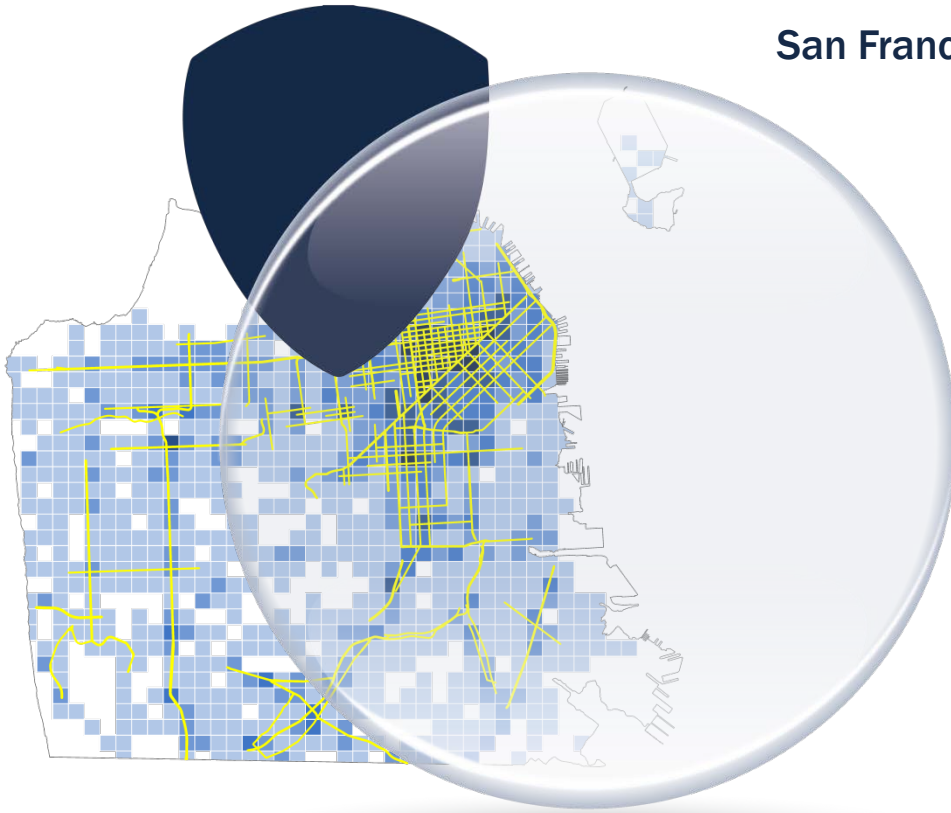


Focus on Enforcement

Insights from research and analysis in support of San Francisco's Vision Zero plan to eliminate traffic deaths



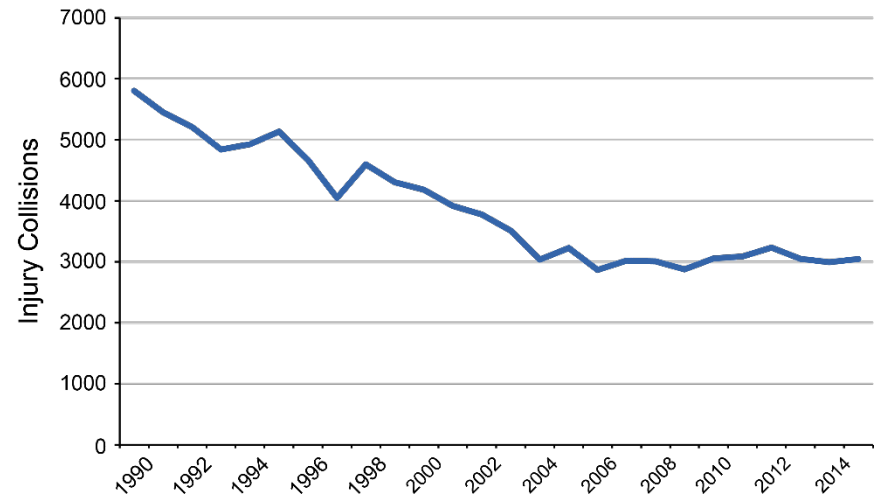
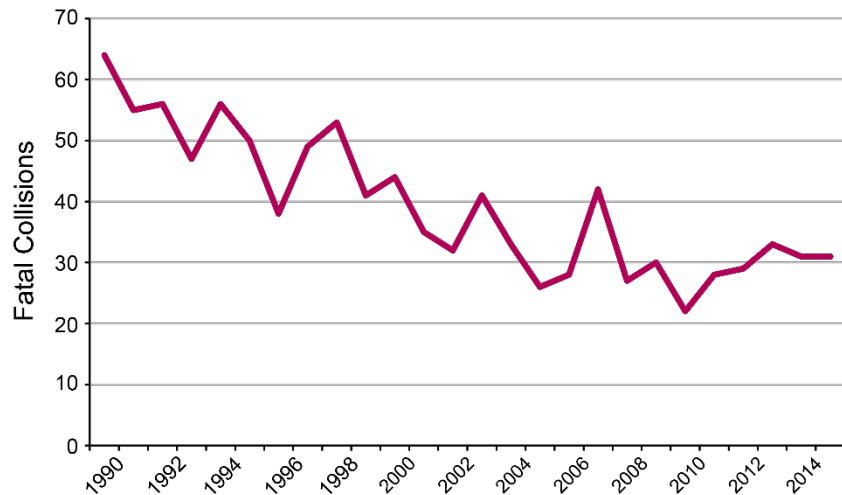
Joe Lapka
Corina Monzón

7/21/2017

Presentation to SFMTA Policy & Governance Committee

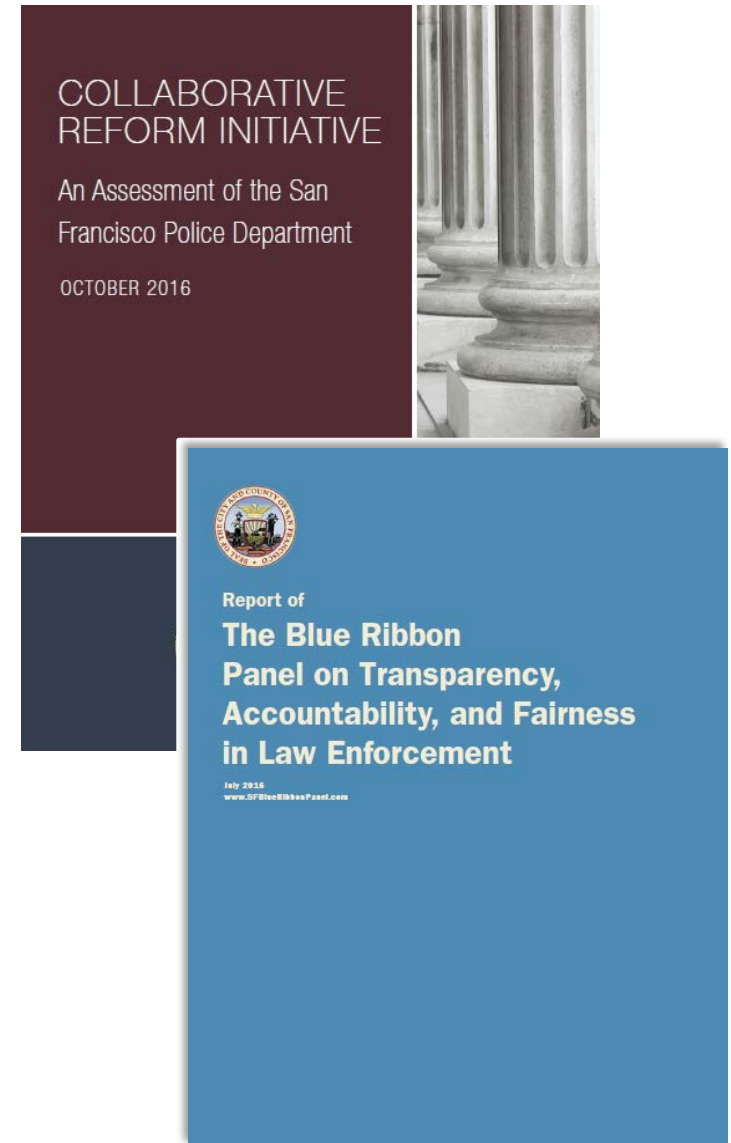
Introduction

- Every year in San Francisco about 30 people lose their lives and over 500 more are seriously injured while traveling on City streets
 - SFMTA data shows that the number of fatal and injury collisions has stagnated since around 2004 following steady decreases throughout the 1990s and early 2000s
 - With the release of the new 2017-2018 Vision Zero Action Strategy, now is an opportune time to think critically about how to set the number of collisions back on their downward trend
- At the request of the SFPD, SFMTA, and DPH, the Controller's Office has analyzed the most recently available collision data to gain a better view of the relationship between traffic enforcement and collisions, and inform potential refinements to the SFPD's traffic enforcement strategy



Introduction

- This analysis is also timely in that the SFPD is currently implementing 479 recommendations it has received over the last 18 months from the Department of Justice, Blue Ribbon Panel, US, Civil Grand Jury, and other sources. Collectively, these recommendations emphasize the importance of:
 - Engaging in **community policing and community outreach**
 - Bringing police and community members together to **foster an improved understanding of police practices and community perceptions**, and
 - Engaging with the community to **develop district-based, co-produced public safety strategies**
- We hope this analysis will be helpful in facilitating conversations among the SFPD and the communities in each District as the SFPD implements these recommendations



Introduction

Information Gathering

Academic research • Informational interviews - Cmdr. Mannix, Cmdr. O’Sullivan, others • Data collection

SFPD Review

Traffic Company • Central, Mission & Southern Districts



Preliminary Analysis and Application Development



Additional Internal Review

Report Development Process



External Feedback

VZ Taskforce • Walk SF
SF Bicycle Coalition

Recommendations:

1. The SFPD should seek out opportunities to extend its enforcement presence beyond the HIN so as to create the impression among the driving public that violations of the law, wherever they occur, will be detected. The selection of alternative sites should be data driven and should consider vulnerable populations at sites such as schools and senior centers. The online collision maps we have developed as a companion to this report can be used for such a purpose.
2. The SFPD should modify its Focus on the Five strategy so that it is better suited to the unique environment of each police district and allows for an appropriately varied response to the problem of traffic collisions. We recommend structuring the goal such that:
 - a) each district is individually responsible for meeting its own district-based target; and
 - a) the districts are jointly responsible for a department-wide goal (i.e., 100% of the districts should meet their target each month).
3. In implementing the recommendations of the Department of Justice, the SFPD should utilize the City's Vision Zero Action Strategy as a framework for working collaboratively with the community to understand traffic violence and jointly develop strategies to address it. As appropriate, the SFPD may additionally consider incorporating specific community concerns into its Focus on the Five goals.
4. The SFPD should develop and publicly report on measures related to procedural justice and social equity in traffic enforcement.
5. Consistent with our recommendations that the SFPD broaden the spatial extent of its traffic enforcement activities and the range of illegal behaviors on which it focuses, the SFPD should similarly ensure that the temporal scope of its operations is sufficient to deter illegal driving behaviors at all times throughout the day and over the course of a week.
6. The SFPD should consider the feasibility of measuring the level of effort it dedicates to traffic enforcement if it wishes to further explore the relationship between the level of policing and the rates of traffic collisions or violations in San Francisco.
7. In evaluating the Safe Speeds SF campaign, the City should not only evaluate its effectiveness in reducing average vehicle speeds and the number of speeding vehicles, but it should also evaluate its impact on the SFPD's resources and consider how sustainable the program is over the long term.

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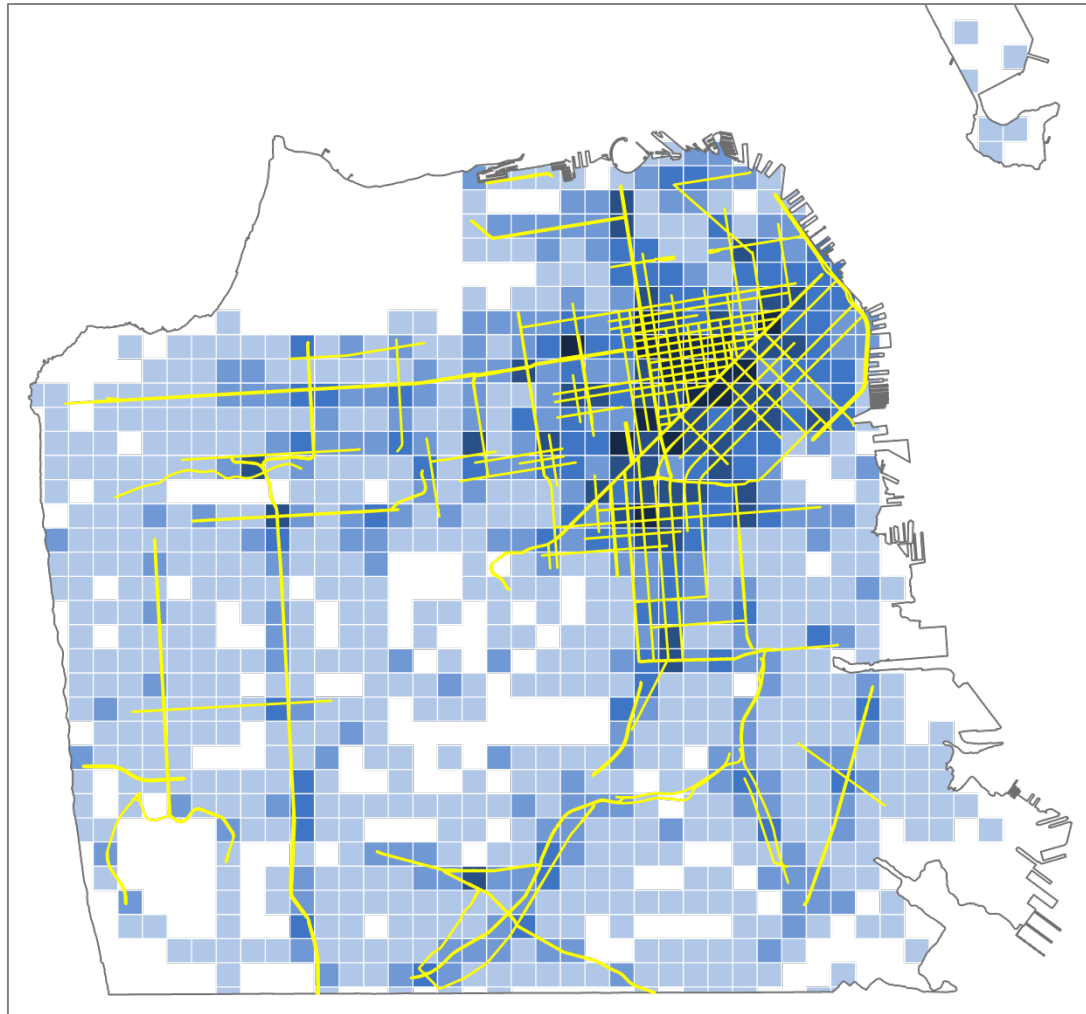
Recommendations:

8. In light of scientific research which shows that effective traffic enforcement programs should be based on proactive rather than reactive measures, and given the proven efficacy of automated speed enforcement in preventing fatal and serious injury collisions, the City and County of San Francisco should continue to advance the use of automated speed enforcement as a tool for encouraging people to drive at safe speeds.

9. The SFPD should work quickly to implement its eCitation and eStops initiatives, which will enable officers to issue citations electronically and provide for the electronic collection of data on the race and ethnicity of those who are stopped. In implementing these initiatives, the SFPD should work with its Vision Zero partner agencies to ensure the new systems will support quality data analyses.

Recommendations:

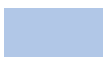
1. The SFPD should seek out opportunities to extend its enforcement presence beyond the HIN so as to create the impression among the driving public that violations of the law, wherever they occur, will be detected. The selection of alternative sites should be data driven and should consider vulnerable populations at sites such as schools and senior centers. The online collision maps we have developed as a companion to this report can be used for such a purpose.



Fatal, Severe Injury & Non-severe Injury Collisions (2013-2015)

Number of Collisions

1-7



8-17



18-30



31-51



52-88

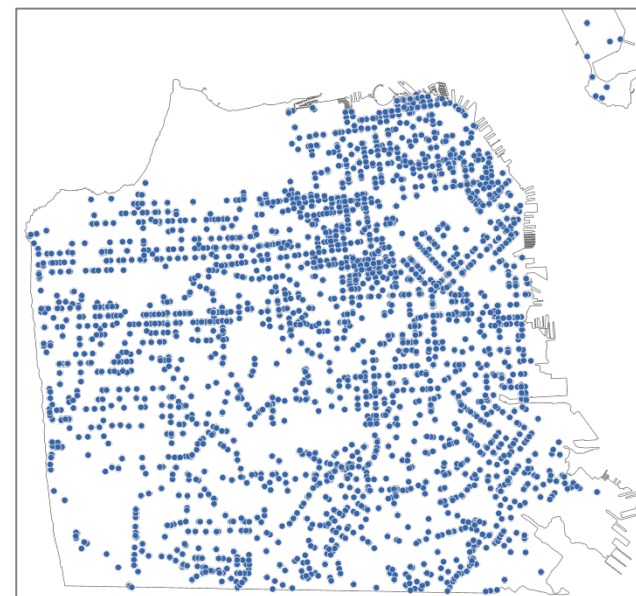


High Injury Network



A sizeable fraction of fatal and injury collisions occur outside of the Vision Zero HIN. The City’s goal of eliminating traffic fatalities by 2024 requires enforcement strategies that deter illegal and unsafe driving behaviors not only on the 12% of city streets that make up the HIN but everywhere throughout the City.

Road Segment	Collision Severity			
	<i>Fatal</i>	<i>Severe Injury</i>	<i>Non-severe Injury</i>	<i>All Fatal & Injury</i>
High Injury Network	60% 56	64% 386	61% 5,129	61% 5,571
Non-High Injury Network	39% 37	35% 209	38% 3,247	38% 3,493
Unknown	1% 1	1% 4	1% 64	1% 69
	100% 94	100% 599	100% 8,440	100% 9,133



● Collisions not on the HIN

<http://sfcontroller.org/collisiondata>

Focus on Enforcement: Insights from research and analysis in support of San Francisco's Vision Zero plan to eliminate traffic deaths

Introduction Instructions **Collision Data**

Collision Data

PCF	Description	Number of Collisions
22350	Unsafe speed for prevailing conditions	127
21950(a,c)	Driver to yield right-of-way at crosswalks	78
22517	Opening door on traffic side when unsafe	63
21801(a,b)	Violation of right-of-way - left turn	61
21453(a,c)	"Red" signal - vehicular responsibilities	53
22107	Unsafe turn or lane change prohibited	46
21802(a,b)	Violation of right-of-way - entering through highway	35
21658	Lane straddling/failure to use specified lanes	25
23152	Driving under the influence of alcohol or drug	17

Note: The top collision factors for each district were determined excluding complaint

Richmond Police District

Layer List

- CVC 21950(a,c)
- CVC 22107
- CVC 22350
- CVC 22517
- CVC 23152
- Right-of-Way Violations
- Turning, Lane Change and Starting/stopping Violations
- All Collisions (heat map)
- Fatal & Injury Collisions (2013-2015)
- High Injury Network
- SFPD Districts
- SFPD Sectors
- Senior Centers
- Schools

0.4mi

POWERED BY Esri

Recommendations:

2. The SFPD should modify its Focus on the Five strategy so that it is better suited to the unique environment of each police district and allows for an appropriately varied response to the problem of traffic collisions. We recommend structuring the goal such that:
 - a) each district is individually responsible for meeting its own district-based target; and
 - b) the districts are jointly responsible for a department-wide goal (i.e., 100% of the districts should meet their target each month).

Benefits and Limitations of the Focus on the Five Strategy

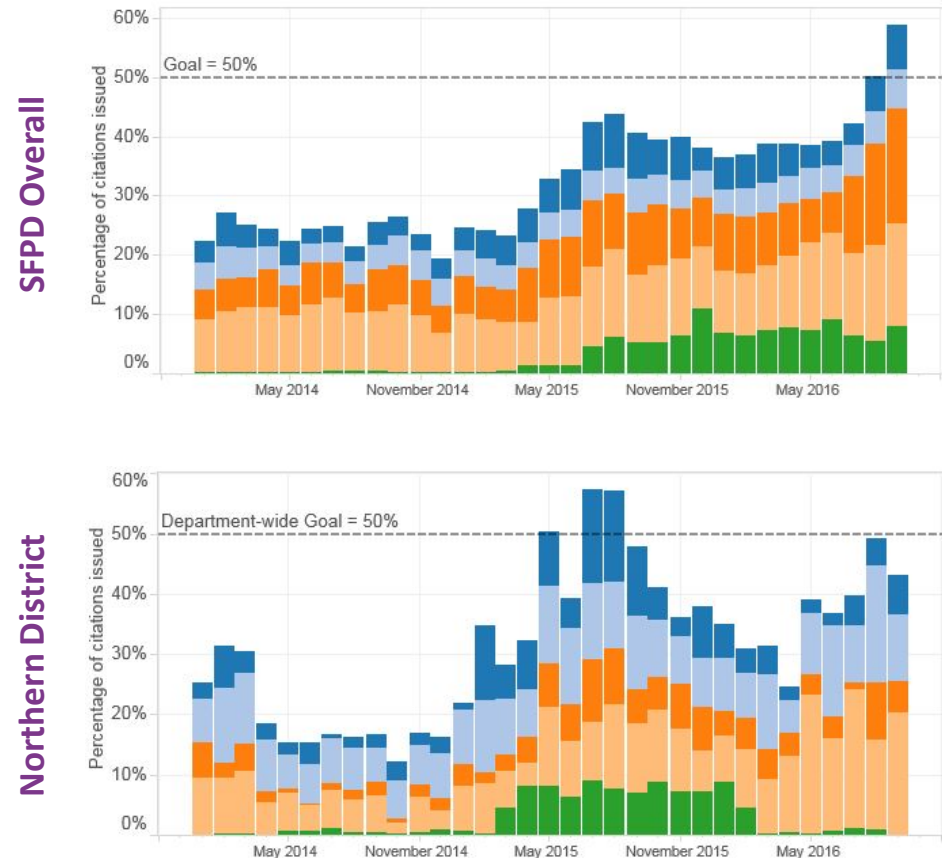
Benefits

- Has helped SFPD direct more of its traffic enforcement resources toward road user behaviors that result in severe injury and death

Limitations

- Factors that contribute to collisions are not the same in every district
- There are other collision factors and associated factors that are equally as dangerous and the SFPD should not be “penalized” for issuing citations for them

Percentage of “Focus on the Five” Citations¹

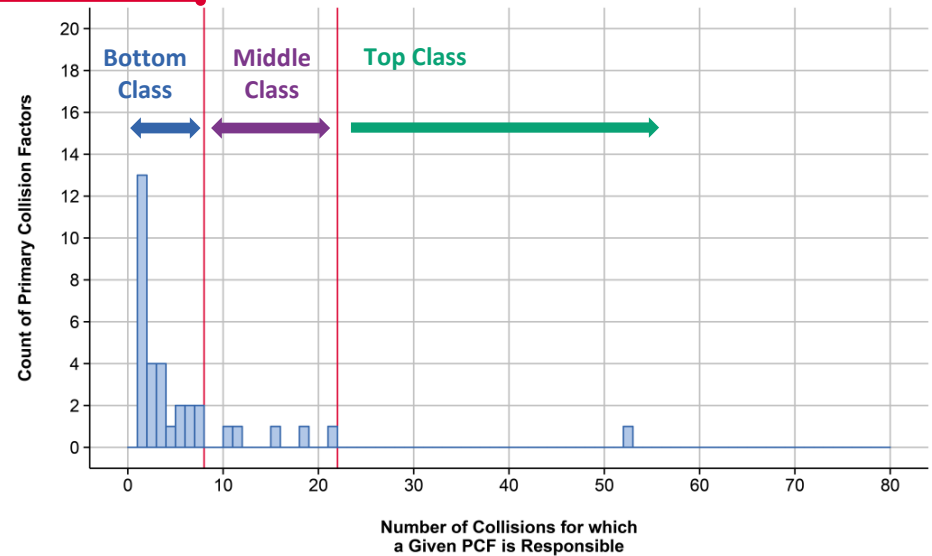


Notes: 1. Effective September 2016, the percentage of citations for the top five causes of collisions is calculated as a percentage of traffic citations. Before September 2016, this calculation was as a percentage of all citations.

Jenks natural breaks optimization

PCF	Description	Count
22350	Unsafe speed for prevailing conditions	52
22107	Unsafe turn or lane change prohibited	21
21950(a,c)	Driver to yield right-of-way at crosswalks	18
23152	Driving under the influence of alcohol or drug	15
21453(a,c)	"Red" signal - vehicular responsibilities	12
22450(a)	Failure to stop at STOP sign	10
21801(a,b)	Violation of right-of-way - left turn	7
21955	Crossing between controlled intersections (Jaywalking)	7
21658(a,b)	Lane straddling/failure to use specified lanes	6
21802(a,b)	Violation of right-of-way - entering through highway	6
21954(a)	Pedestrians must yield right-of-way outside of crosswalks	5
22106	Unsafe starting or backing on highway	5
21453(d)	"Red" signal - pedestrian responsibilities	4
21456(a,b)	Pedestrian violation of "Walk" or "Wait" signals	3
21650	Failure to keep to right side of road	3

natural breaks among PCF groups

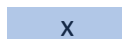


(2013-2015; fatal and injury collisions excluding those with only a complaint of pain)

PCF	Description	District										Count
		Bayview	Central	Ingleside	Mission	Northern	Park	Richmond	Southern	Taraval	Tenderloin	
22350	Unsafe speed for prevailing conditions	x	x	x	x	x	x	x	x	x	x	10
21950(a,c)	Driver to yield right-of-way at crosswalks	x	x	x	x	x	x	x	x	x	x	10
21453(a,c)	"Red" signal - vehicular responsibilities	x	x	x	x	x	x	x	x	x	x	10
22107	Unsafe turn or lane change prohibited	x	x	x	x	x	x	x	x	x	x	10
23152	Driving under the influence of alcohol or drug	x	x	x	x	x		x	x	x		8
21801(a,b)	Violation of right-of-way - left turn		x	x	x	x		x	x	x		7
22517	Opening door on traffic side when unsafe		x		x	x		x	x		x	6
21658(a,b)	Lane straddling/failure to use specified lanes		x				x	x	x	x	x	6
21955	Crossing between controlled intersections (Jaywalking)		x		x		x		x		x	5
21954(a)	Pedestrians must yield right-of-way outside of crosswalks		x		x				x	x	x	5
22450(a)	Failure to stop at STOP sign	x		x		x				x		4
22106	Unsafe starting or backing on highway		x				x				x	3
21703	Following too closely prohibited						x			x		2
21802(a,b)	Violation of right-of-way - entering through highway							x		x		2
21453(d)	"Red" signal - pedestrian responsibilities					x					x	2
21950(b)	Pedestrian right-of-way at crosswalks regulated		x								x	2
21456(a,b)	Pedestrian violation of "Walk" or "Wait" signals										x	1
22101(d)	Violating special traffic control markers								x			1
Count		6	12	7	9	9	8	9	11	11	12	

PCF	Description	District									
		Bayview	Central	Ingleside	Mission	Northern	Park	Richmond	Southern	Taraval	Tenderloin
● 22350	Unsafe speed for prevailing conditions	x	x	x	x	x	x	x	x	x	x
● 21950(a,c)	Driver to yield right-of-way at crosswalks	x	x	x	x	x	x	x	x	x	x
● 21453(a,c)	"Red" signal - vehicular responsibilities	x	x	x	x	x	x	x	x	x	x
22107	Unsafe turn or lane change prohibited	x	x	x	x	x	x	x	x	x	x
23152	Driving under the influence of alcohol or drug	x	x	x	x	x	x	x	x	x	x
● 21801(a,b)	Violation of right-of-way - left turn		x	x	x	x		x	x	x	
22517	Opening door on traffic side when unsafe		x		x	x		x	x		x
21658(a,b)	Lane straddling/failure to use specified lanes		x				x	x	x	x	x
● 22450(a)	Failure to stop at STOP sign	x		x		x				x	
22106	Unsafe starting or backing on highway		x				x				x
21703	Following too closely prohibited						x			x	
21802(a,b)	Violation of right-of-way - entering through highway							x		x	
22101(d)	Violating special traffic control markers								x		
23123(a)	Driving while using a wireless telephone not configured for hands-free use	x	x	x	x	x	x	x	x	x	x
23123.5(a)	Driving while using a wireless device to send, read, or write text communication unless the device is used in a hands-free and voice-operated manner	x	x	x	x	x	x	x	x	x	x
Count		8	11	9	9	10	10	11	11	12	10

● Current Focus on the Five Factors

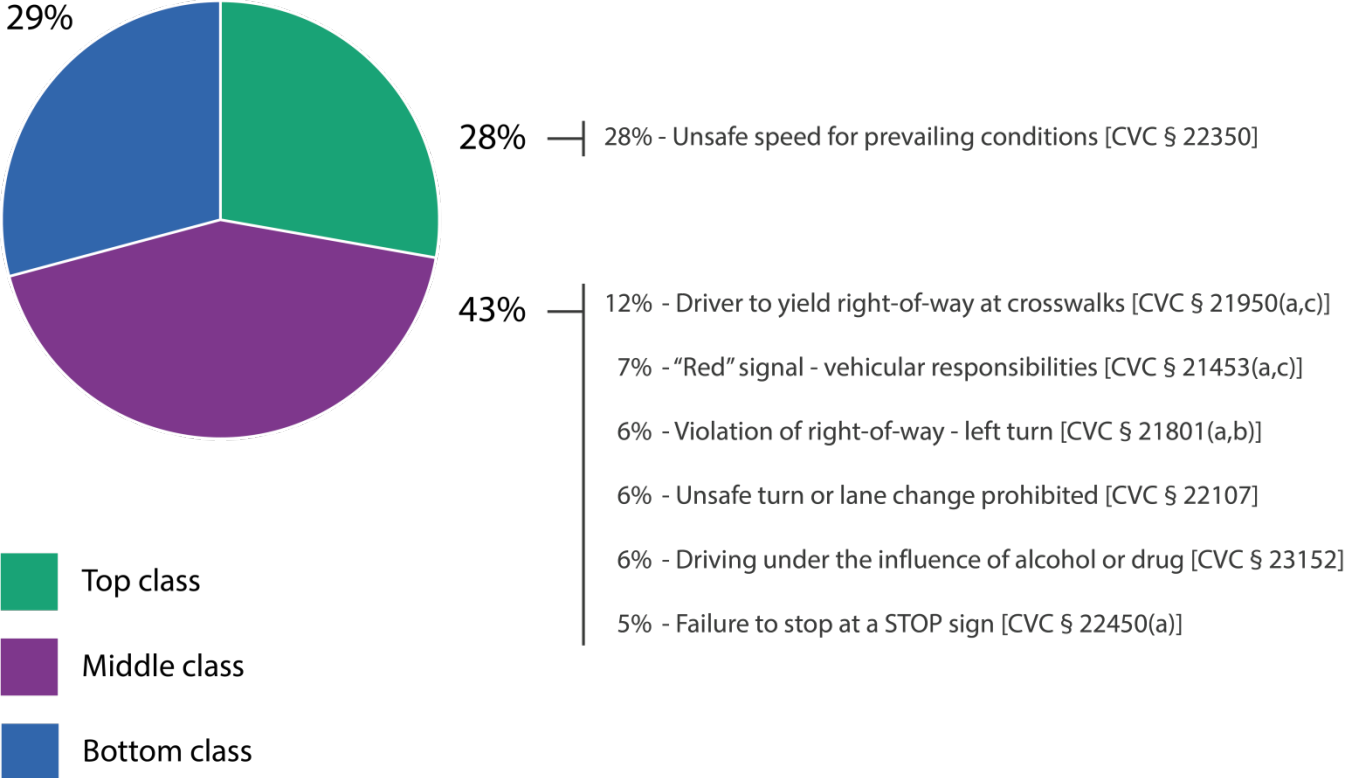


Factors resulting from the clustering analysis

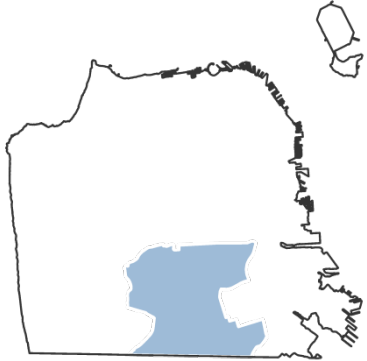


Expanded factors

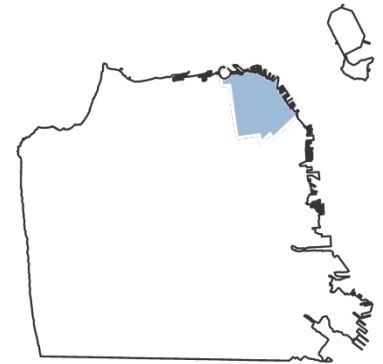
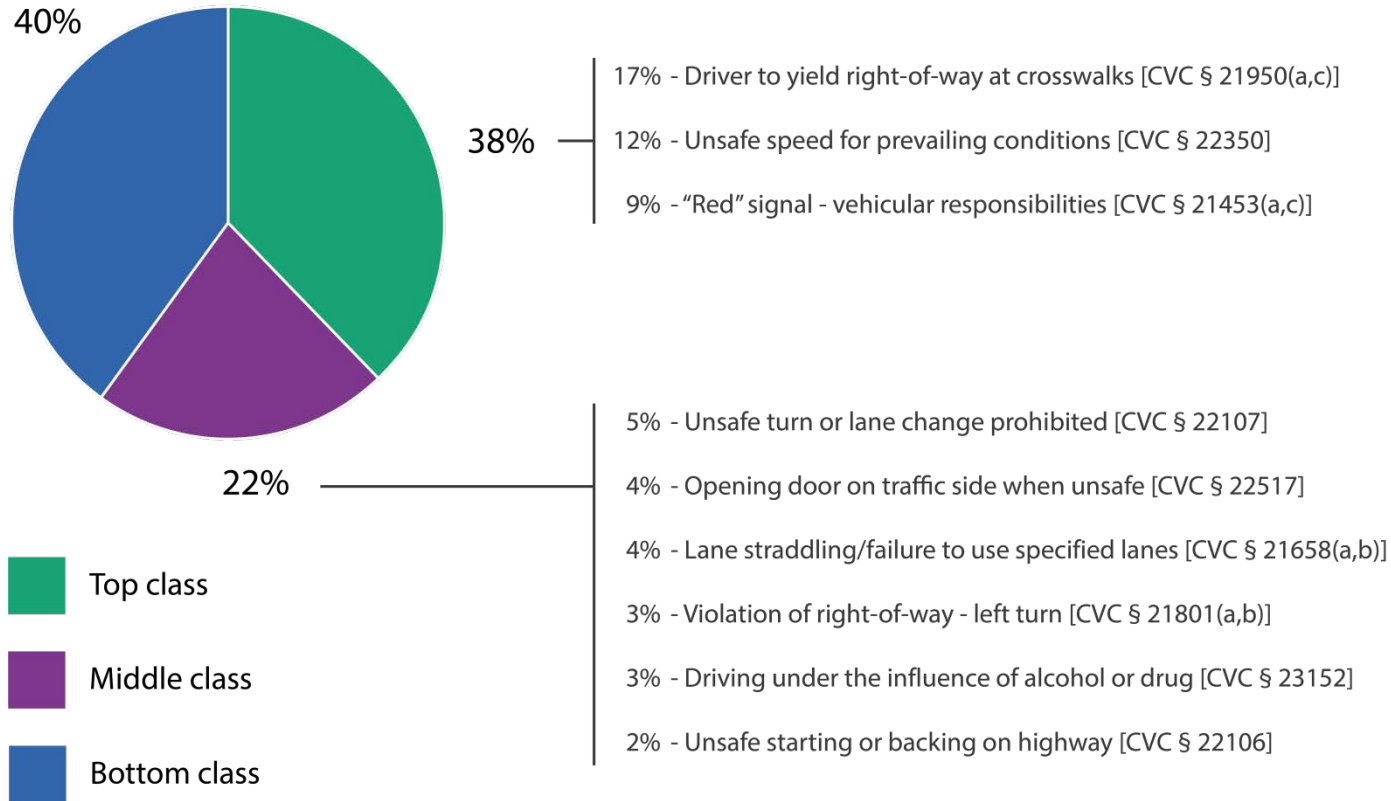
The top two classes of collision factors¹ account for 71% of collisions with known primary factors^{2,3}



- Notes:**
- 1. Excluding pedestrian violations of the California Vehicle Code
 - 2. Excluding complaint of pain cases
 - 3. Some totals may be slightly off due to rounding



The top two classes of collision factors¹ account for 60% of collisions with known primary factors^{2,3}

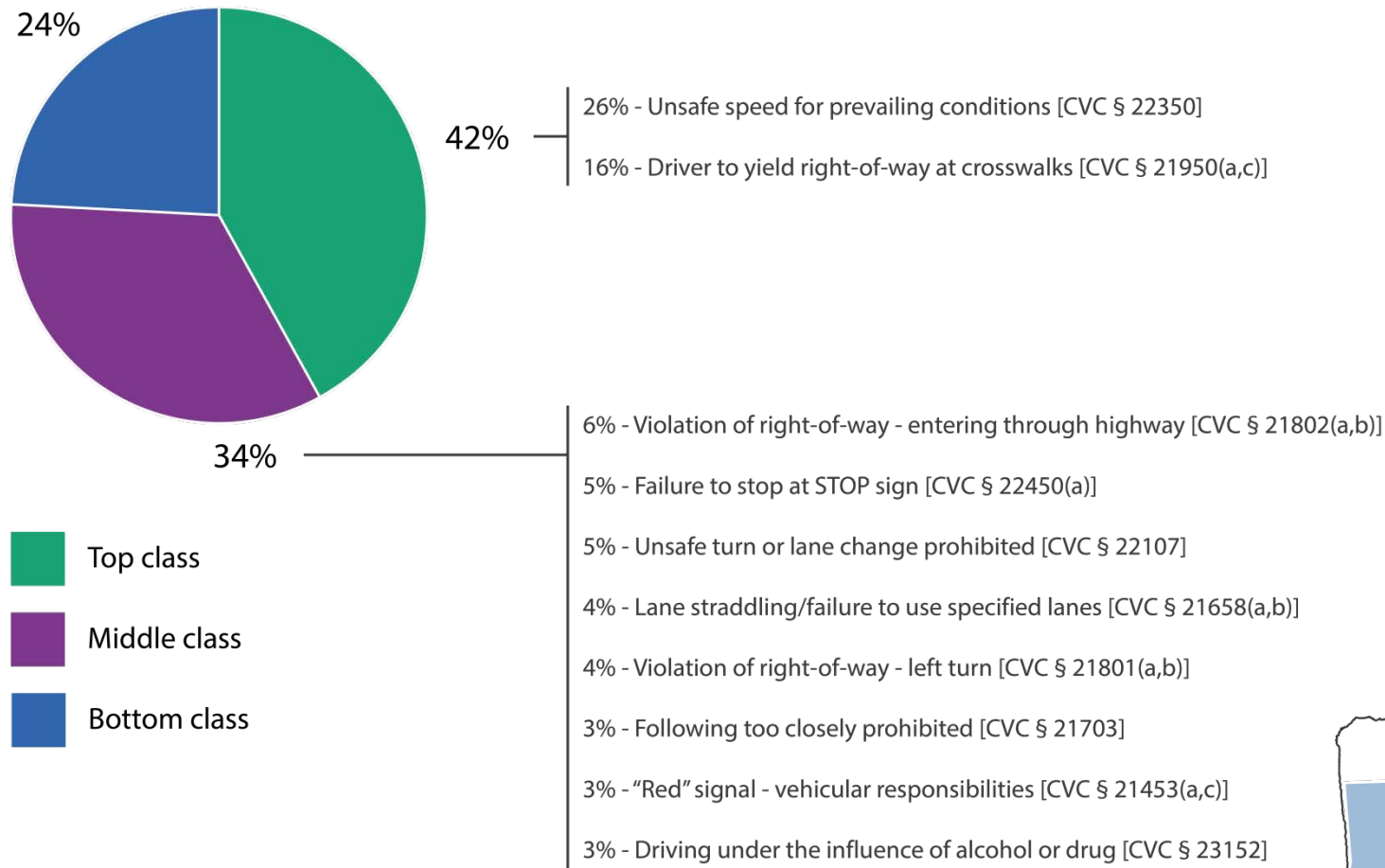


Notes:

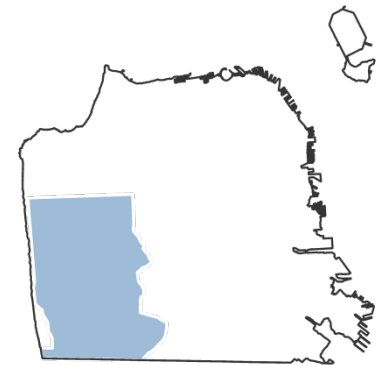
1. Excluding pedestrian violations of the California Vehicle Code
2. Excluding complaint of pain cases
3. Some totals may be slightly off due to rounding

Distribution of the Primary Collision Factors in the Taraval District

The top two classes of collision factors¹ account for 76% of collisions with known primary factors^{2,3}



- Notes:**
1. Excluding pedestrian violations of the California Vehicle Code
 2. Excluding complaint of pain cases
 3. Some totals may be slightly off due to rounding



1. Speeding and Speed-related Violations

- CVC §21703 – Following too closely prohibited
- CVC §22350 – Unsafe speed for prevailing conditions

2. Right-of-Way Violations

- CVC §21453(a,c) – “Red” signal – vehicular responsibilities
- CVC §21950(a,c) – Driver to yield right-of-way at crosswalks
- CVC §21801(a,b) – Violation of right-of-way – left turn
- CVC §21802(a,b) – Violation of right-of-way – entering through highway
- CVC §22450(a) – Failure to stop at a STOP sign

3. Impaired & Distracted Driving

- CVC §23152 – Driving under the influence of alcohol or drug
- CVC §23123(a) – Driving while using a wireless telephone not configured for hands-free use
- CVC §23123.5(a) – Driving while using a wireless device to send, read, or write text communication unless the device is used in a hands-free and voice-operated manner

4. Turning, Lane Change and Stopping/Starting Violations

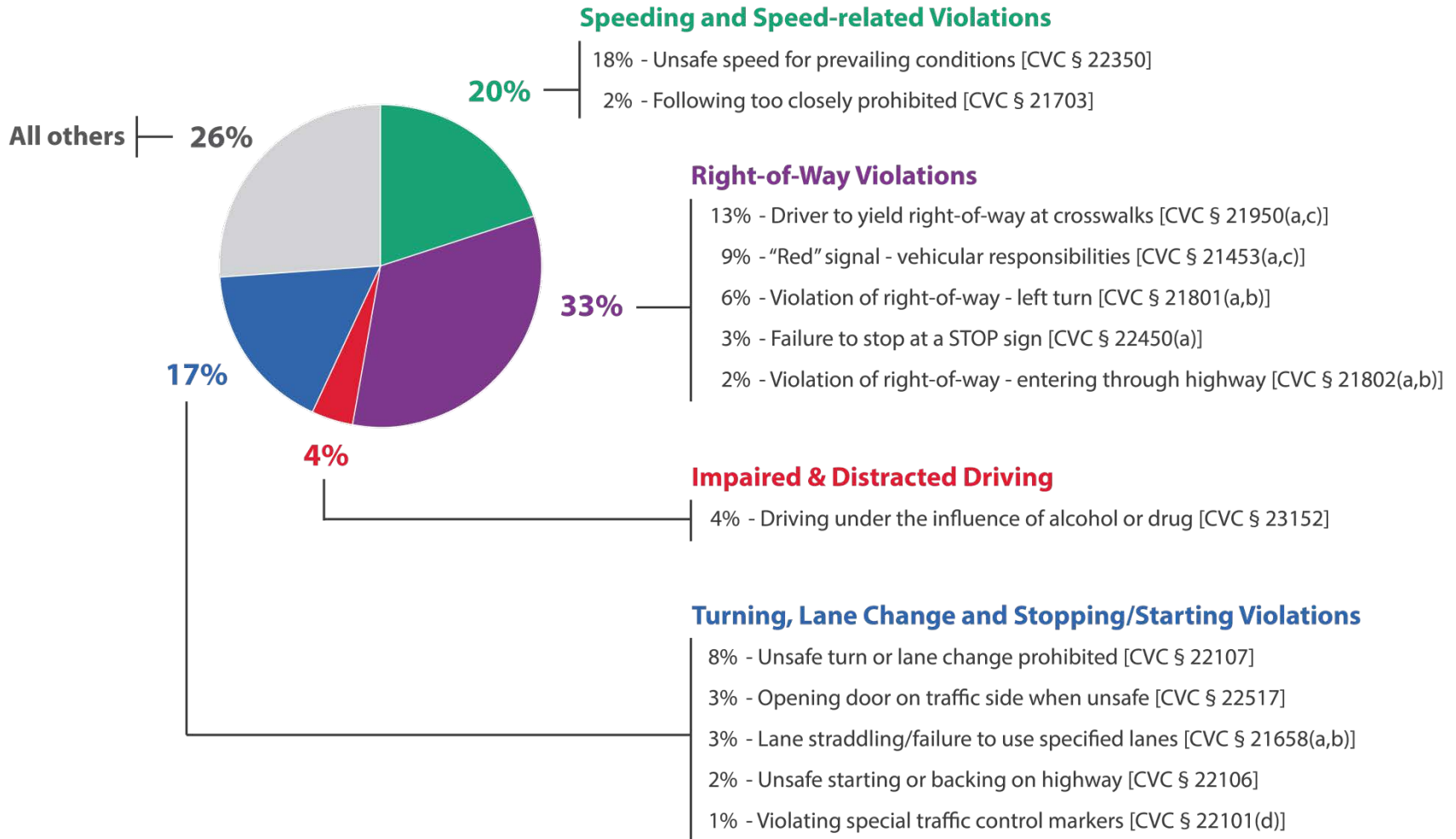
- CVC §22107 – Unsafe turn or lane change prohibited
- CVC §21658(a,b) – Lane straddling/failure to use specified lanes
- CVC §22101(d) – Violating special traffic control markers
- CVC §22517 – Opening door on traffic side when unsafe
- CVC §22106 – Unsafe starting or backing on highway

5. Community Priorities

1-2 additional district-specific factors based on community input

Distribution of the Primary Collision Factors Recommended for Focused Enforcement

The thirteen collision factors we are recommending for focused enforcement collectively account for approximately 74% of collisions with known primary factors



PCF	Description	Count
22350	Unsafe speed for prevailing conditions	526
21950(a,c)	Driver to yield right-of-way at crosswalks	362
21453(a,c)	"Red" signal - vehicular responsibilities	262
22107	Unsafe turn or lane change prohibited	221
21801(a,b)	Violation of right-of-way - left turn	185
21954(a)	Pedestrians must yield right-of-way outside of crosswalks	108
23152	Driving under the influence of alcohol or drug	105
21955	Crossing between controlled intersections (Jaywalking)	104
22517	Opening door on traffic side when unsafe	95
21658(a,b)	Lane straddling/failure to use specified lanes	89
22450(a)	Failure to stop at STOP sign	77
22106	Unsafe starting or backing on highway	65
21802(a,b)	Violation of right-of-way - entering through highway	56
21453(d)	"Red" signal - pedestrian responsibilities	52
21950(b)	Pedestrian right-of-way at crosswalks regulated	47
21703	Following too closely prohibited	46
21456(a,b)	Pedestrian violation of "Walk" or "Wait" signals	38
21755(a)	Unsafe passing on right shoulder	36
21750	Overtaking and passing unsafely	28
21804(a,b)	Entering highway from alley or driveway	28
21650	Failure to keep to right side of road	27
21956(a)	Pedestrian on roadway prohibited	26
22100(a,b)	Turn at intersection from wrong position	25
22101(d)	Violating special traffic control markers	24
21800(a-d)	Violation of right-of-way	19
21650.1	Bicycle to travel in same direction as vehicles	14
21657	Driving against one-way traffic patterns	12
22103	Illegal U-turn in residential district	12
21202(a)	Bicyclist at less than normal speed must keep to the right	11
21460(a,b)	Improper turns over double lines/solid lines to right prohibited	11
22102	Illegal U-turn in business district	11
21663	Driving on sidewalk prohibited	9
21201(a-d)	Equipment requirements for bicycles	8
21451(a,b)	"Green" signal - vehicular responsibilities	8
22515	Leaving vehicle unattended without setting the breaks or stopping the motor	6

PCF Grouping Analysis Results - City-wide

Note: This table appears as Appendix D in the full report

PCF Grouping Analysis Results - City-wide (continued)

PCF	Description	Count
21453(b)	"Red" signal - vehicular responsibilities with right turn	5
21717	Turning across bicycle lane	5
22400(a,b)	Minimum speed law - impeding traffic flow	5
21209(a)	Motor vehicle in bicycle lane prohibited	4
21461(a)	Driver failure to obey signs/signals	4
21751	Passing without sufficient clearance	4
21954(b)	Failure of driver to exercise due care for safety of pedestrian on roadway	4
20002(a)	Hit and run - property damage	3
21200.5	Bicyclist riding under the influence	3
21461.5	Pedestrian failure to obey signs/signals	3
21651(a)	Driving across dividing section on freeway prohibited	3
21752(a,b,d)	Driving left of center - limited view/within 100 feet of bridge, viaduct, tunnel/within 100 feet or when traversing intersection - prohibited	3
21754	Improper passing on right prohibited	3
21756(a-c)	Unsafe passing of standing streetcar, trolley coach, or bus safety zones	3
21803(a,b)	Violation of "Yield" sign	3
21806(a,b)	Failure to yield to emergency vehicle	3
21952	Failure to yield right-of-way on sidewalk to pedestrian	3
22105	Illegal U-turn on highway without unobstructed view	3
22109	Sudden stopping without signaling	3
22500	Stopping, standing, parking in prohibited locations	3
23123(a)	Driving while using a wireless telephone not configured for hands-free use	3
7.2.12	Bicycle riding restricted	3
21208(a,b)	Riding outside bicycle lane prohibited	2
21211(a,b)	Illegally impeding bicycle lanes	2
21451(c,d)	"Green" signal - pedestrian responsibilities	2
21712(a)	Allowing riding on portion of vehicle not designed for passenger use prohibited	2
21760(b,c,d)	Improper passing of a bicycle - Three Feet for Safety Act	2
21951	Overtaking vehicles stopped for pedestrians	2
22108	Signal required before turning or changing lanes	2
22348(a)	Driving in excess of the posted speed limit	2

PCF Grouping Analysis Results - City-wide (continued)

PCF	Description	Count
22352(a)(2)	Operating vehicle in excess of 15 MPH at freeway intersection with no clear field of vision	2
22526(a,b)	Blocking intersection (gridlock) prohibited	2
23109(a-c)	Engaging in or abetting a speed contest or exhibition of speed	2
7.2.35	Parking on grades	2
21106(b)	Use of crosswalks where prohibited by sign	1
21200(a)	Bicycle riding - general rights and responsibilities	1
21204(b)	Riding bicycle on other than a permanent seat	1
21210	Bicycle parked - impeding pedestrian traffic prohibited	1
21281	Improperly equipped assistive mobility device	1
21452(b)	Failure of pedestrian to properly respond to signal of yellow light or arrow	1
21457(a)	Actions required at flashing red signal	1
21462	Failure to obey a traffic control signal	1
21463	No person shall illegally operate signals	1
21651(c)	Willfully driving wrong way on divided highway and causing injury or death	1
21660	Failure of approaching vehicles to pass to the right	1
21708	Running over unprotected fire/chemical hose prohibited	1
21753	Failure to yield to overtaking vehicle	1
21968	Motorized skateboard prohibited	1
22100.5	U-Turn at controlled intersection	1
22351(a,b)	Driving in excess of prima facie speed limits established in VC 22352	1
22360	Violation of local speed limits between business and residence districts	1
24252(a-c)	Maintenance of lamps and devices required	1
2800(a)	Refusal to obey a peace officer	1
2800.2(a)	Fleeing a peace officer - reckless driving	1
7.2.13	Non-motorized user-propelled vehicle - unspecified violation	1
7.2.13(b)	Riding a non-motorized user-propelled vehicle in the roadway	1

For More Information

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To download the report, visit:

<http://sfcontroller.org/>

To access the district collision maps, visit:

<http://sfcontroller.org/collisiondata>
