



Memorandum

TO: TRANSPORTATION AND
ENVIRONMENT COMMITTEE

FROM: John Ristow
Eddie Garcia

SUBJECT: VISION ZERO UPDATE AND
ACTION PLAN

DATE: October 16, 2019

Approved

Date

10-26-19

RECOMMENDATION

Accept an update on the Vision Zero transportation safety initiative and the Action Plan.

BACKGROUND

In May 2015, San Jose became the fourth city in the nation to formally adopt a Vision Zero transportation safety initiative. Over 40 cities nationwide have adopted a Vision Zero policy, including 11 in California, and are part of the Vision Zero Network as of February 2019¹. Vision Zero cities strive to reduce, and ultimately eliminate, fatalities and severe injuries caused by traffic collisions. Vision Zero is interconnected with the city's goals in the General Plan 2040 and Climate Smart San Jose to decrease single occupancy vehicle mode share, and make sustainable options like walking, biking, emerging mobility, and transit more appealing.

On May 6, 2019, the Annual Transportation System Safety/Vision Zero report was presented to the Transportation and Environment (T&E) Committee.² DOT shared that traffic fatalities in San Jose have grown 37% in the last ten years (while the city population grew less than 10%), and that 52 people died in San Jose in traffic fatalities in 2018. DOT also shared its plan to return to the committee in the Fall 2019 with an updated Vision Zero Action Plan that would include strategies on reducing traffic fatalities and severe injuries.

During the May meeting, the T&E Committee asked staff to also provide an unconstrained resource plan and cost estimate to make substantial progress and achieve Vision Zero in San Jose, and how traffic fatality information could be reported on a quarterly basis.

¹ Vision Zero Network Cities: February 2019. <https://visionzeronetwork.org/resources/vision-zero-cities/>

² San Jose Council T&E, May 6, 2019. http://sanjose.granicus.com/MediaPlayer.php?view_id=2&clip_id=11053

ANALYSIS

Dramatically reducing, and ultimately eliminating traffic fatalities, will require a sustained long-term commitment with significant additional resources to provide for more rigorous and systematic data analytics, delivery corridor based safety projects, engagement, and education of the community to build awareness of Vision Zero and to create a culture of safety, and expanded enforcement activities focused on the top violations that result in traffic fatalities and severe injuries (KSI).

The analysis section of the report includes the following subsections

- A. Fatal and Severe Injury Traffic Data
- B. Quarterly Reporting on Fatal and Severe Injury Traffic Data
- C. Current Safety Investments
- D. Focus on Reducing Speed on Major Roadways
- E. Vision Zero Action Plan Development and Top Priorities
- F. Unconstrained Vision Zero Investments

A. Fatal and Severe Injury Traffic Data

Traffic fatalities in the ten-year period between 2009-2018 increased 37%, from 38 in 2009 to 52 in 2018. Traffic fatalities reached a peak of 60 in 2015, the year San Jose adopted Vision Zero, and have been in the low 50s in recent years. In 2018, 195 people were severely injured as the result of a traffic collision, the highest number in the last five years.

In the last ten years, San Jose's pedestrian fatalities have also increased, with 24 pedestrian deaths in 2018. This is consistent with the national uptrend in pedestrian fatalities since 2009.³ Nationally, the pedestrian fatality spike is believed to be related to the greater use of smartphones (among all road users) and SUVs (which strike pedestrians higher). Motor vehicle occupants are the other large traffic fatality mode share in San Jose, with 18 fatalities in 2018. In San Jose, the median age for pedestrian fatalities are older adults in their 50s, and motor vehicle fatalities are younger adults in their 20s. Year to date in 2019, the trend has been similar, with pedestrians and motor vehicle occupants representing the top fatality types by mode.

Figure 1 on the following page provides details on traffic fatalities by mode of travel that have occurred in San Jose for the five-year period 2014-2018, and in 2019, through September 30 (end of Q3). In 2018, pedestrians are substantially over-represented in fatality data compared to their mode share. The 24 pedestrian deaths represent 46% of fatalities, the largest group by mode, compared to 7% who walk and/or take transit to work.⁴

³ Governors Highway Safety Association: Pedestrian Traffic Fatalities by State: 2018 Preliminary Data.

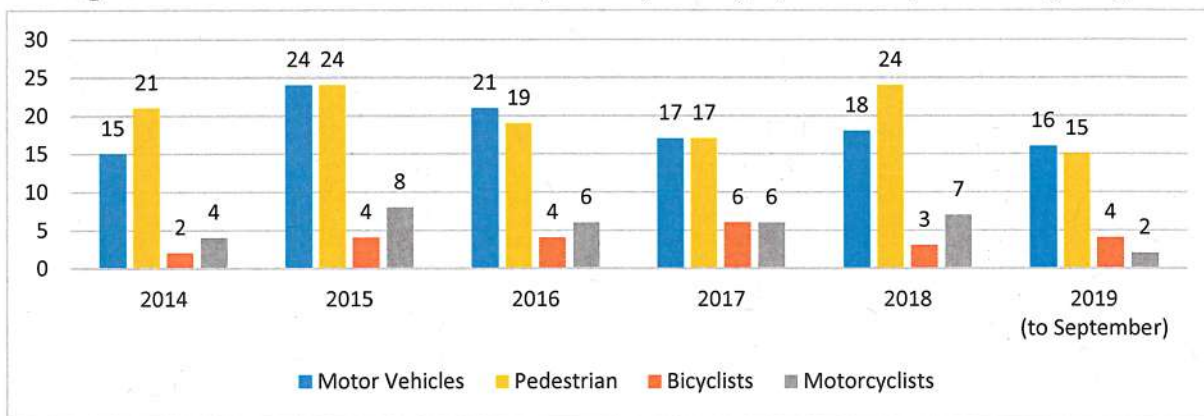
<https://www.ghsa.org/resources/Pedestrians19>

⁴ US Census/American Community Survey (2013-2017): Commuting Characteristics by Sex

https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_17_5YR_S0801&prodType=table

Of high concern is that the number of traffic deaths to date in 2019 is similar to the number of fatalities in the peak year of 2015. As of September 30, 2019, 37 people have died of a traffic fatality, identical to the 37 in 2015 for the same period. The 37 traffic deaths are slightly above the five-year average (2014-2018) of 35 for the first three quarters of the year. As of June 30, 2019, there were 74 severe injuries for the first two quarters of 2019, compared to the high of 91 in 2018 and the 76 five-year average for the same period.

Figure 1: San Jose Traffic Fatalities by Mode (January 1, 2014 – September 30, 2019)



Speeding is the most common known factor contributing to traffic fatalities and injuries of all severity levels during the five-year period 2014-2018. The other top factors for KSI crashes include run red light, pedestrian not yield to vehicle, unsafe turning, and motorist not yield to pedestrian in crosswalk. About 45% of traffic fatalities do not have an identified contributing factor.

B. Quarterly Reporting on Fatal and Severe Injury Traffic Data

A Transportation System Safety/Vision Zero report has been presented annually to the T&E Committee on various transportation safety programs and activities, highlights on collisions that have resulted in a fatality, and updates on the Vision Zero initiative. Moving forward, DOT can prepare similar reports on traffic fatalities and severe injuries on a more frequent basis. DOT recommends providing the T&E Committee with two reports annually; continuing with the comprehensive annual Spring report discussing the previous year’s full data in the context of the past 5-year trend; and a new Fall report that provides partial year fatality and severe injury data (Q1-Q3 for fatalities, and Q1-Q2 for all crashes and injuries), along with noteworthy updates on safety programs and projects.

As discussed later in this report, the updated Vision Zero Action Plan includes the formation of a Vision Zero Task Force. The Task Force would meet quarterly and the agenda for each meeting would include a review and discussion of fatal and severe injury traffic data. The work product of the Task Force would be shared with the T&E Committee in the Spring and Fall reports.

C. Current Safety Investments

The May 2019 Annual Transportation/Vision Zero report highlighted various projects and programs that are delivered by DOT and the Police Department.

Through the Vision Zero initiative, 17 major streets have been designated as Priority Safety Corridors (PSCs); streets that experience a higher incidence of fatalities and severe injuries due to traffic collisions. As shown in Figure 2, these corridors overlap in great part with San Jose's Communities of Concern.

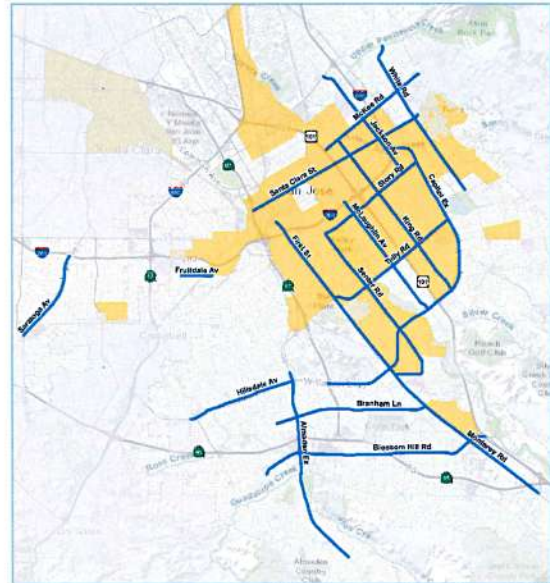
Efforts have been made by both departments to prioritize traffic safety measures on the PSCs. For example, DOT has obtained \$29 million in grant funds for projects on the PSCs, streetlights have been upgraded with LED bright white lights (remaining lights to be upgraded by end of 2020), and bicycle facilities are being created along with travel lane narrowing in conjunction with the pavement program. The Traffic Enforcement Unit (TEU) focuses on deploying officers to the highest crash locations; including the PSCs.

As highlighted in the May 2019 report, another \$45 million has been awarded for safety projects and programs in other areas. Traffic capital improvement program funds are also used for enhanced crosswalks, radar speed display signs, signal and bike projects, and safety education.

New safety messaging initiatives in 2019 include the first senior pedestrian awareness campaign to be used in San Jose, bringing a current well-regarded campaign from San Francisco Vision Zero to San Jose, and a new initiative to use changeable message signs on high volume roadways to alert all road users to be more attentive to low visibility conditions as daylight savings time ends.

Although significant efforts are being made to improve safety on San Jose roadways, current available resources are not adequate to dramatically reduce fatalities and severe injuries to make substantial progress on San Jose's Vision Zero initiative. Local and grant funds are limited and are insufficient for building out the Complete Streets guidelines that were adopted by San Jose in 2018, which include facilities for pedestrians, cyclists, and other emerging types of mobility. Further, the grant process can take 3-5 years from application to project implementation.

Figure 2 – Priority Safety Corridors



D. Focus on Reducing Speed on Major Roadways

High legal speeds, separate from *illegally speeding*, is a common theme on San Jose’s 17 Priority Safety Corridors. The PSCs are multi-lane arterials with large distances between signals where it is easy to pick up speed. Speed limits on the corridors range from 25 to 55 mph, with the vast majority of corridors at 35 mph and above (Figure 3). Over half of the PSCs have speed limits of 40 mph or more. 43% of the city’s fatalities and 33% of severe injuries occur on these 70 miles of roadway, which comprise about 3% of the city’s roadways. The City’s other arterial roads (about 330 miles), many of which also have high posted speed limits, experience another approximate 41% of the City’s fatalities and 47% of severe injuries.

Figure 3 – Posted Speeds on VZ PSCs by Mileage

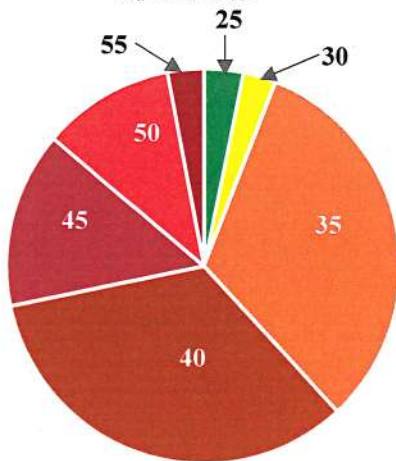
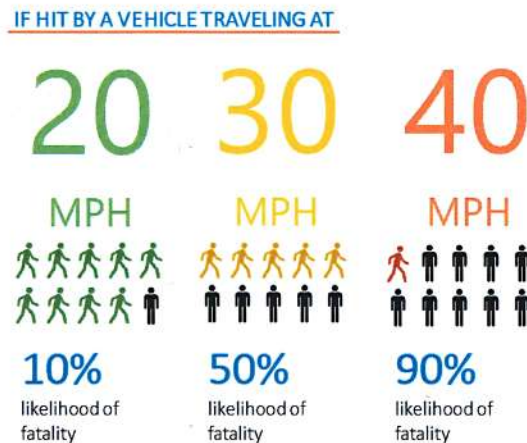


Figure 4 – Likelihood of Pedestrian Fatality Based on Speed



As highlighted in Figure 4, the likelihood of a pedestrian fatality from a collision at speeds of 40 mph and above is 90%, and higher for older adults. The median age pedestrian fatality in San Jose is an older adult in their 50s.

To radically reduce traffic fatalities and severe injuries, our roadways must be redesigned to slow traffic, and to become safer and more comfortable for walking and biking. Through a strategic focus on reducing speeds on the City’s major roadways (PSCs and other arterials), the City can improve safety in areas that are experiencing a high percentage of the fatalities (84%) and severe injuries (80%) that are occurring in the city. Collectively, the combined 390 miles of PSCs and other arterials comprise about 16% of San Jose’s 2,400-miles of roadways.

Additionally, as part of AB2363, San Jose DOT is a participant in a 2019 California State Transportation Agency task force to review how speed limits are set in California. Joining other NACTO cities in California, San Jose is advocating for greater ability for local municipalities to lower speeds on high injury network streets and for the ability to utilize Automated Speed Enforcement. Today, cities in California have limited ability to lower speed limits on high injury high speed streets. Cities are not authorized by the State legislature to utilize speed cameras. Speed camera programs in other cities outside of California have reduced the incidence of excessive speeding, and to reduce crashes and associated injuries.

E. Vision Zero Action Plan Development and Top Priorities

The Vision Zero Action Plan includes strategies that are focused on measures that would be implemented over the next 4-6 years. The plan follows investment strategies that Vision Zero cities in the US with the lowest rates of traffic fatalities per 100,000 population use.⁵ The action plan is in the final stages of development. Upon finalizing the action plan, DOT will solicit input from the Vision Zero Advisory Committee and other stakeholders, and then bring forward a proposed action plan for review and approval by the City Council. The high priority actions included in the draft Action Plan are discussed in this subsection.

Action #1: Build Robust Data Analytics Tool

This past year, DOT developed a Vision Zero Dashboard that is a GIS-based data tool that displays crash data from the last five complete years of data, currently 2014-2018, along with a variety of metrics, such as top violations, crash severity, crashes by mode of travel, and by Council District (Attachment A). The dashboard will be made available at visionzerosj.org in November. These data years will be updated as future full year data is available.

DOT also worked with Urban Logiq on a demonstration project that showed that layering crash data with other kinds of city data has great potential to learn insights about variables in the crash data itself and in the comparison with other existing, and future, data sources.

Securing consultant resources to develop a robust data analytics tool would build on these capabilities to provide ongoing analytics of crash data, assisting staff with determining trends and root causes of crashes, and to develop and prioritize strategies to improve roadway safety. The development and ongoing vendor support of the data analytics tool is estimated to cost \$200,000 annually.

Other data analytics initiatives that are currently in process include:

- Verizon pilot that uses cameras posted above intersections and computer learning insights to analyze near misses and do predictive modeling.
- San Jose State University advanced GIS class students are working to develop a methodology to rank the relative safety of intersections, and potentially street segments, based on crash activity to augment our GIS capacity.

Action #2 Form a Vision Zero Task Force

Nearly every Vision Zero city with the lowest traffic fatality rates has established a panel of cross-functional experts to serve on a task force to review traffic fatalities and the circumstances surrounding them, as well as draw on their areas of expertise and resources to inform and formulate a holistic solution. A task force contributes towards increased accountability in cross-department strategies to create a safer city, with formalized roles and responsibilities of involved departments and agencies.

⁵ San Francisco transportation benchmarking. <https://sfgov.org/scorecards/benchmarking/transportation>

Task forces in Vision Zero cities are frequently led by a member of the jurisdiction's legislative body. For example, in San Francisco, the Mayor nominated a Supervisor to lead their task force.

To provide for a strategic and productive focus on reducing traffic fatalities and severe injuries, San Jose's VZ task force members would consist of various city departments, county and other regional partners, with participation by other groups, such as California Walks, Silicon Valley Bicycle Coalition, and AARP.

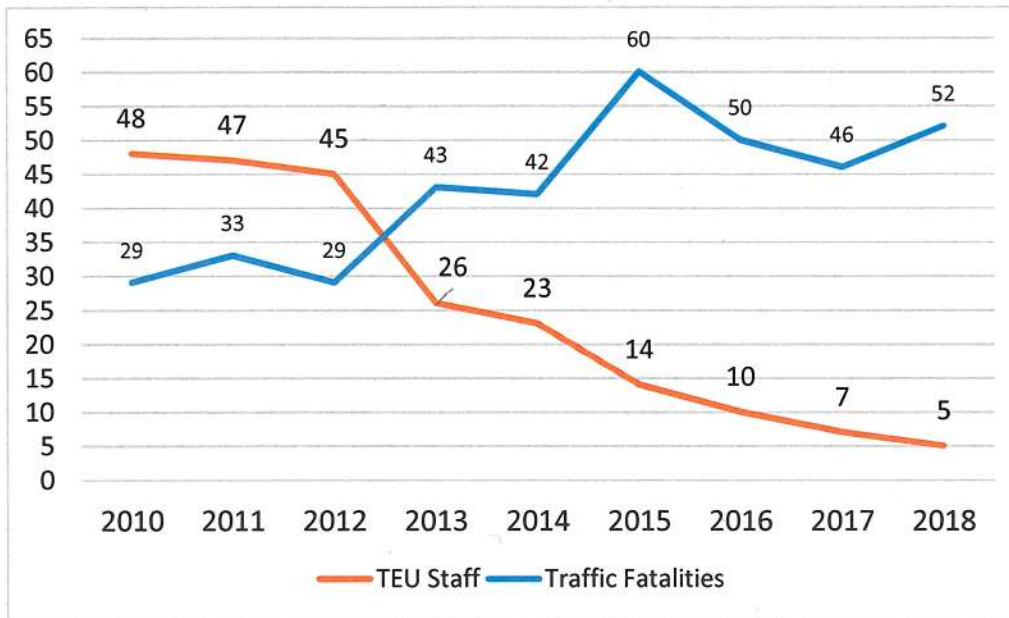
The Policy section of the Vision Zero Action Plan includes topics the Task Force can address, many of which involve two or more city departments and other agencies. Examples of efforts involving task force leadership include:

- Review of the past quarter's fatalities and severe injuries, discuss known information about the crashes and investigation status, identify trends and priority measures to improve safety.
- Review of the past quarter's traffic enforcement activity, with a focus on the Top 5 violations that contribute to KSIs.
- Coordination of education campaigns with enforcement activities.
- Improve the quality of crash and injury data by joining injury records from city police with public health and trauma records retained by the county trauma centers, public health department, medical examiner/coroner, the VTA, and the County Sheriff.
- Consideration of safety measures on Capitol and Almaden Expressways which are under county jurisdiction. These expressways have bus stops, sidewalks, pedestrian retail, and speed limits up to 50 mph. There have been 26 fatalities in the last five years (2014-2018) on the expressways.
- Work with senior and homeless pedestrians through other departments and agencies already providing these residents with services.

Action #3 Increase Traffic Enforcement Unit and Prioritize KSI-Reduction Strategies

Traffic enforcement activities have declined significantly since 2010 due to a reduction in the Police Department's Traffic Enforcement Unit (TEU). As shown in Figure 5 on the following page, TEU staffing decreased significantly, from 48 officers in 2010 to 5 in 2018; traffic fatalities increased during this time period. Recently, staffing in the TEU has increased to 12 officers. Two of the officers support special event activities. The Action Plan includes a recommendation to increase TEU to its current budget allocation of 24 officers.

Figure 5 – Traffic Fatalities vs. TEU Staffing



The Action Plan also includes a recommendation to deploy KSI-reduction enforcement strategies, specifically enforcement activities that place a focus of prioritizing enforcement to address KSI crashes, including:

- Top Five violation factors
- Locations with high incidence of KSI crashes
- Times of day with high incidence of KSI crashes, including during the evening

The top five violation factors for KSI crashes in San Jose are: speeding, red light running, pedestrian not yield to vehicle, unsafe turn, and motorist not yield to pedestrian in crosswalk. As noted previously, many crashes involving a fatality do not have an identified known cause. The Action Plan includes a recommendation for DOT and the Police Department to work with the Fire Department, County public health sources, and technology where possible, to improve report quality on KSI causes.

Action #4 Community Engagement to Build a Culture of Safety

To have sustained impact on building awareness of the need for a culture of safety, and ultimately achieve results with changed behaviors will take significant ongoing efforts. The Action Plan includes measures associated with expanding DOT’s current education efforts that is largely focused on education of school age children, senior residents, and homeless residents. Securing an additional staff member to focus on outreach with communities in high KSI areas will help to build awareness of Vision Zero and of the need for safety. An estimate of \$300,000 annually will provide for an education program (staffing, advertising, and program materials) to focus on increasing the communities understanding, and their role, in traffic safety. The expanded program would also provide for collaboration with other departments, such as Parks,

Recreation and Neighborhood Services, on leveraging events that are already occurring in the community to deliver Vision Zero-focused traffic safety education.

Action #5 Quick Build Team for Data-Driven Safety Improvement Projects

Implementing capital infrastructure projects on the City’s Priority Safety Corridors and other major roadways to achieve a substantial reduction in fatalities and severe injuries, with currently available City and grant fund resources, is not feasible. Further, the efforts involved with designing and constructing capital projects, especially with grant funds, would not allow for a wide-scale implementation of safety projects across the city in a meaningful timeframe.

A quick build strategy can be used with paint and plastic to create a roadway geometry that begins to achieve a complete street environment, similar to the materials and approach used for the Better Bikeways project Downtown. Quick build projects would include measures such as: roadway geometry changes at intersections and along corridors, protected bike lanes, pedestrian-focused signal timing, and median islands where feasible.

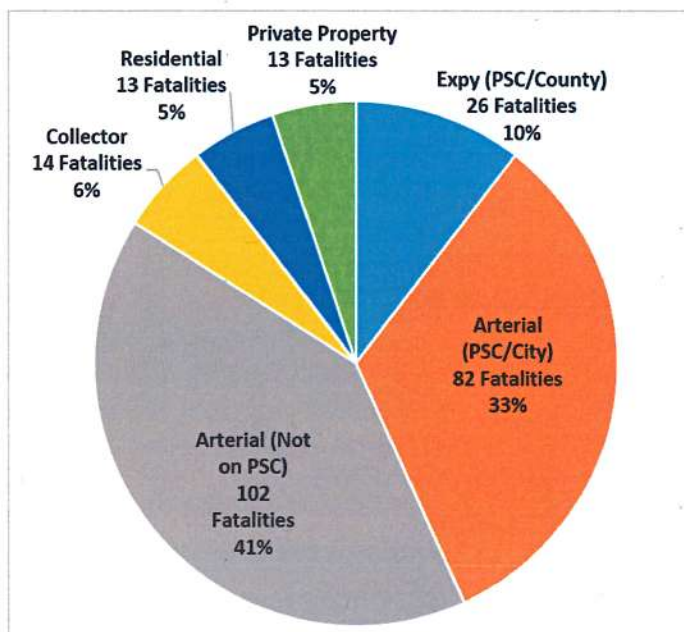
Implementing safety measures using a quick build strategy will help to improve safety on the 390 miles of major roadways that currently experience a majority of the City’s fatalities and severe injuries. As shown in Figure 7, between 2014-2018, a cumulative 74% of fatalities occurred on PSCs and other arterial roads within the City’s jurisdiction. These roads represent 16% of the City’s 2,400-mile roadway network. Although not shown, a cumulative 80% of severe injuries during this time period occurred on these major roads.

A quick build strategy would enable safety measures to be implemented at a significantly reduced cost and quicker timeframe, until funding can be secured for comprehensive capital improvements. Implementing quick build projects on the 56 miles of city-controlled Priority Safety Corridors is estimated to cost \$20 million.

Figure 6 – Almaden Blvd & San Fernando Quick Build Project



Figure 7 – 2014-2018 Traffic Fatalities



Although \$20 million is a substantial investment, it is significantly less (about 3.5%) than the cost of comparable capital projects, as discussed later in the unconstrained portion of this update. The target goal in the Action Plan is to implement quick build strategies on all of the City’s PSCs within a 4-6 year timeframe. Additionally, the plan also identifies a need to pursue funding to implement quick build strategies on the other Arterial roadways.

DOT will continue to apply for competitive grants to fund capital projects, prioritizing efforts that will implement complete streets measures on the City’s major roadways. Given the significant timeframe to secure funding to implement capital projects, the quick build projects will provide the benefit of evaluating the paint and plastic crash reduction designs prior to constructing permanent features.

Action #6 Prioritize Limited Resources on KSI-Reduction Strategies

Vision Zero strategies focus on measures that reduce fatalities and severe injuries. Doing so can also reduce the incidence of moderate and minor injuries. The Action Plan identifies the need to prioritize the available use of resources to implement KSI-reduction strategies on the major roadways, where the data shows that the majority of fatalities (84%) and severe injuries (80%) are occurring. This would include prioritizing resources initially in areas of the City with a greater incidence of KSI collisions.

For example, Figure 8 highlights that while more overall crashes occurred in CD 3 during the five-year period between 2014-2018, more fatal and severe injury crashes occurred in CD7. Considering both fatal and severe injuries, CDs 3, 5, 6 and 7 have the highest incidence of KSI crashes.

Figure 8 – Fatal and Severe Injury Crashes by Council District

Council District	Crashes	Fatal	Severe	Fatal + Severe KSI
1	1,499	9	43	52
2	1,342	20	41	61
3	5,544	34	118	152
4	2,517	17	75	92
5	3,378	17	92	109
6	3,031	21	110	131
7	3,469	52	111	163
8	1,673	20	38	58
9	1,874	15	64	79
10	1,692	24	63	87

As part of the 2019-2020 Mid-Year Budget Process, DOT will identify opportunities within the Traffic Capital Improvement Funds to dedicate resources this fiscal year to the Top Priority actions in the Vision Zero Action Plan.

F. Unconstrained Vision Zero Investments

As indicated earlier, at the May 2019 T&E Committee meeting, the committee asked staff to return in the Fall 2019 with an estimate of the unconstrained cost of achieving Vision Zero.

The measures described below were developed with the goal of dramatically reducing fatal and severe injury crashes in San Jose. The collective one-time and ongoing costs associated with these measures are more than significant. Implementing these measures will clearly require a new dedicated revenue source that is not currently available within the City's resources.

Ongoing Robust Data Analytics, Harness Tech Innovation

Robust data analytics will be an essential ongoing component of the City's efforts in dramatically move towards Vision Zero. In addition to the data analytics tool identified in the near-term Action Plan, having the resources of a data scientist will provide more in-depth analysis of trends, GIS mapping, and consideration of factors other than transportation data. For example, in San Francisco, incorporating public health (trauma hospital, medical examiner, EMS) data revealed about 30% more KSI data than shown in police data. Additionally, there are also many emerging data types including movement data from cell phones and connected vehicles, predictive crash modeling, and using machine learning to analyze data sourced from cameras posted above intersections on signal or streetlight posts.

Long-term, additional efforts to further modernize the Police Department's crash data input system should be explored. For example, an automatic download of crash data into the crash database DOT engineers use to analyze crashes would facilitate a quicker review of KSI crashes. Currently, the process for DOT to receive copies of crash reports and then to manually enter data into a database typically takes several months after a crash has occurred.

Robust Engagement and Education

Ongoing robust engagement and education of the community will also be important over the long-term. In addition to the efforts described in the near-term Action Plan, an expanded program would provide additional opportunities to deliver core safety messaging. Examples could include print and radio ads, street ambassador team, changeable message signs deployed at strategic locations, recruiting a management intern/fellow to research the most effective outreach campaign methods, and conducting focus groups to help determine optimal messaging with campaigns. A rough estimate of \$1,000,000 annually is being provided; it is possible that to achieve dramatic results with changing behavior, more might be required.

Expanded Traffic Enforcement Unit for Enhanced Coverage

Currently, the TEU is allocated funding for a 24-officer unit. At this time, the unit has 12 officers, of which two are allocated for special events. At a minimum, the TEU should be staffed at its prior level of about 50 officers, potentially up to 100 officers to provide opportunities to provide robust enforcement coverage across the City and throughout the day and night. Even when TEU was staffed with around 50 officers, San Jose was still experiencing approximately 30 fatalities annually.

The additional cost to provide a TEU team of 50 to 100 officers, including supervisory staffing is between \$6 – 18.5 million annually. There would be additional costs associated with training and equipment needs, such as motorcycles or vehicles.

Complete Streets Capital Projects on Major Arterials, More Traffic Signals

Recently implemented projects, such as The Alameda Phase II and Ocala Avenue projects have provided the basis for estimating complete street capital projects on other major roads. To implement complete streets on the 56 miles of the city's 15 PSCs would cost an estimated \$560 million. A rough estimate for implementing complete streets designs on the 330 miles of the additional arterial roadways is over \$3 billion.

Additionally, to provide improved mobility safety for pedestrians and bicyclists, and to enable the city to set slower arterial speeds through signal timing, additional traffic signals would need to be constructed to supplement the existing signal network. To provide for a traffic signal network that is similar to the signal spacing downtown (approximately every 650 feet), approximately 220 traffic signals would need to be installed on the City's 15 PSCs at an estimated cost of \$330 million. Additional work is needed to determine the additional traffic signal needs on the other arterial roadways.

COORDINATION

This report has been coordinated with the City Attorney's Office, and the City Manager's Budget Office.

/s/

JOHN RISTOW, Director
Department of Transportation

/s/

EDDIE GARCIA
Chief of Police

For questions, contact Lily Lim-Tsao, Deputy Director of Transportation Safety, Operations and Parking at (408) 975-3269, or David Tindall, Deputy Chief of Bureau of Field Operations, at (408) 277-4715.

Attachment