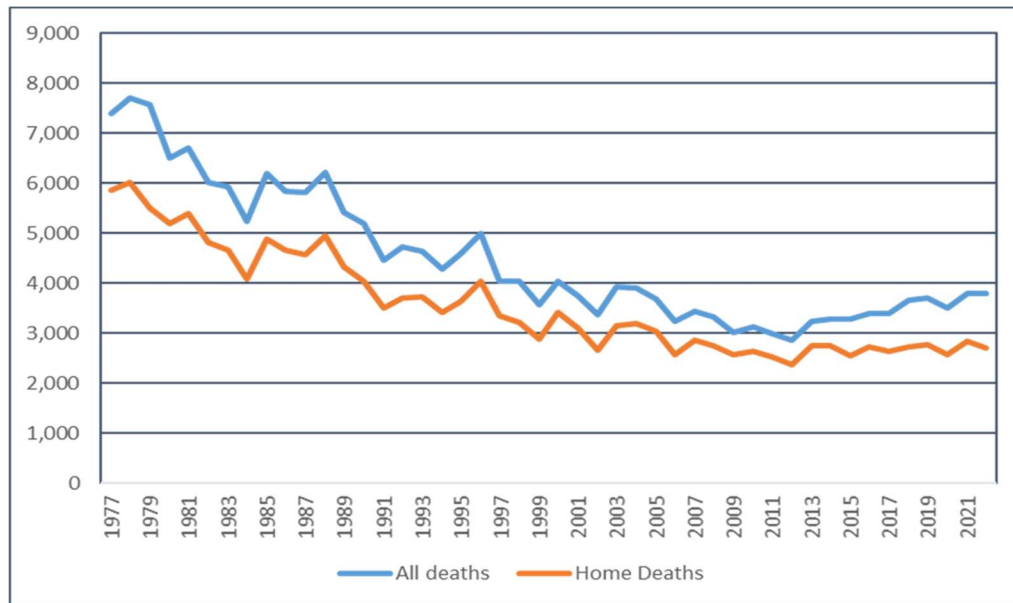
The fire service understands prevention: in Berkeley, an average of two persons are injured each year in fires.

¹ Emily Raguso (Dec 9, 2016). Unstoppable: Berkeley cyclist’s miraculous recovery after crash that nearly killed her. *Berkeleyside*. (<https://www.berkeleyside.org/2016/12/09/unstoppable-berkeley-cyclists-miraculous-recovery-after-crash-that-nearly-killed-her>). Accessed Jan 17, 2024.

Data since 2010 shows that the Department’s Fire Prevention Bureau has reduced fire-related injuries to an average of two per year.² This success has resulted in large part from decades of national advancements in fire prevention, prompted in 1973 by the report of the National Commission on Fire Prevention and Control, which found that “95 cents of every dollar spent on the fire services is used to extinguish fires; only about 5 cents is spent on efforts...to prevent fires from starting,” and concluded that “much more energy and funds need to be devoted to fire prevention, which could yield huge payoffs in lives and property saved.”³

The commission’s recommendations spurred a steady stream of advancements in fire protection codes that required the use of passive and active fire protection systems, including design specifications for buildings, fire resistant building materials, exit systems, fire sprinkler and smoke control systems, smoke and heat alarm systems, and fire suppression systems. Altogether, these changes reduced civilian fire deaths by 60% between 1979 and 2012, resulting in 5,000 fewer deaths per year by 2012 (Figure 1).⁴

Figure 1. All U.S. civilian fire deaths and home fire deaths, 1977-2022.



An average of 694 persons are injured in street trauma each year in Berkeley.

There is now a need to direct similar prevention efforts toward traffic-related trauma in Berkeley, which during the period 2017 to 2022 resulted in injuries to 490 motorists, 103 cyclists and 101

² FireCARES. Berkeley Fire Department (<https://firecares.nfors.org/departments/74866/berkeley-fire-department?page=1>).

³ National Commission on Fire Prevention and Control (May 4, 1973). America Burning. (<https://www.usfa.fema.gov/blog/america-burning-50th-anniversary/>) p. 7

⁴ Hall, S. (November 2023). Fire loss in the United States during 2022. Quincy, MA: National Fire Protection Association. <https://injuryfacts.nsc.org/home-and-community/safety-topics/fire-related-fatalities-and-injuries/>

pedestrians on average each year (Figure 2), including an annual average of five fatalities (Figure 3).⁵

Figure 2. Annual average collisions causing injuries to vehicle occupants, cyclists and pedestrians, 2017—2022, Berkeley, CA.

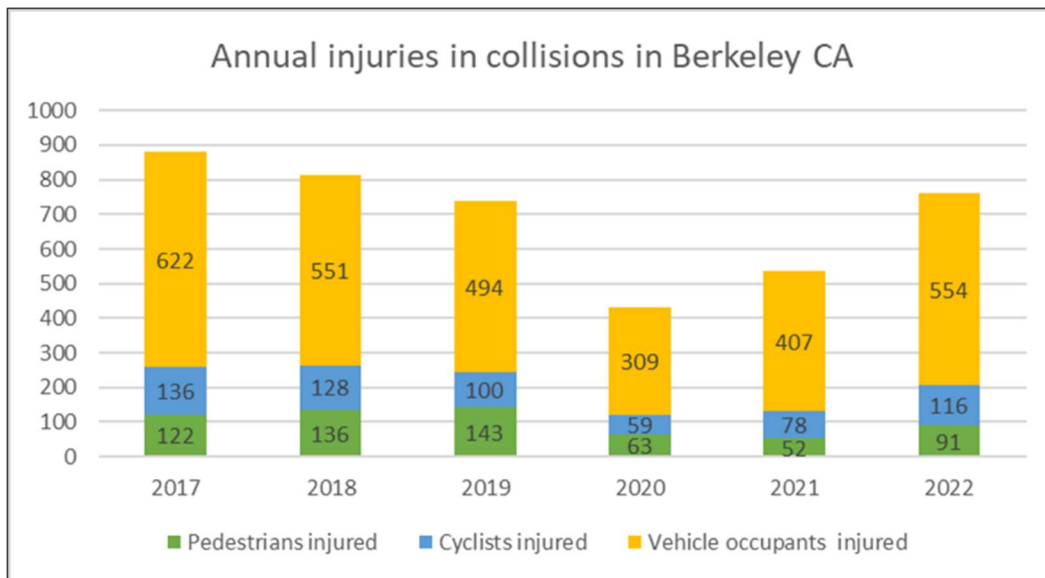
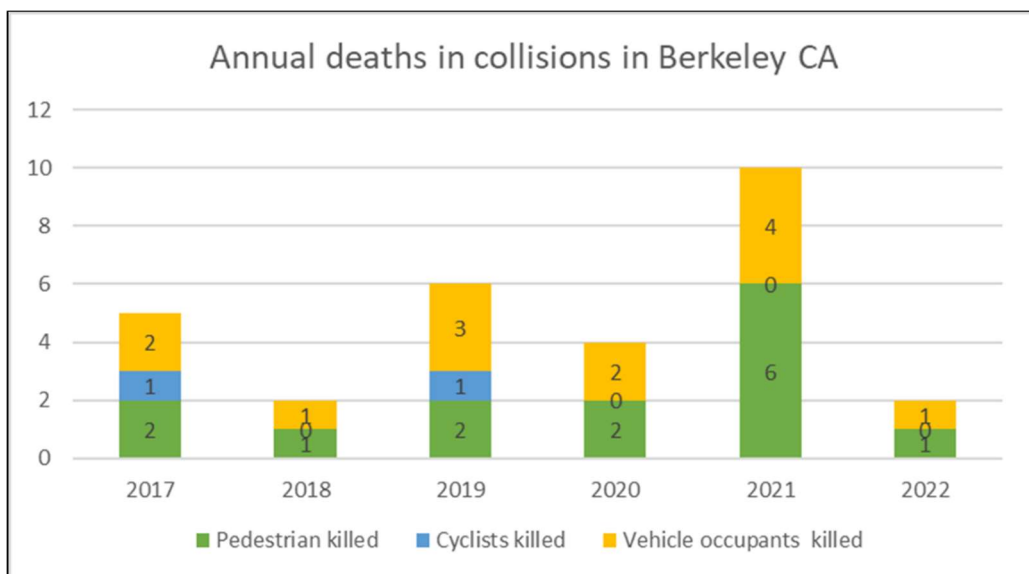


Figure 3. Annual average collisions causing fatal injuries to vehicle occupants, cyclists and pedestrians, 2017—2022, Berkeley, CA.

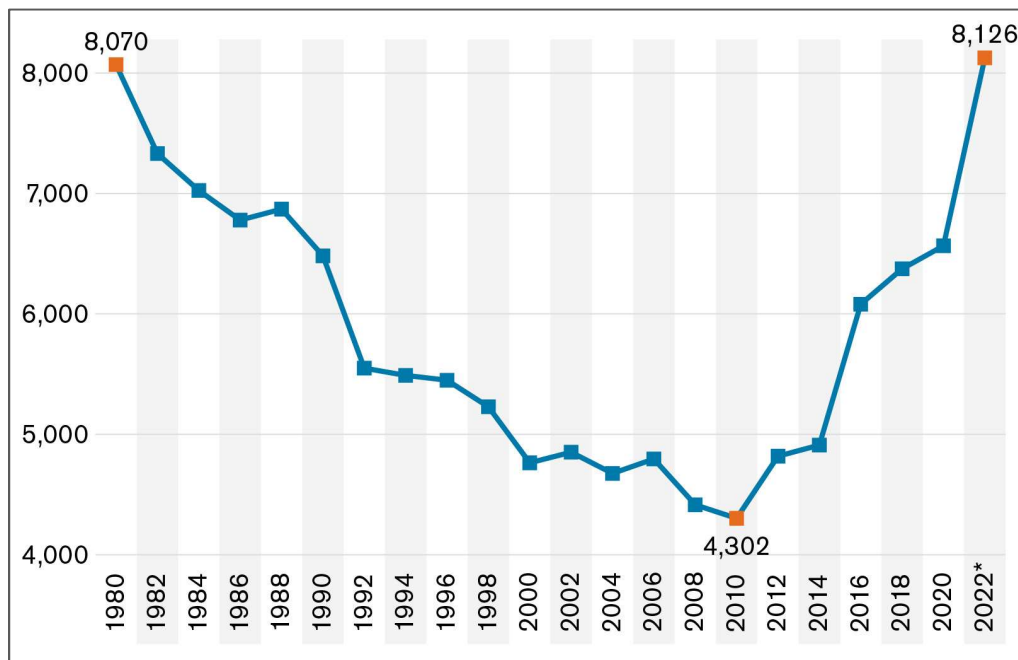


⁵ Collision data from the Collisions Stats tab of the Berkeley Police Transparency Portal - Traffic Safety website: (<https://bpd-transparency-initiative-berkeleypd.hub.arcgis.com/pages/traffic-safety>). Death & severe injury collision data from the UC Berkeley SafeTREC Transportation Injury Management System (TIMS) Query & Map (<https://tims.berkeley.edu/tools/query/index.php?clear=true>). All data accessed 5/18/2023 – 5/20/2023 and prepared by Tom Lent.

Severe and fatal collisions disproportionately affect pedestrians and cyclists.

Following a 40% decline over the 21 years between 1988 and 2009, national trends show a 77% increase in pedestrian fatalities from traffic collisions over the 11 year period from 2010 to 2021, with preliminary data showing a spike in 2022 that would bring the total increase during this period to 89% (Figure 4).⁶ All other traffic fatalities increased 25% during the period 2010 to 2021.⁷ This striking increase in pedestrian deaths is attributed to multiple causes, the most familiar being a U.S. transportation system that is “designed to move cars quickly, not to move people safely.”⁸

Figure 4. U.S. pedestrian fatalities resulting from traffic collision, 1980—2022.



*Projected based on data for the first six months of 2022.

In Berkeley, residents report that they walk or bike for 40% of trips made in the city, but pedestrians and bicyclists suffer 60% of severe and fatal collisions.⁹ Drivers operating at unsafe speeds and failing to yield at crosswalks are the two most common violations contributing to severe and fatal collisions in Berkeley, amounting to 33% of such incidents over the period 2011-

⁶ Governor's Highway Safety Association (June 2023). Pedestrian Traffic Fatalities by State—2022 Preliminary Data, January-December. ([Pedestrian Traffic Fatalities by State: 2022 Preliminary Data | GHSA](https://www.ghsa.org/data-reports/pedestrian-traffic-fatalities-by-state-2022-preliminary-data)). (p. 11).

⁷ Governor's Highway Safety Association (June 2023). *Ibid.* (p. 5).

⁸ Emily Badger and Alicia Parlapiano (Nov 27, 2022). The Exceptionally American Problem of Rising Roadway Deaths. The New York Times (<https://www.nytimes.com/2022/11/27/upshot/road-deaths-pedestrians-cyclists.html>). See also: Amanda Holpuch (June 27, 2022). U.S. Pedestrian Deaths Are at Highest Level in 41 Years, Report Says. The New York Times (<https://www.nytimes.com/2023/06/27/us/pedestrian-deaths-2022.html>). Simon Romero (Feb 14, 2022) Pedestrian Deaths Spike in U.S. as Reckless Driving Surges. The New York Times (<https://www.nytimes.com/2022/02/14/us/pedestrian-deaths-pandemic.html?action=click&module=RelatedLinks&pgtype=Article>).

⁹ City of Berkeley, Vision Zero Annual Report (June 2022). (https://berkeleyca.gov/sites/default/files/documents/2022-06-28%20Item%2023%20Vision%20Zero%20Annual%20Report_0.pdf). (p. 13).

2020.¹⁰ Perhaps not surprisingly, while 71% of Berkeley residents report being interested in relying on bicycles for daily use, most are too concerned about safety to act on this choice.¹¹

A subset of injuries that result from street trauma cause immense suffering and financial hardship for those affected, and they require extensive Department and medical resources. On the current trajectory, traffic-related street trauma, and the demand for the Department's EMS services that accompany it, is expected to increase alongside increases in housing density. The Department already reports that the growing number of EMS calls is taxing its resources and personnel.

Responding to critically injured persons also takes a toll on emergency responders.

California Senate Bill 542 (Stern) created a rebuttable presumption that post-traumatic stress injuries among firefighters and peace officers are work-related and thus compensable under workers' compensation. The bill, signed by Governor Newsom in 2019, noted that "trauma-related injuries can become overwhelming and manifest in post-traumatic stress, which may result in substance use disorders and even, tragically, suicide." The bill reports that "the fire service is four times more likely to experience a suicide than a work-related death in the line of duty in any year."¹² Reducing the frequency of exposure to critically injured persons is an effective response to this occupational hazard for responders.

The Department has an important role to play in preventing street trauma, while also ensuring an effective response to it.

Research continues to show that street trauma is largely *preventable* through hardened, engineered traffic controls, which reduce vehicle speeds and separate vehicles from cyclists and pedestrians.^{13,14,15} There is concern, however, that such protections could affect Department response times to critical emergency medical incidents, as well as response times and access by fire equipment to structural fires. Travel time from the scene of an emergency to the hospital by the Department's paramedic ambulances could also be affected. These concerns warrant careful evaluation because the survival of a subset of persons who call 911 can hinge on the speed of fire response and subsequent transport to the hospital.

¹⁰ City of Berkeley, Vision Zero Annual Report (June 2022). *ibid* (p. 14).

¹¹ Berkeley City Manager Dee Williams-Ridley (June 29, 2022). Consent Calendar on Vision Zero Annual Report, 2021-2022. Environmental Sustainability and Climate Impacts (https://berkeleyca.gov/sites/default/files/documents/2022-06-28%20Item%2023%20Vision%20Zero%20Annual%20Report_0.pdf). (p. 3).

¹² Senate Bill No. 542. Chapter 390, Stern. Workers' Compensation. (https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=201920200SB542). See subsection (1)(e).

¹³ Marshall W, Ferencak N (2019). Why cities with high bicycling rates are safer for all road users. *J. of Transport and Health* 13:285-301. (<https://www.sciencedirect.com/science/article/abs/pii/S2214140518301488?via%3Dihub>). Accessed January 28, 2024.

¹⁴ Aaron Short (May 29, 2019) Separated bike lanes means safer streets, study says. *Streetsblog*. (<https://usa.streetsblog.org/2019/05/29/protect-yourself-separated-bike-lanes-means-safer-streets-study-says>). Accessed January 28, 2024.

¹⁵ City of Cambridge, MA, Environmental and Transportation Planning Division (October 2023). *Bicycling in Cambridge. Data Report 2023*. (https://www.cambridgema.gov/-/media/Files/CDD/Transportation/Bike/bikereports/20231023bicyclingincambridgedatareport_final.pdf). Accessed January 28, 2024.

Improving the design of streets substantially reduces street trauma.

In a 2019 study of street trauma in twelve major metropolitan areas between 2000 and 2012, investigators analyzed 17,000 fatalities and 77,000 severe injuries and found that areas with the most extensive networks of separated bike lanes experienced 44% fewer deaths and 50% fewer serious injuries compared to cities where such infrastructure was lacking. The benefits were felt among vehicle occupants as well as cyclists and pedestrians because separated bike lanes also reduced the speed of traffic. Crashes that killed vehicle occupants, cyclists, and pedestrians dropped 61% in Seattle, 49% in San Francisco, 40% in Denver and 38% in Chicago as these cities added more protected and separated bike lanes as part of their Vision Zero plans.¹⁶

Implementing a street trauma prevention program will require a mission change within the Department.

Integrating a street trauma prevention function into the fire department's mission will require a structural change within the Department. A new Division or sub-division will likely need to be established with sufficient staff and resources allocated to support the Department's capacity to perform analysis, interdepartmental coordination, program design, and implementation.

The Berkeley Fire Department is a progressive department that is well-positioned to offer the citizens of Berkeley a new vision of the fire service that calls attention to the importance of both rapid response and effective prevention. To be successful, this will require the Berkeley Fire Department to adopt street trauma prevention as a core element of its public safety mission, just as the fire service adopted a prevention function within its fire suppression mission for more than 50 years, with remarkable success.

The Disaster and Fire Safety Commission can support the Department in building a street trauma prevention program.

In consultation with a representative of the Transportation and Infrastructure Commission, the Disaster and Fire Safety Commission will:

- (1) Establish a Vision Zero work group that will adopt this brief as an overarching framework; and,
- (2) Draft a recommendation to Council requesting additional resources for the Department to establish a street trauma prevention program. This program would be responsible for coordinating with other City departments and commissions to integrate the Department's perspectives on both response and prevention into the City's traffic safety projects related to Vision Zero and other policies.

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¹⁶ Marshall W, Ferenchak N (2019), *op cit*. See Table 1, p. 288, and Results section 4.2.2, p. 294.