

**Bike Collisions
on the
Pacific Coast Highway
(RT-1)
3 County Overview:
Los Angeles, Orange, San Diego
2004-2016**

Data compiled from CHP SWITERS Traffic Database
Draft

1

Revised 1/2014 Refresh 2010-2013 to 4q13

Revised 4/2014 Refresh 2001-2013. (partial) to 1q14

Revised 7/2014 Refresh 2011-2014 to 2q14

Revised 10/2014 - refresh 2011-2014 to 3q14

Revised 1/2015 Refresh 2012-2014, archived 2001-2003.

Revised 4/2015 - refresh 2012-2015 to 1q15

Revised 10/2015 - refresh 2013-2015 to 3q15

Revised 1/2016 - refresh 2013-2015 to 4q15

Revised 4/2016 - refresh 2012-2016 to 1q16

Revised 7/2016 - refresh 2014-2016 to 2q16

THE Pacific Coast Highway aka:

Pacific Coast Hwy

PCH

Hwy 1

RT-1

Coast Hwy +(W, E, N, S)

RT-101 in parts of San Diego County

as entered in the SWITRS database by the reporting agency

RT-1 Overview - 3 Counties

All 1,821 Collisions Involved a Bike:

- 12.1% = Hit & Run, or 221 collisions
- 8.0% = Alcohol Involved, or 145 collisions
- 3.6% = "Dooring", or 67 collisions
- Riders: 30 Dead - 1,731 Injured
- Pedestrians: 0 Dead - 24 Injured
- Motorcyclist(s): 0 Dead - 14 Injured
- 1,803 Degrees of Injury:

– Severe	Visible	Complaint of Pain		
163	1,061	Draft	579	2

This report covers 3 Counties which host their segment of the Pacific Coast Highway in Southern California: Los Angeles, Orange, and San Diego.

Data obtained from SWITRs on 7/1/2016

Any collision that involved a bicycle that generated a police report in San Diego, Los Angeles, or Orange County and contained in the SWITRs database is reflected in this presentation.

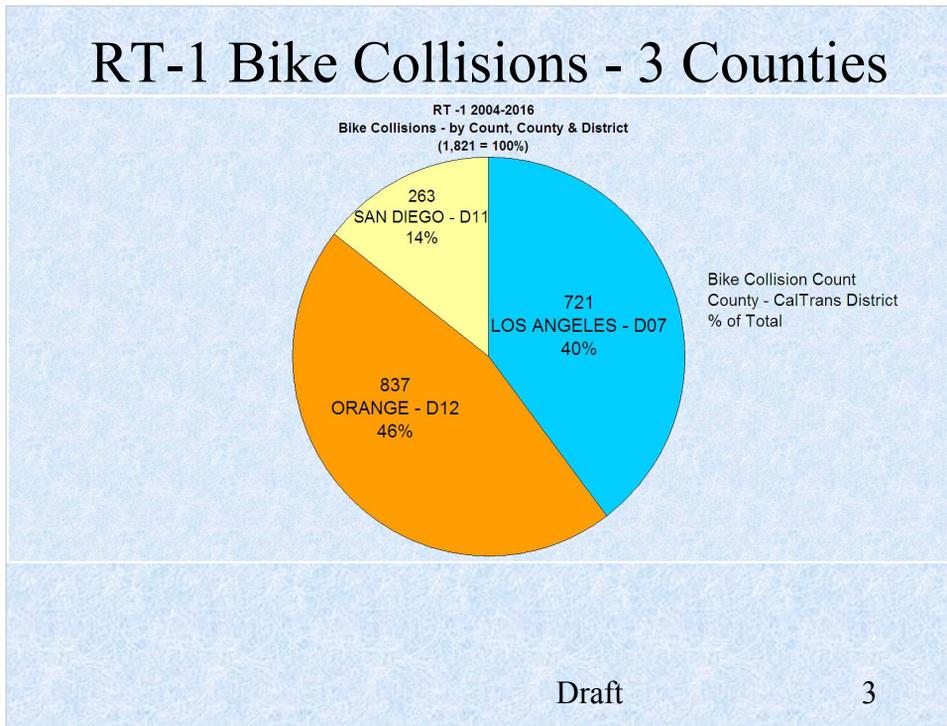
That means car vs bike, bike vs bike, bike vs pedestrian, bike vs fixed / movable object, bike vs animal, etc. and vice-verse.

Collisions result in: loss of life, debilitating injuries, damage to property, costs to responders, and costs to survivors.

Identifying trends and developing counter measures to their causes will make life more enjoyable and profitable for all.

While comprehensive in scope, the totals listed should be viewed as a “floor” or the minimum of known collisions since not all collisions are reported to the CHP and thus are external to the database from which this report was created.

Data for 2014-2016 are still in-flowing and should be viewed accordingly. Each "slide" has underlying detailed analysis available on request.



Showing where bike collisions happen on RT-1, and in what CalTrans District for each of the 3 Counties.

Counts are provided in addition to the percentages shown in the chart above.

How many miles of RT-1 are we talking about?

According to:

https://en.wikipedia.org/wiki/Category:California_State_Route_1

The respective approximate mileage for the Counties:

Los Angeles: 62 miles (Long Beach to Mulholland).

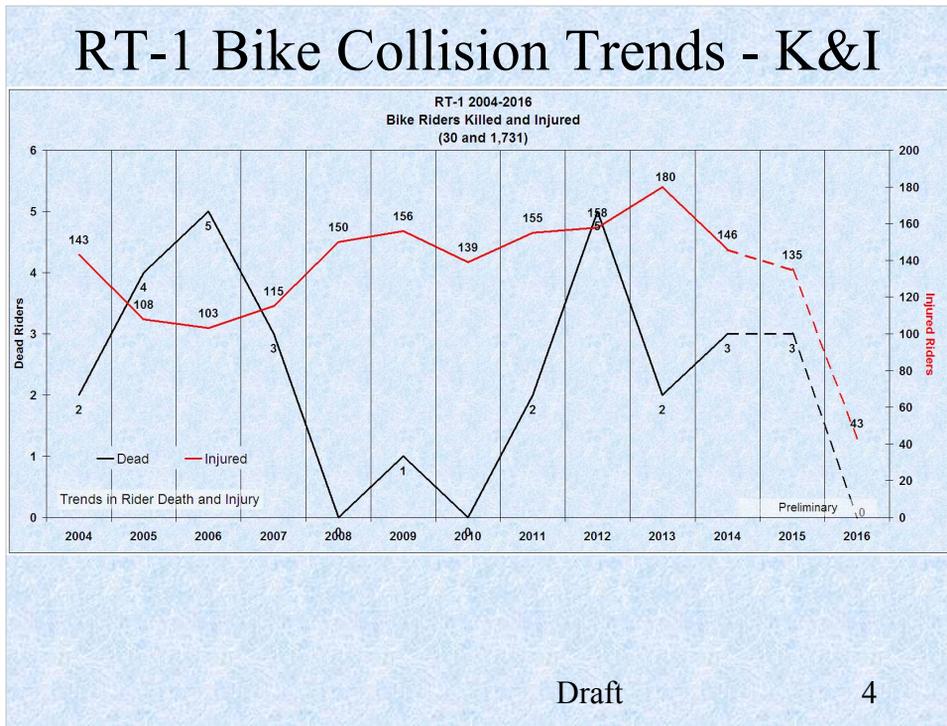
Orange: 32 miles (Dana Point to Long Beach) + Dana Point through San Clemente on El Camino Real to the County line on old Hwy 101 ~14 = 46 miles.

San Diego: not listed in above reference but generally from County line to Harbor Drive ~ 65 miles.

So roughly: ~173 miles through the 3 most populated Counties in the State.

Most portions are maintained by CalTrans (represented by their district number in the chart), while some portions are maintained by individual Cities such as Newport Beach in Orange County.

24 new collisions have been added from the last overview with no additional fatalities - yay!



Note: data flow is ongoing for the majority of 2015-2016, with a trickle from 2014 still being seen.

2008 and 2010 were exceptional years for riders on RT-1 due to the fact that none were killed. 2016 started off right with 0 reported so far.

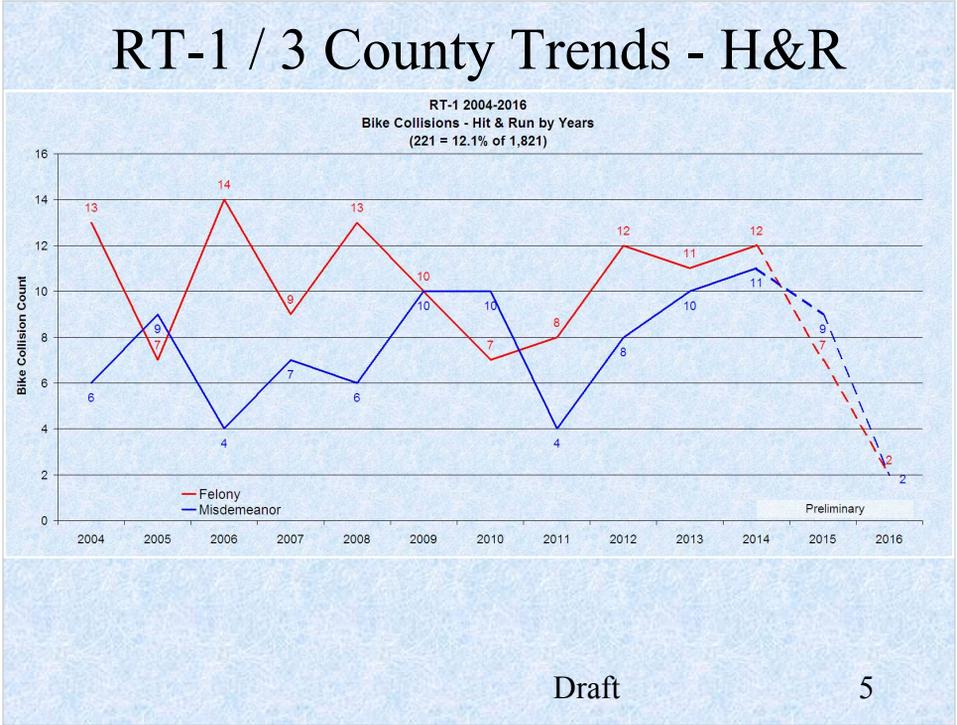
From the 1,821 bike collisions, 30 people were killed (1.6%), with 1,803 (99.0%) injured leaving no chance of emerging from a bike collision on RT-1 unscathed.

Injuries may have peaked in 2013 which is encouraging and may indicate collision avoidance measures implemented by different localities.

Time and advocacy efforts will tell if meaningful and effective measures are put in place to reduce bike collisions on RT-1.

Understanding where and how collisions happen is a good step in reducing collision causes.

Recent fatalities and injuries have not been entered into the database yet and are not reflected here. When they are, the picture could change dramatically.



The shows the count of hit and run collisions with bikes, or bikes that hit and ran on RT-1 in the 3 County area.

Hit / Run overall percentage remained at 12.1% from the last overview with Felonies and Misdemeanors rising 0.1 point to 6.9% and 5.3% respectively.

It would appear that Hit / Runs are on the increase although data is still flowing in for 2014-2016 which may skew the trends

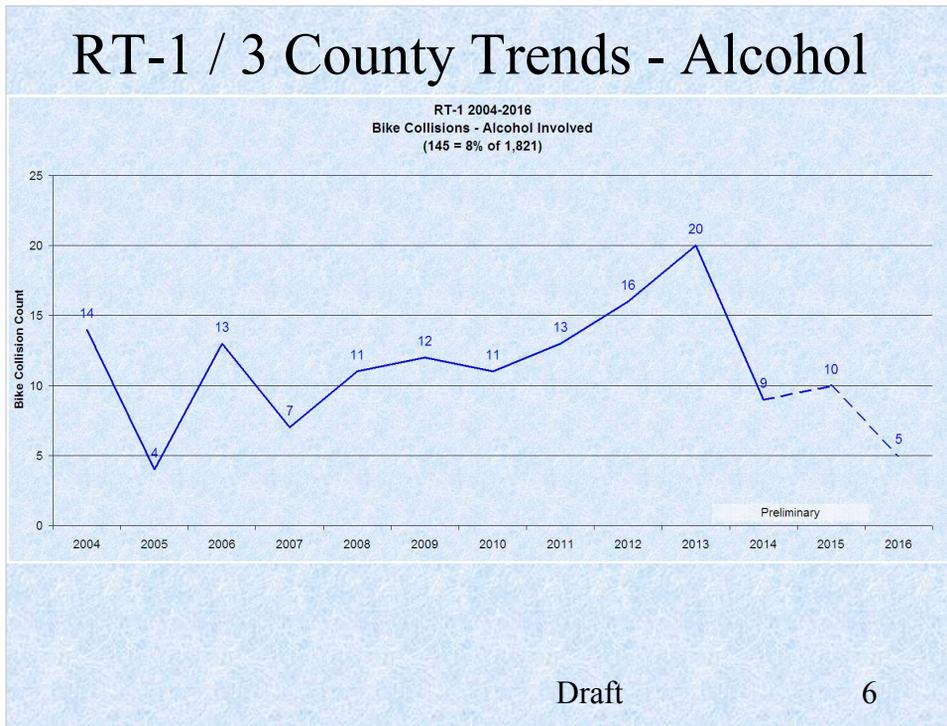
Felonies appear to be trending negative (good) for now, and misdemeanors continue their upward climb. If the current trends continue - new strategies to reduce the number of H&R bike collisions need to be developed, implemented, and measured for success.

Current Yearly Average Counts for 2004-2015:

Felony	12.3	Misdemeanor	94
2016 =	2		2

What can be done to decrease the hit/ run rate further?

Spoiler alert: not all hit/runs are done by motor vehicles - but that's another subject for another presentation.



This shows the use of alcohol in bike collisions on RT-1 in the 3 Counties.

There is a slight positive slope (not good) to the over all trend appearances to the contrary because data is still flowing from 2014-2016.

Alcohol involved bike collisions remains rose 2.5% to 8% from the last report. The least Alcohol contributed over the previous 12 years was 3.4% in 2005, with the maximum at 11.9% in 2006.

For 2016, Alcohol use is running at 10.6%, 35.9% above the average of 7.8% for 2004-2015.

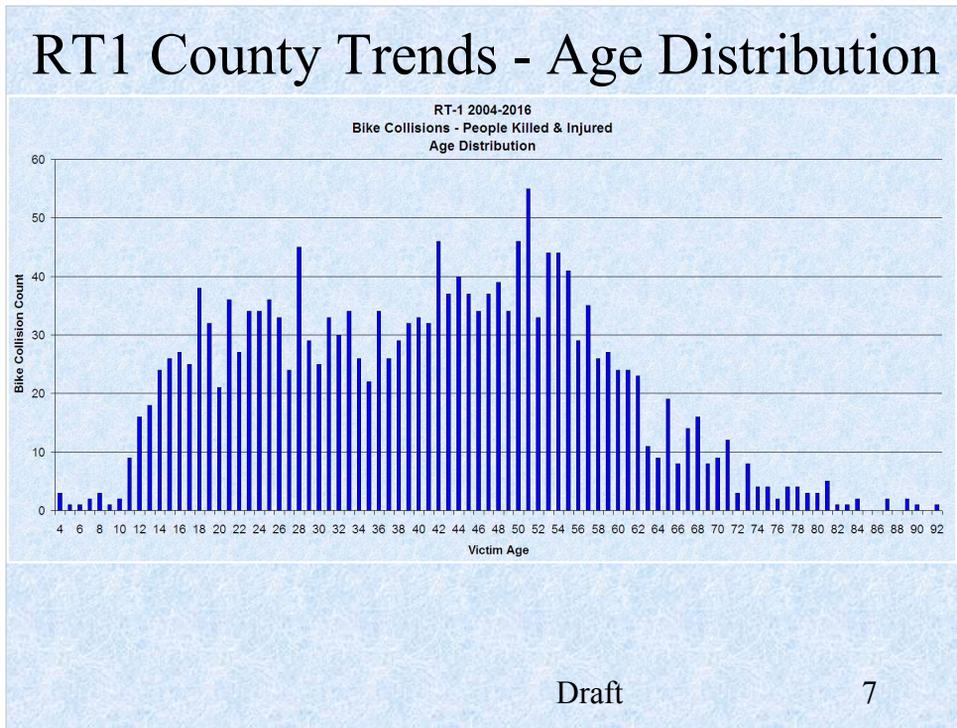
Here's the counts with percentages:

	LA	ORANGE	SAN DIEGO	Total
Alcohol	52	72	21	145
% of County	7.2%	8.6%	8.0%	
% of Total	2.9%	4.0%	1.2%	
Total	721	837	263	1,821

Shock - Orange County did not rise from the last report!

It might be useful to know where and when the alcohol bike collisions took place to better address any issues in those areas.

Spoiler alert: Not all alcohol related bike collisions are due to intoxicated motor vehicle operators!



Shown here are the ages of people killed and injured in bike collisions on RT-1 in the 3 County area.

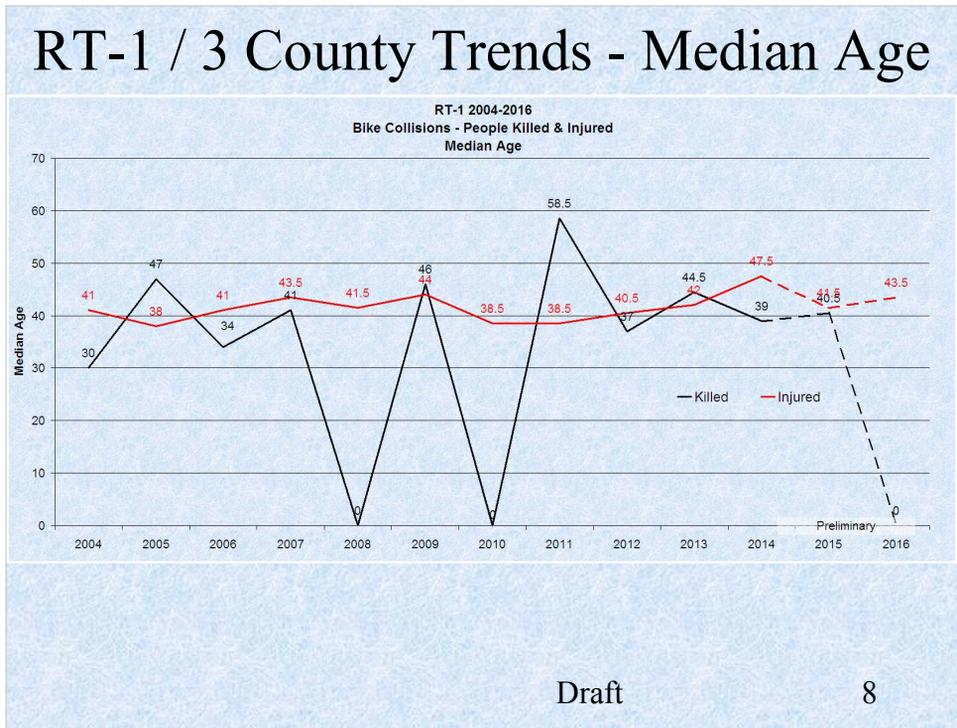
This measurement reveals the ages most likely to be involved in a bike collision based on these past collisions.

Better education and skills targeting the ages before they are likely to be involved in a bike collision, would be a great countermeasure to poor skills or habits learned "on the street corner". In this case, pre- and early teens are the best to design materials for. In this light, it might be a better idea to target materials at this age level and train the parents!

Parents would also do well to learn and teach their children safe riding practices.

It appears that the earliest ages would benefit from some riding education - materials developed for this effort should be designed with this in mind. Those at an early age could be in car seats, strollers, being carried or towed on bikes, sloppy reporting, or a combination of all.

Safety and education advocates should take note and target their material accordingly.



Shown here are the median age of people killed and injured in bike collisions on RT-1 in the 3 County area.

Is increasing age related to increasing chances of a serious bike collision?

The median age trend is increasing for both types of collisions leading to the above question.

The age trend for fatalities appears positive despite current appearances due to no fatalities for 2016 in this update. This could signal more older riders being killed, or younger riders avoiding their demise on 2 wheels.

The age trend for injuries is also increasing.

Are older riders forgetting how to ride safely?

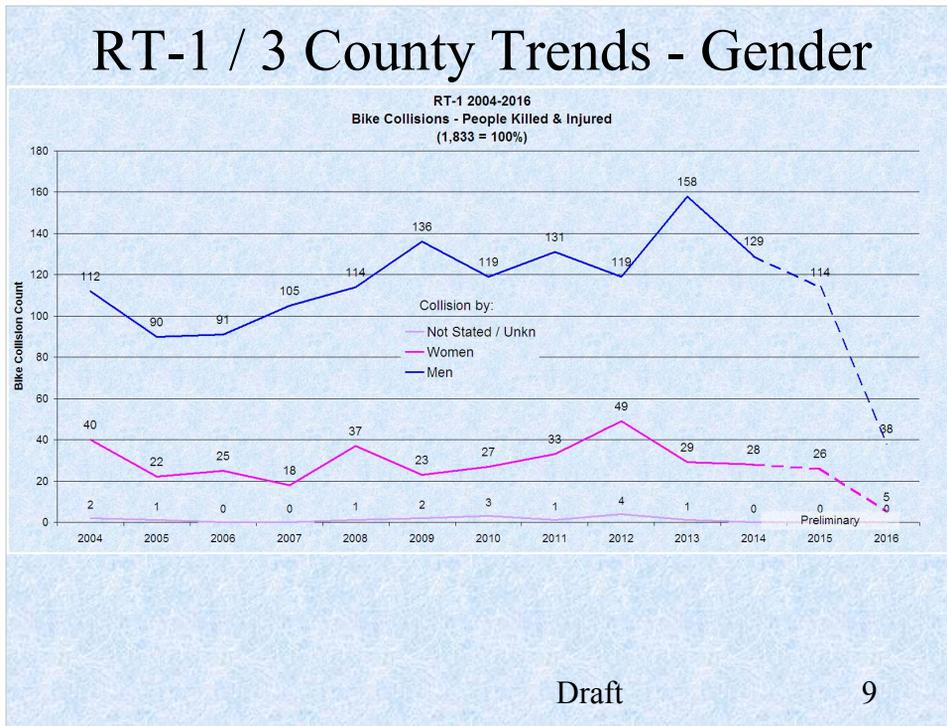
Are riding situations too demanding requiring reflexes they no longer have?

Average median age for people killed in bike collisions was 32.

Average median age for people injured in bike collisions was 41.

If the median age decreases, then fewer older riders are having collisions, and/or a greater number of younger riders are entering the mix.

This measurement can be used to better understand the target market for education efforts; ie: are they getting older, younger?



This shows bike collision counts for men and women (boys and girls), and those otherwise identified.

This helps detect trends and provide measurement to education efforts.

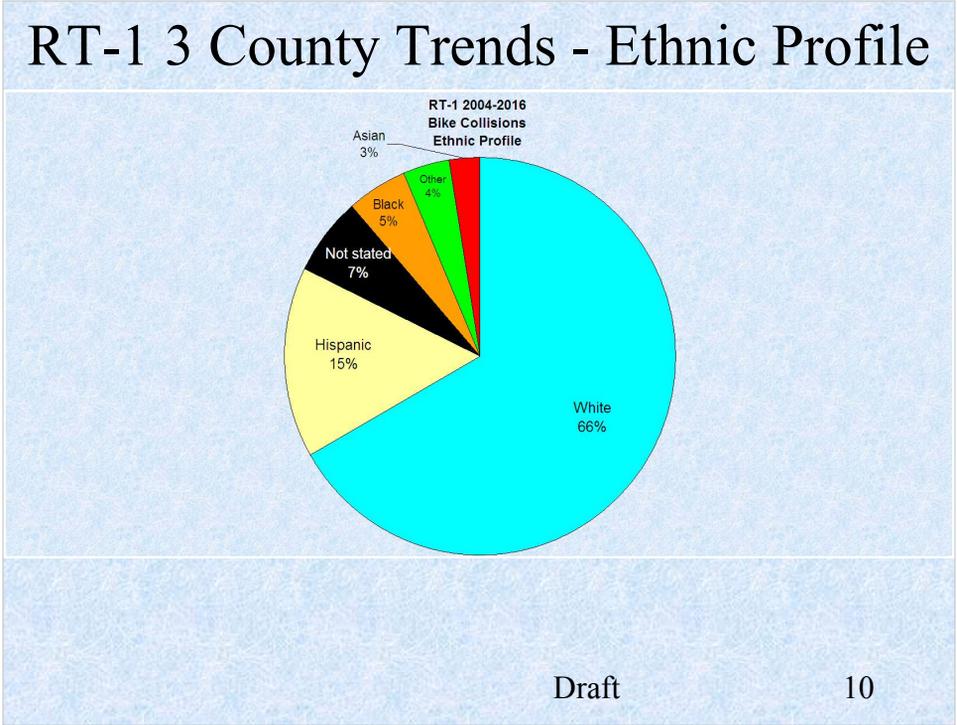
None of the trends look encouraging, except for those otherwise identified since data is still in-flowing for 2014-2016.

Of note here is that the rate of decline for men is sharper than that for women. The slight decline for women indicates a stronger need for education efforts tailored for women so they may better avoid collisions.

This measurement can also be used to track the effectiveness (or not) of education efforts so that course correction can be made to deliver the best material or information possible.

Since men form the greater percentage of bike riders, it's intuitive that they should be involved in more collisions, yet the rate of decline appears greater than that for women. Why should this be?

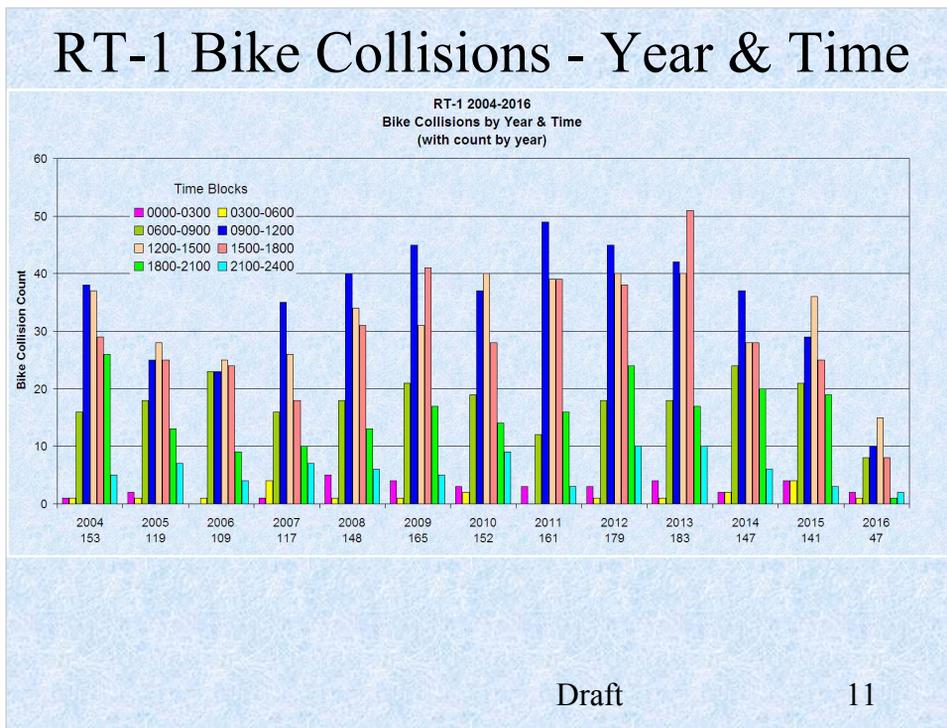
Effective awareness of the root causes of these collision will reduce rider collisions, and reduce associated costs responding to them.



The ethnic profile of people killed and injured in RT-1 bike collisions is shown here.

This measurement is useful to better target educational materials to select demographics, and to track changing demographics in the cycling environment.

All percentages remain unchanged from the last overview.



Showing collisions over the years in 3 hour time blocks highlighting when bike collisions occur, and the over-all trend in collisions by year.

Counts for each year are provided.

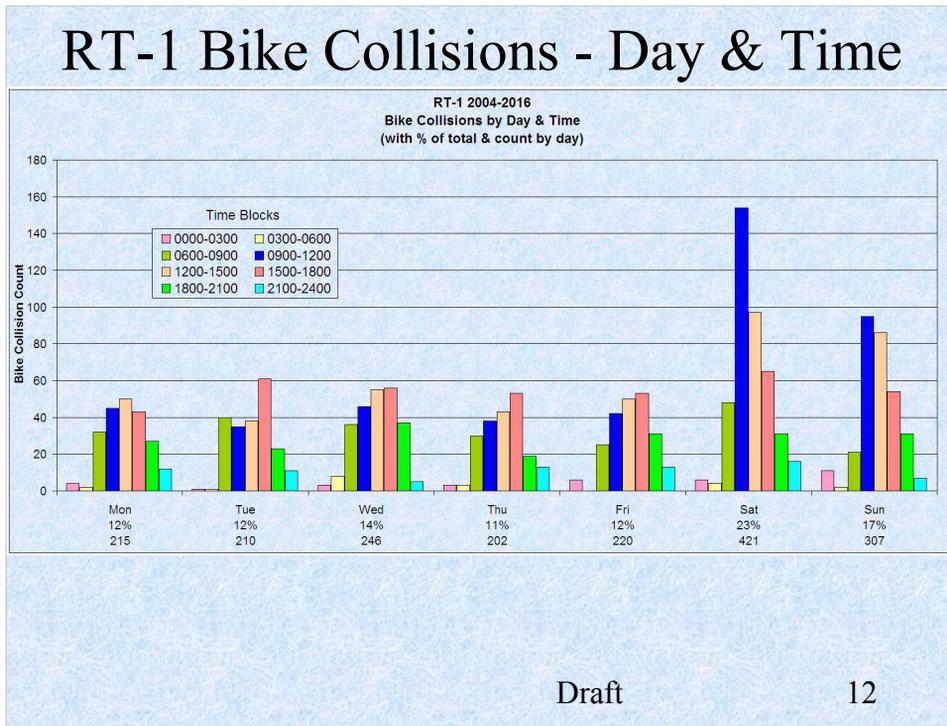
2012 and 2013 had the highest number of bike collisions (so far) culminating a steady increase year over year since 2006. 2010 saw a slight dip of but 2011 made up for that and the counts continue to increase.

From data used to compile these charts, July traditionally has the most number of bike collisions with 12.5% of the yearly total, with August and September ranking second and third at 11.4 and 10.5% respectively.

The morning hours of 9-noon seem to stand out more than others over the years.

The time of collisions appears consistent throughout the years with the notable exception of 2013 and possibly 2015. This could indicate higher traffic volumes and an opportunity to identify weak spots in safety during those times.

Data is still in-flowing so expect 2014-2016 to show more increases.



Showing aggregated bike collisions over the week in 3 hour time blocks highlighting when bike collisions occur, and the over-all trend in collisions by day with counts and percentages provided.

The most dangerous day to ride the PCH in the 3 County area is on Saturday, with most collisions happening between 0900 and 1200 in the morning.

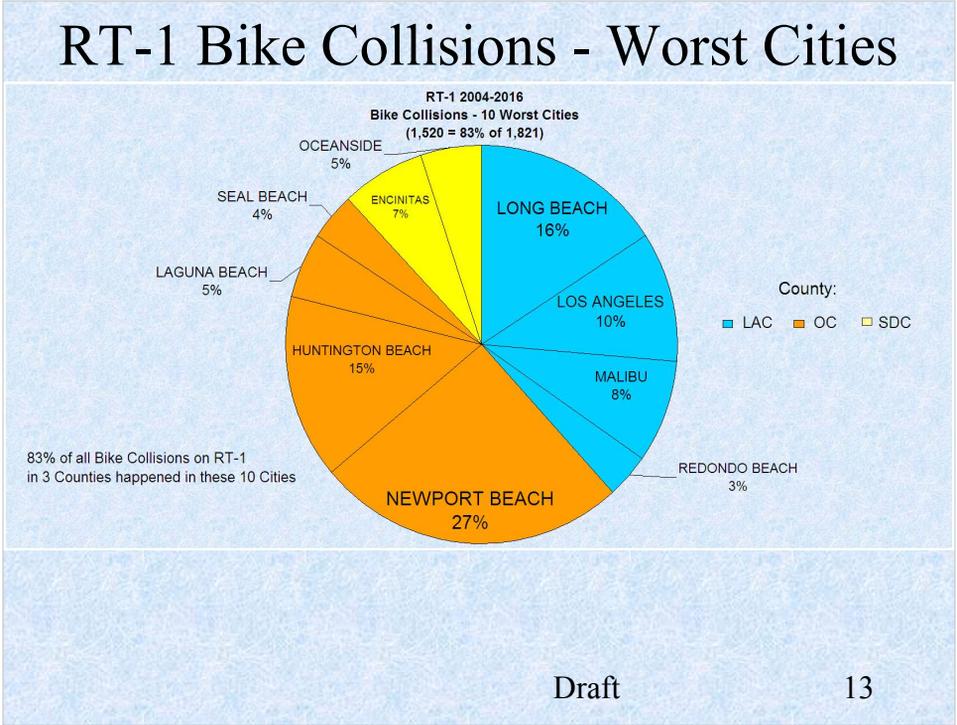
This is an amazing revelation - almost counter-intuitive in fact.

While weekends are normally safer to ride elsewhere as compared to weekdays, the opposite is true for this roadway.

The higher amount of collisions on the weekend seems to indicate a greater amount of recreational riders than during the week, or perhaps inattentive tourists gawking at the riders they just hit.

Perhaps greater traffic enforcement actions on the weekend would help reduce roadway conflict and collisions.

If only we knew where to look...



Here are 10 Cities having the most bike collisions on RT-1 in 3 Counties.

Over 80% of all RT-1 bike collisions happen in these areas making them the "worst" to ride in safely.

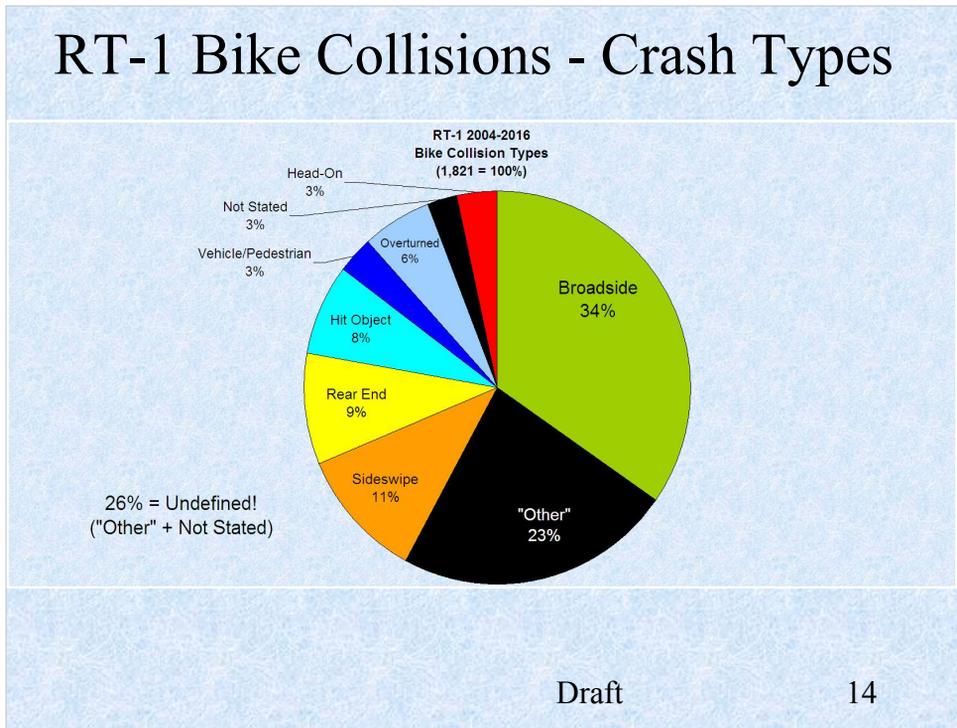
It is not surprising that the densest population areas carry a larger percentage of collisions, but that doesn't need to be the case.

Here's the bike collision counts for RT-1 in the 3 County area:

CITY	Total
LONG BEACH	242
LOS ANGELES	158
MALIBU	128
REDONDO BEACH	53
NEWPORT BEACH	391
HUNTINGTON BEACH	227
LAGUNA BEACH	81
SEAL BEACH	59
ENCINITAS	105
OCEANSIDE	76

Understanding and resolving collision causes in these 10 cities will have the greatest positive impact to the health and economy of the respective Counties.

Note: Los Angeles and Malibu combined have less bike collisions than Newport. Why?



The types of RT-1 bike collisions in the 3 Counties are shown here.

Here are the 9 defined types: Not Stated, Head-On, Sideswipe, Rear End, Broadside, Hit Object, Overturned, Vehicle/Pedestrian, and "Other".

"Other" and "not stated" remained unchanged at 23% and 3% from the last overview leaving 26% of bike collision types defined as undefined.

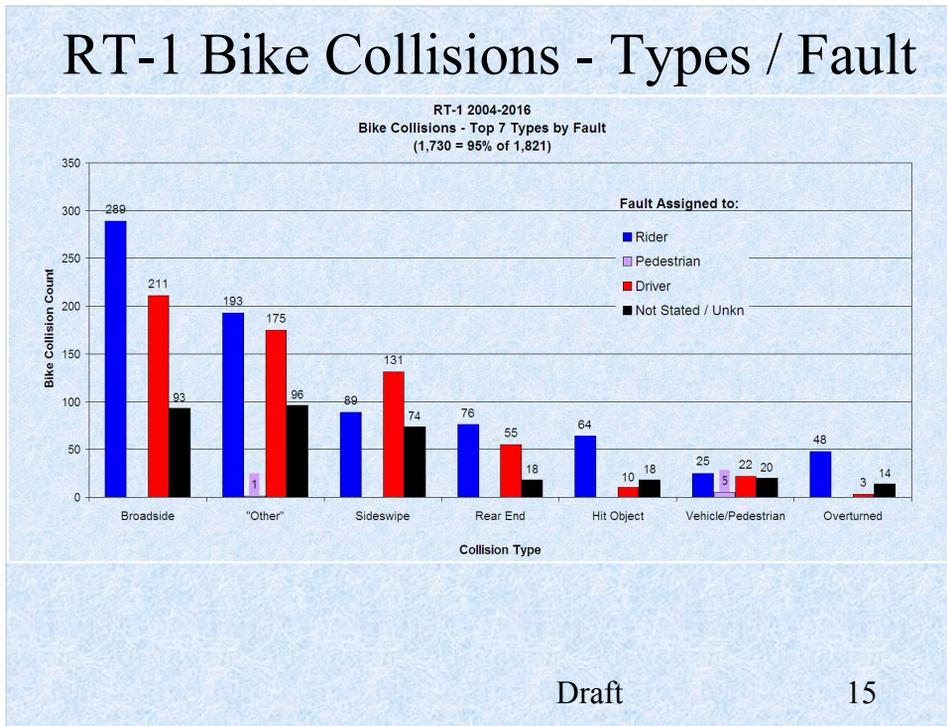
What "other" collision types could there be?

Over 23% of meaningful data being lost in this category, and with 3% "not stated", over 1/4 of collision type data is undefined - making it tough to figure out how to mitigate these types of collisions. A reduction in broadside collisions and a better definition of "other" collision types looks like a good place to start.

Could a category be matched with the primary collision factor and who was at fault? Yes!

Better documentation of the collision type would help to begin the process of mitigating bike collisions. Knowing the types of collisions riders are involved in can better help plan countermeasures to avoid them.

Comparing the types of collisions to the physical location of where they occurred may identify infrastructure issues to which effective countermeasures can be developed and measured.



This chart shows 7 (of 9) types of collisions with the highest count of bike collisions ranked (high to low / left to right) with parties at fault.

Over 90% of all RT-1 bike collisions are reflected in these 7 types.

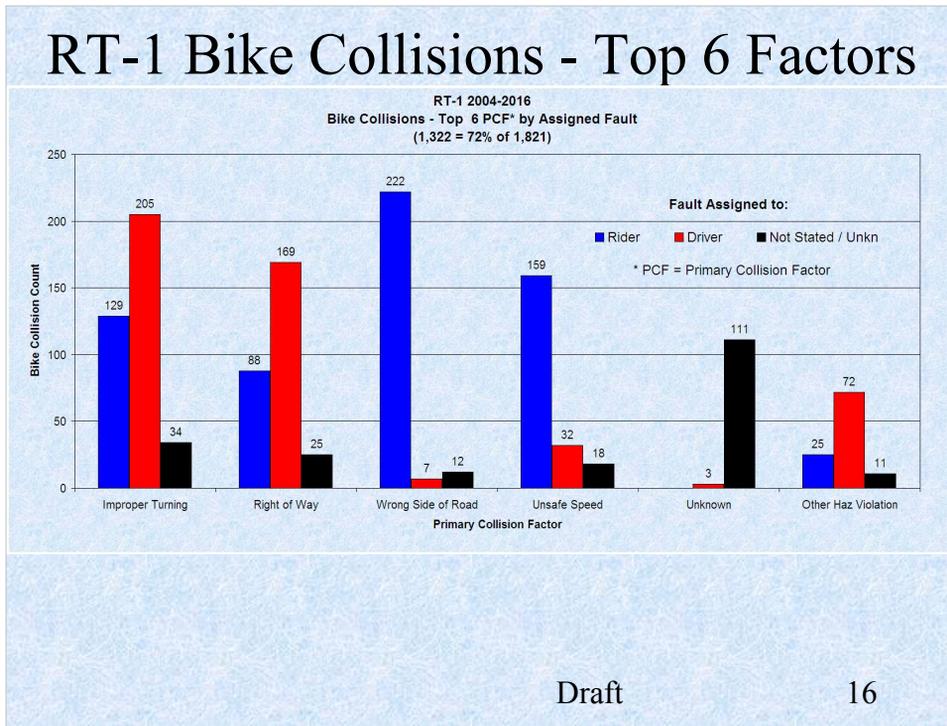
Pedestrians are responsible for a very small number of bike collisions.

Note that the 2nd highest count of collisions is under the "other" type. This represents 25.5% of useful data being undefined making it extremely tough to develop effective counter measures for these types of collisions - whatever they are. Combined with "not stated", undefined collisions rise to 28%.

If fault can be assigned, then not stating, or assigning the "other" collision type seems like a cop-out to accurately record meaningful collision reports. As the 2nd largest type of collisions on RT-1 in the 3 County area, one would expect better from the respective reporting agencies to better document how people are being killed and injured while riding their bikes. Granted not all collisions may be able to have fault determined by the investigating agencies, however the numbers reflected here seem higher than they should.

Lot's of room for improvement in this area.

Analysis of behaviors and infrastructure of these types of collisions could yield significant recommendations to increase the safety of all road users and minimize City and County expense.



6 of the 22 Primary Collision Factors with the highest count of bike collisions are illustrated here along with fault assigned for the collision. The 5th highest count of bike collisions is "Unknown" or undefined.

Given the number of PCF categories and CVC codes; the high number of "unknown, not stated" is troublesome and could indicate sloppy reporting.

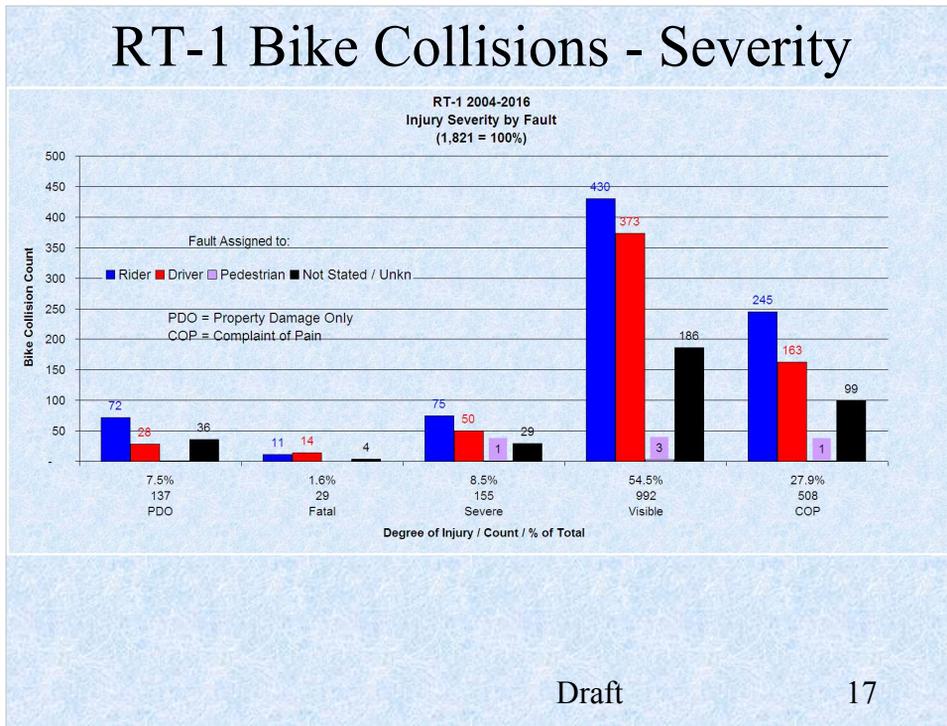
Education efforts at proper rules of the road could go a long way in reducing bike collisions.

Note that the high number of "wrong way" riders does not translate to riders actually riding against traffic as will be seen in a few slides.

From the previous chart it may be inferred that riders are broad-sided by riding opposite the direction of traffic - perhaps on sidewalks, and being hit by drivers looking left towards oncoming traffic prior to entering the roadway.

Additional analysis could reveal and confirm or refute this hypothesis.

Effectively addressing these 6 collision factors will have the greatest and most immediate "impact" on reducing bike collisions whether through infrastructure or information through educational outreach.



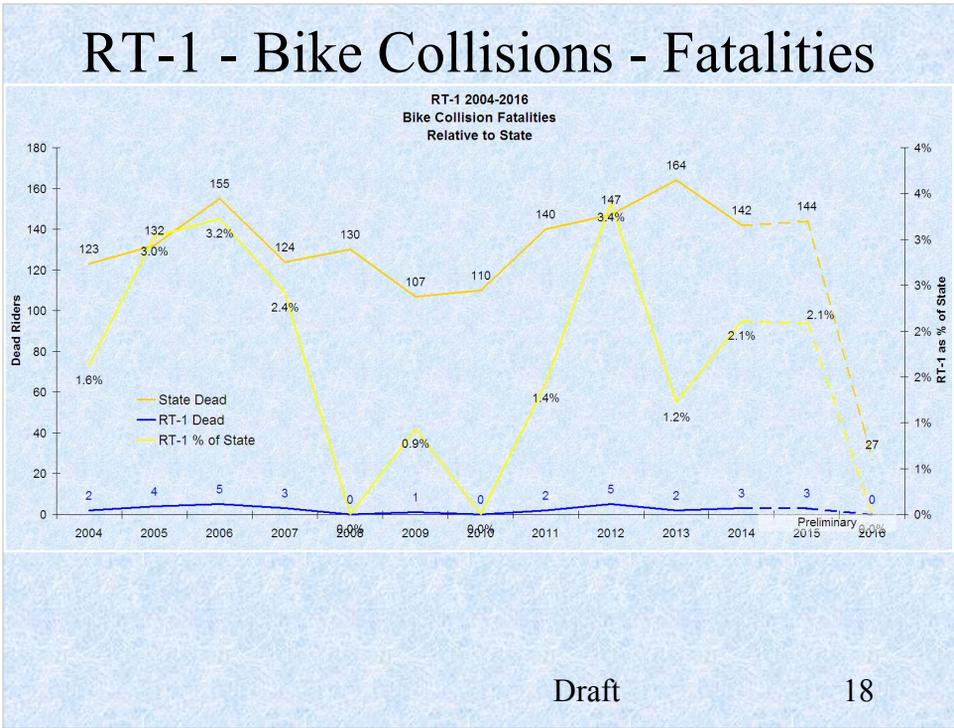
Not all bike collisions result in injury, but of those that do, the severity of injury ranges from property damage only to death.

Shown here are the degrees of injuries as well as who was assigned fault for causing them - except for the 354 or 19.4% of collisions where fault was defined as unknown or not stated.

Counts and percentages are provided.

Note: This is a count of collisions and not a sum of fatalities and injuries, thus the total count for fatal collisions is 29 while the actual sum of people killed is 30.

This is due to 2 people being killed in one collision.



This chart compares RT-1 bike collision fatalities from the 3 Counties relative to the State.

RT-1 contributed 30 or 1.8% of 1,645 fatal bike collisions in the State from 2004-2016, unchanged from the last overview, and is at the average of 1.8% for 2004-2015.

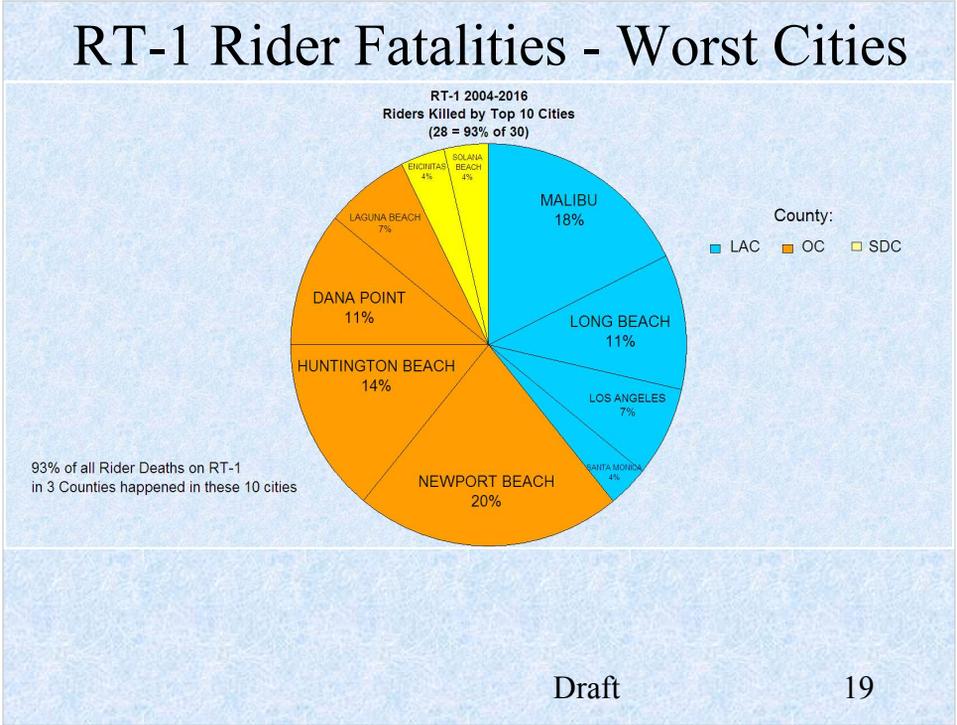
For 2016, RT-1 is running at 0% with 0 of 6 State totals.

This is 100.% below the average of 1.8% for 2004-2015 which is great.

The least RT-1 contributed over the previous 12 years was 0% of the State total in 2008 and 2010, with the maximum at 3.4% in 2012.

Understanding where and how collisions happen is a good step in reducing collision causes.

Recent news reports of additional bike collisions were not in the database at the time of download so these curves could change dramatically.

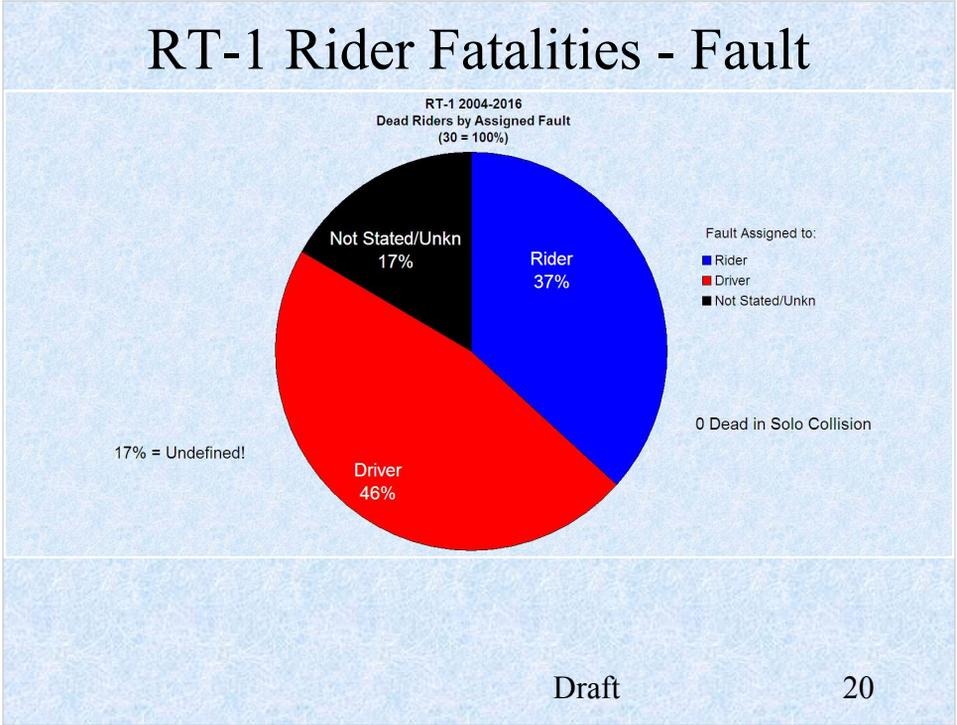


Over 90% of rider fatalities on RT-1 in 3 Counties occurred in these 10 Cities, which makes them the "worst" Cities to safely ride a bike collision free.

Here's the counts:

CITY	Total
NEWPORT BEACH	6
MALIBU	5
HUNTINGTON BEACH	4
DANA POINT	3
LONG BEACH	3
LAGUNA BEACH	2
LOS ANGELES	2
SANTA MONICA	1
SOLANA BEACH	1
ENCINITAS	1

Understanding and resolving bicycle collisions in these 10 areas will have the greatest positive impact to the health and economy of the 3 Counties.



Unlike other cities and counties, riders were not assigned the greatest fault for their demise when killed on RT-1 in the 3 County area. Drivers were assigned the greatest fault which should make fixing the causes for the collision easier since they are still around to ask.

Rider fault rose 8.8% from the last overview.

Too bad we can't ask them for their version or "the rest of the story".

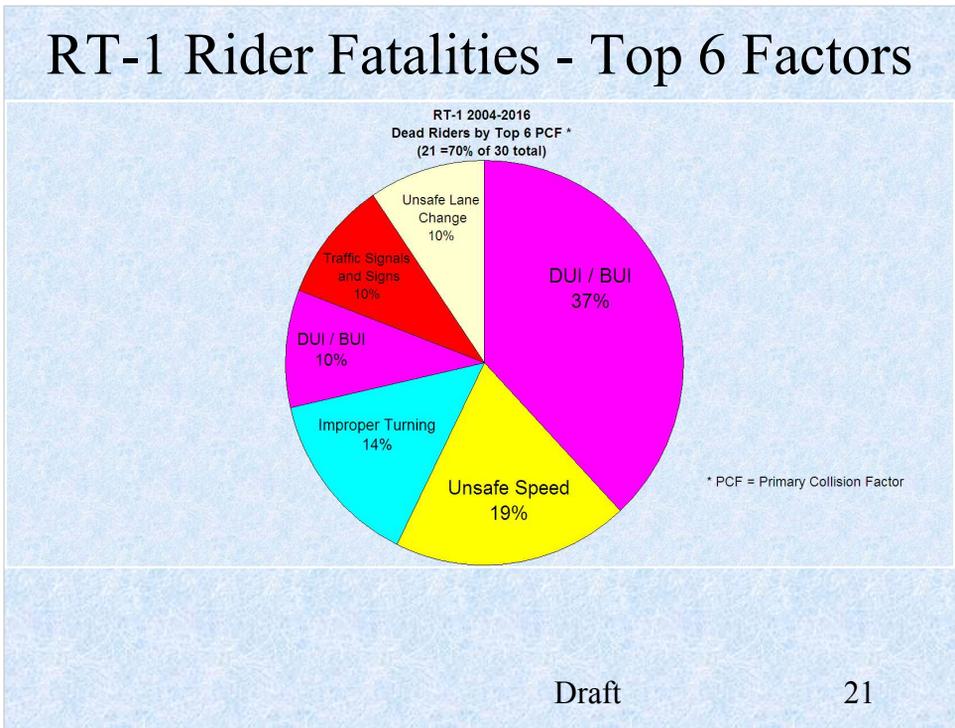
No pedestrians were at fault for fatal bike collisions on RT-1.

Driver fault fell 6.1% from the last overview.

Here's the counts:

Fault	Total	% of Total
Rider	11	37%
Driver	14	47%
Not Stated/Unkn	5	17%

Undefined fault remains unchanged at 17% which is still a big potential for a perception image problem if someone were to think that drivers are given greater leniency in the fault-for-collision category.



6 of the 22 Primary Collision Factors with the highest count of fatal bike collisions are shown here without fault assigned.

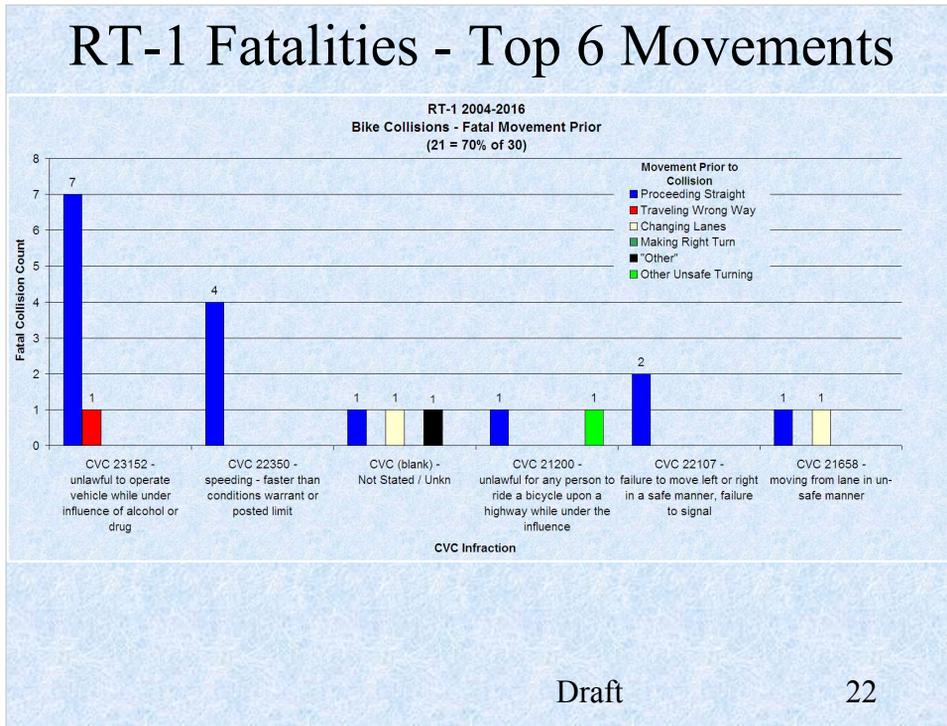
70% of all fatal bike collisions are broadly defined by these 6 factors and while not specific, these factors provide insight as to the main reasons for the collisions.

Over 1/3 are due to someone (rider or driver) being intoxicated, or under the influence of something.

These factors are derived by sorting all rider fatalities by CVC count and taking the first 6, and cross referencing the appropriate PCF code to present the picture you see here.

Since almost 3/4 of fatal bike collisions were captured by 1/4 of the available PCF codes means that effectively reducing collisions related to these PCFs will have the greatest and most immediate "impact" on reducing bike collisions whether through infrastructure or information through educational outreach resulting in cost savings and a better quality of life for all.

CVC = California Vehicle Code - - - PCF = Primary Collision Factor



The top 6 of the 18 primary movements prior to fatal bike collisions are shown here without fault assigned, with the specific California Vehicle Code (CVC) infraction by CVC code and narrative for the infraction.

These 6 categories encompass over 69% of fatal bike collisions on RT-1 within the 3 County area. Being under the influence (with someone going the wrong way), and speed were the 2 primary factors in the greatest number of fatalities.

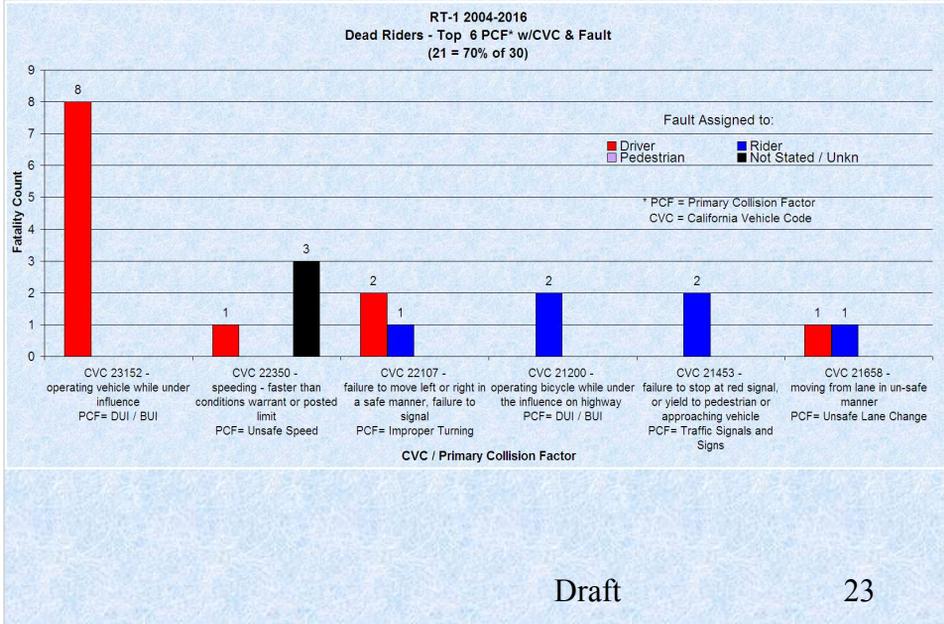
Proceeding Straight was the predominate movement prior to collision, followed by Traveling Wrong Way, Turning operations, entering traffic, and "other" or undefined.

1 fatality was due to someone "Traveling Wrong Way", being "RATS" (Riding Against Traffic) or actually traveling on the "Wrong Side of the Road" to use the appropriate PCF factor while under the influence.

Understanding the specific movements prior to collision is important to consider when examining collision contributors and mitigation design. Focusing on collision causes under these movements will help make RT-1 safer to live around and travel on.

The remaining collisions are spread out under other CVC codes, or another of the 18 prior movements and are not shown here.

RT-1 Rider Fatalities - Top 6 CVC



This chart goes one step further by showing fault assigned for the collision, and listing of the specific CVC violation code with a short description of the infraction, and its corresponding PCF.

These collision factors for fatal bike collisions are shown here because they have the highest count in decreasing order from left to right.

Drivers under the influence killed 8 riders or 26.6% of total rider fatalities, while 2 riders or 6.7% met their fate while under the influence on RT-1.

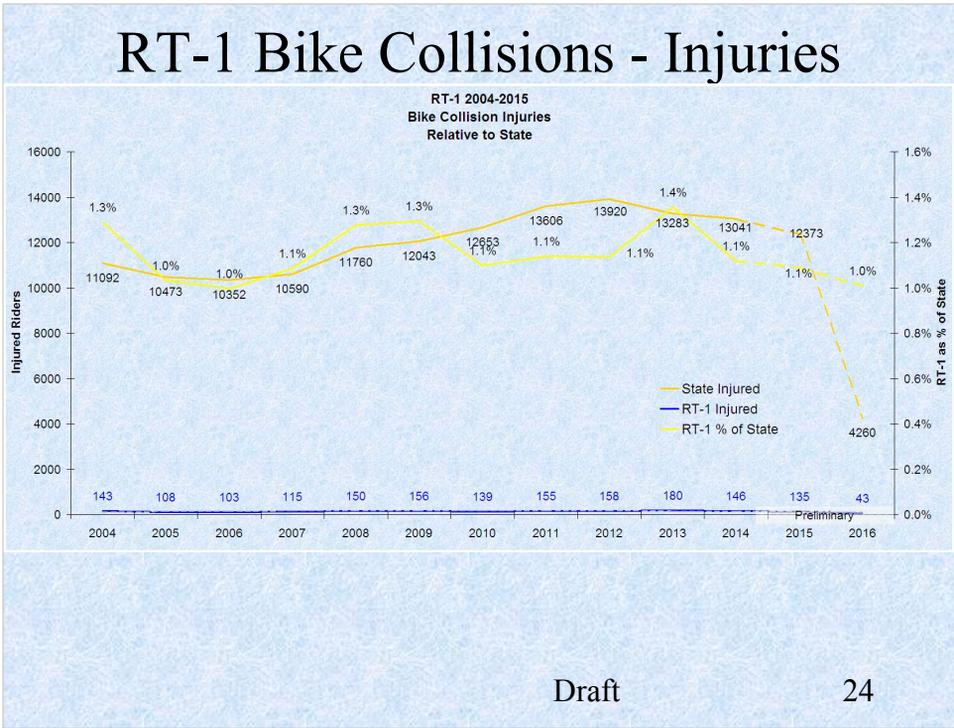
1 rider died at the hands of a speeding driver while 3 other speeding riders died without any fault being assigned to anyone, however since there were no solo fatalities, the appearance of something amiss is strong.

2 riders were at fault for, and died as a result of, running a signal or failing to yield to pedestrians or oncoming traffic, while another 5 died in maneuvering operations.

Focusing on the causes and preventions of these 6 reasons for collisions will have the greatest effect on RT-1 safety within the 3 County area.

CVC = California Vehicle Code.

PCF = Primary Collision Factor



This chart compares RT-1 bike collision injuries from the 3 Counties relative to the State.

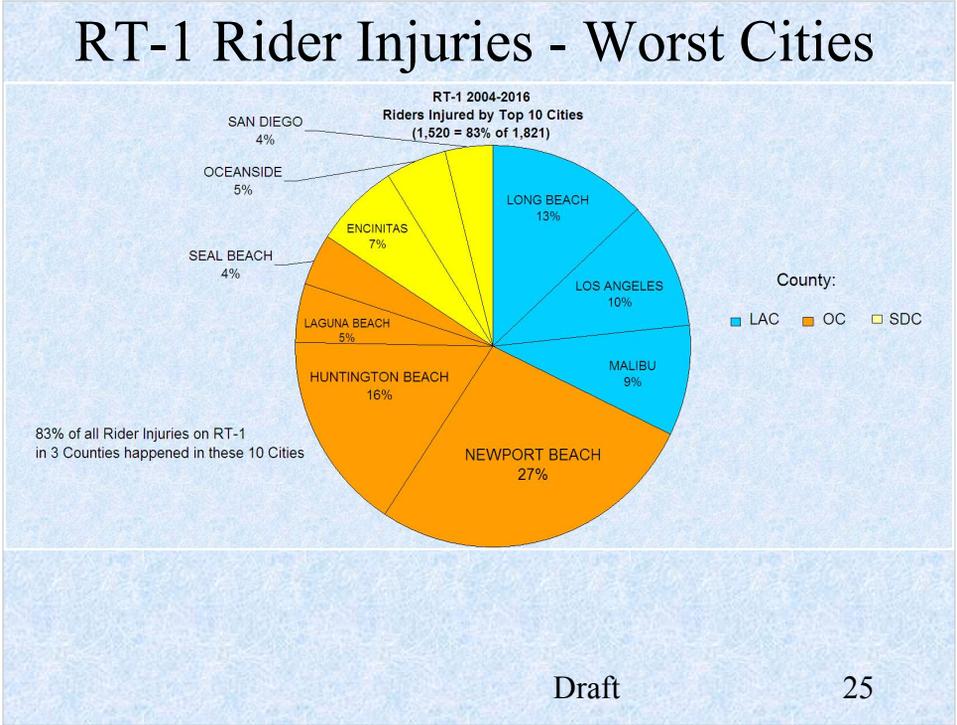
RT-1 contributed 1,731 or 1.2% of 149,446 injured bike riders in the State from 2004-2016 which is right at the average of 1.2% for 2004-2015, and has averaged ~141 rider injuries per year for that time-frame.

For 2016, RT-1 is running at 1.0% with 43 of 4,260 State totals. This is 16% below the average of 1.2% for 2004-2015.

The least the RT-1 contributed over the previous 12 years was 1.0% of the State total in 2005 and 2006, with the maximum at 1.4% in 2013.

Understanding where and how collisions happen is a good step in reducing collision causes.

Recent news reports of additional bike collisions were not in the database at the time of download so these curves could change dramatically.

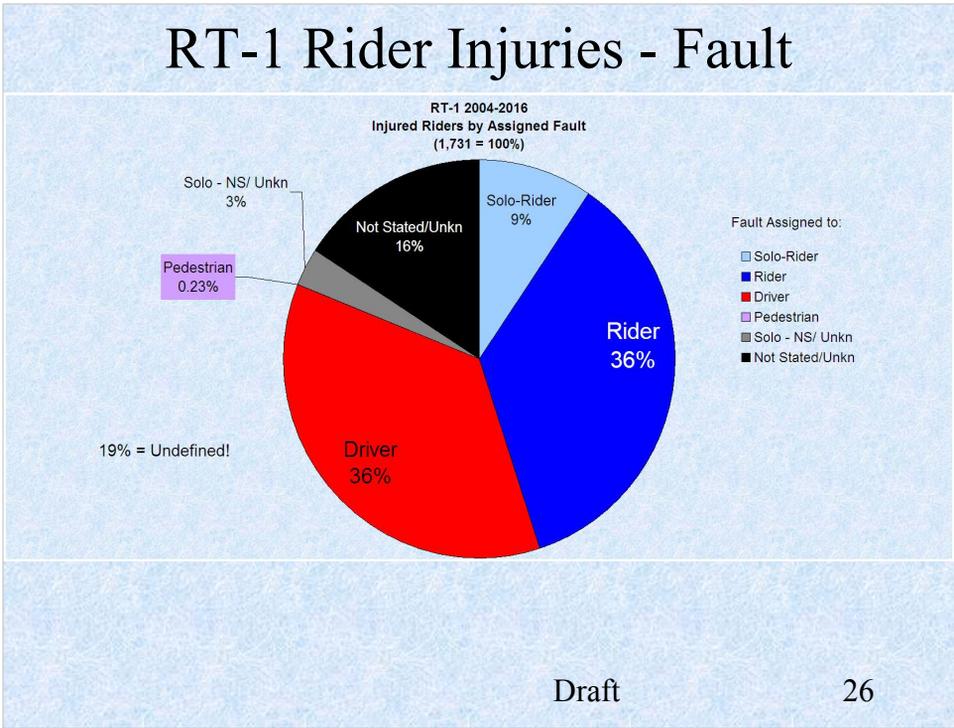


Over 80% of rider injuries on RT-1 in 3 Counties occurred in these 10 Cities, which makes them the "worst" Cities to safely ride a bike collision free.

Here's the counts:

CITY	Total
NEWPORT BEACH	391
HUNTINGTON BEACH	231
LONG BEACH	189
LOS ANGELES	152
MALIBU	129
ENCINITAS	100
OCEANSIDE	73
LAGUNA BEACH	69
SEAL BEACH	62
SAN DIEGO	57

Understanding and resolving bicycle collisions in these 10 areas will have the greatest positive impact to the health and economy of the 3 Counties.



45% of injured riders were assigned fault for the collision that injured them, however, solo falls come into greater play here.

Pedestrians were at fault in 4 bike injury collisions in the 3 County area.

This is unchanged from the previous overview.

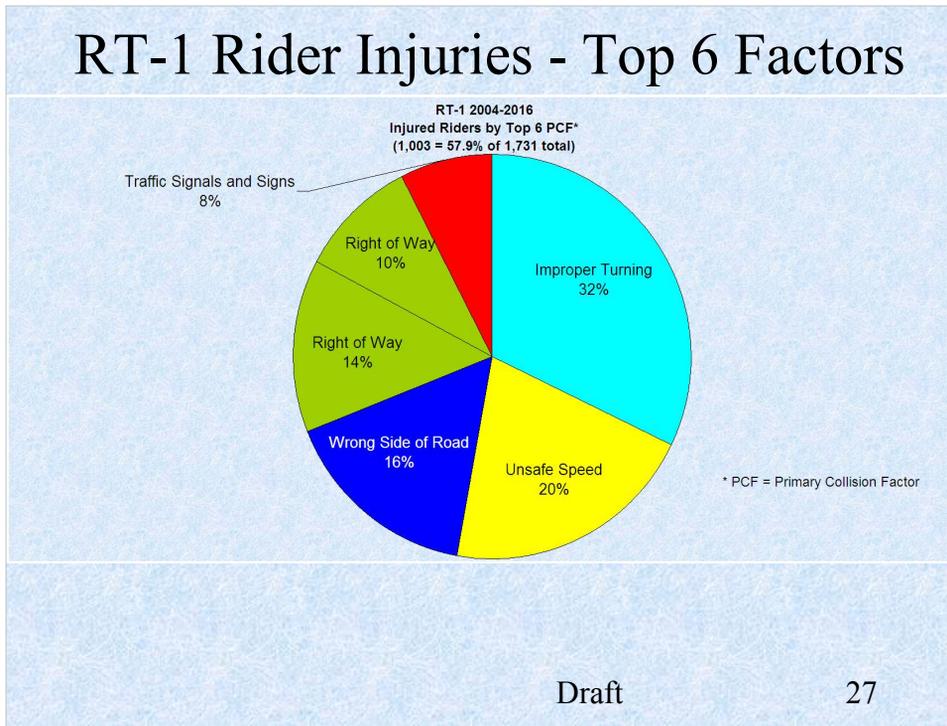
Driver fault decreased 1 point to 36% from the last overview.

Here's the counts:

Fault	Total	% of Total
Solo-Rider	162	9%
Rider	615	36%
Driver	625	36%
Pedestrian	4	0.23%
Solo - NS/ Unkn	52	3%
Not Stated/Unkn	273	16%

(Total percentages may not equal 100 due to rounding)

Undefined fault remains at 19% which is a big potential for a perception image problem if someone were to think that drivers are given greater leniency in the fault-for-collision category.



6 of the 22 Primary Collision Factors with the highest count of injury bike collisions are shown here without fault assigned.

Almost 60% of rider injury collisions are broadly defined by these 6 factors, and while not specific, these factors provide insight as to the reasons for collisions.

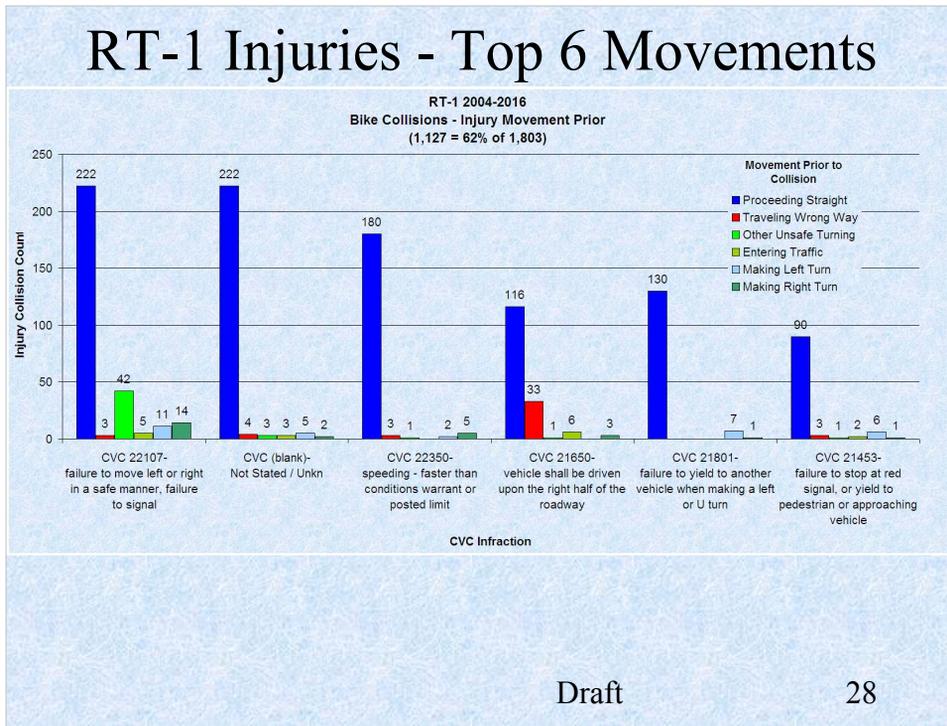
These factors are derived by sorting all rider injuries by CVC count and taking the first 6, and cross referencing the appropriate PCF code to present the picture you see here.

Since almost 60% of injury bike collisions can be captured by 1/4th of the available PCF codes means that effectively reducing collisions related to these PCFs will have the greatest and most immediate "impact" on reducing bike collisions whether through infrastructure or information through educational outreach resulting in quicker cost savings and a better quality of life for all.

Also, keep an eye on "Wrong Side Of Road".

Factors duplicated are due to different CVC citations within the same PCF.

CVC = California Vehicle Code - - - PCF = Primary Collision Factor



The top 6 of the 18 primary movements prior to injury collisions are shown here without fault assigned and the resulting California Vehicle Code (CVC) infraction by CVC code and narrative for the infraction.

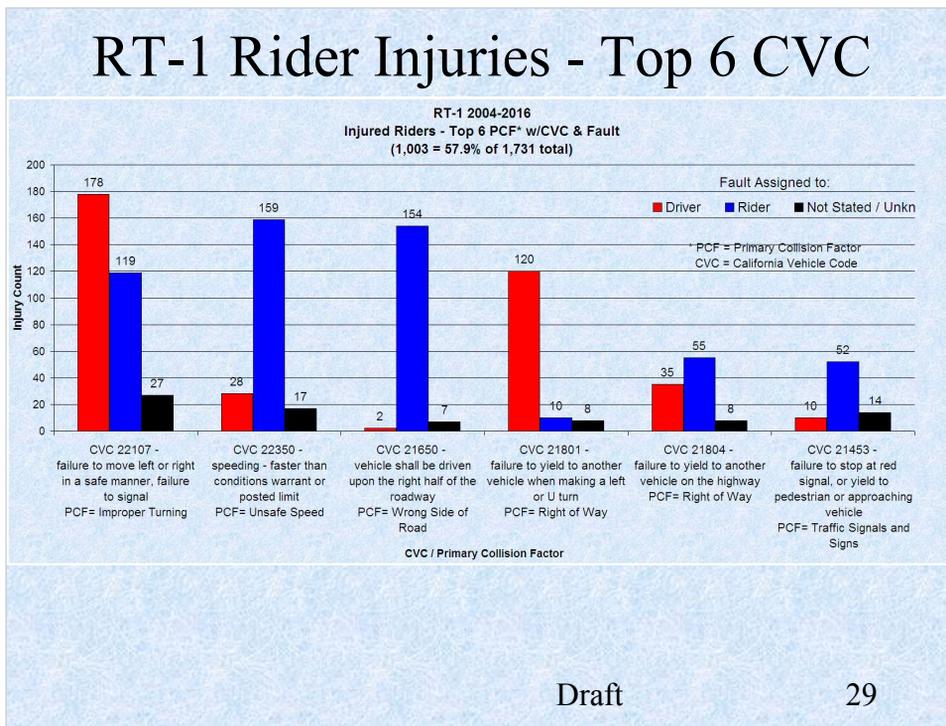
These 6 categories encompass over 50% of bike collision injuries on RT-1 in the 3 County area.

65 total injuries were due to people "Traveling Wrong Way", being "RATS" (Riding Against Traffic) or actually riding on the "Wrong Side of the Road" to use the appropriate PCF factor; although only 33 were correctly placed in the appropriate CVC code category by the reporting agency. More enforcement education needed?

The predominate movement prior to collision was proceeding straight, followed by traveling the wrong way, entering traffic, and other turning procedures.

Understanding the specific movements prior to collision is important to consider when examining collision contributors and mitigation design. Focusing on collision causes under these movements will help make RT-1 safer to live around and travel on.

The remaining collisions are spread out under other CVC codes, or another of the 18 prior movements and are not shown here.



This chart goes one step further by showing fault assigned for the collision, and listing of the specific CVC violation code with a short description of the infraction, and its corresponding PCF.

No pedestrian was at fault for any of the collisions shown here.

Being on the Wrong Side of the Road (WSR) was the 3rd leading cause of bike collision injuries. Getting riders to "go with the flow" will drastically reduce collisions because that's where drivers expect to see them, but not all "wrong side of the road" violations were riding against traffic!

As seen previously, only 33 people were correctly cited for actually traveling against traffic. Subtracting 2 drivers at fault and disregarding the 7 undefined leaves at most 31 riders to have valid fault for the collision. With 154 bike riders at fault under the WSR collision factor, the percentage works out to 20% of citations being written against riders actually riding on the wrong side while 80% are not. Effective enforcement should have these percentages reversed at a minimum, so education of riders must be accompanied by education of enforcement agencies.

Focusing on the causes and prevention's of these 6 reasons for collisions will have the greatest effect on RT-1 safety within the 3 Counties.

What of the other 123 (80%) of 154 riders cited for "WSR" that were actually riding in the correct direction? What was the real cause for their injury?

WSR = Wrong Side of road

CVC = California Vehicle Code.

PCF = Primary Collision Factor

**Bike Collisions
on the
Pacific Coast Highway
(RT-1)
3 County Overview:
Los Angeles, Orange, San Diego**

2004-2016

End Slide

Draft

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Methodology and caveats are available separately.

Additional detailed analysis of items in this presentation are also available, or can be tailored to specific requirements for any City or County in the State of California. Collisions may be examined down to the minute.

The apparent disparity of fatalities and injury totals between some slides is due to some combining the two while others report them separately; also some use counts while others use sums to provide greater perspective and insight. Also, some report totals for bike riders only while others report totals for all parties.

For clarity: there were 34 additional injuries which were not bike riders, pedestrians, or motor cycle riders.

The other 34 injuries were drivers and/ or their passengers involved in collisions with bike riders, or the passengers of bike riders (ie:kids in kid seats, trailers, tandem stoker, etc...).

Thank You