Submission to the Office of the Chief Coroner regarding the Inquiry into Bicycling Deaths in New Zealand

Revised and updated
for the Christchurch Hearing

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“Cycling is a great way to get around and a sport enjoyed by more than a million New Zealanders.

“If only three in 100 people took up cycling instead of driving, New Zealand would save more than 1 billion dollars per year! Cycling is the pollution solution that improves your health, increases your productivity at school or work, and enhances the safety of your community.” - Introduction, NZTA's Official Road-Code for Cyclists

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1) Acknowledgements

I would like to thank the Office of the Chief Coroner for seriously considering the issue of bicycling fatalities in New Zealand, and extend my thanks for the opportunity to contribute to this inquiry.

I would also like to offer my thoughts and prayers to those who have been affected by the incidents that have brought about this inquiry: Those whose lives were cut short, their friends and families who will remember them, and everyone else whose lives have been forever changed by these tragic and untimely deaths. My thoughts and prayers are also with all of those who have been lucky enough to not be directly subject to this Coronial Inquiry, but whose lives were nonetheless traumatically changed from a crash.

2) Background and motivation for writing a submission

Prior to moving to New Zealand in 2007, I have accumulated a wide range of experience in the US. This includes several years as a volunteer and paid Emergency Medical Technician (EMT, or "medic" in NZ English) with multiple state and national certifications, during which time I attended countless motor vehicle crashes and fatalities. I had the opportunity to receive CEVO (Certified Emergency Vehicle Operator) training and certification, in addition to several defensive driving courses.

My experience in transportation includes about one million kilometres of behind-the-wheel driving experience with no collisions or offences. This experience includes nearly every type of vehicle from personal cars and motorcycles to emergency vehicles and box trucks with trailers. Additionally I have several years of experience with rail and inter-modal freight, during which time I received additional safety training and experience related to land transport.

I've been car-free since moving to Wellington in 2007. Since 2008 my primary means of transportation has been a bicycle. This has proven to satisfy my local transportation needs and has improved my health and quality of life. I've been published in **Chainlinks**, the quarterly magazine of CAN (Cycling Advocates' Network) and I've been invited to write regularly for cyclingwellington.co.nz.

I have recently completed instructor courses to teach the NZTA approved "Bikeability" safety training at grades 1 & 2, and I hope to continue my training with a grade 3 instructor course.

3) Limitations of this submission

I am grateful for the opportunity to share my expertise, experience and opinions on the topic of bicycle safety (and in many ways, the broader topic of road safety). I hope that someday New Zealand will lead the world in bicycle safety, or at least move up a few notches on that list. This submission is my attempt to transfer some of my knowledge and experience of bicycling and road safety to the Coroner's Inquiry; to that end, it can only fail miserably. My writing skills are not up to the task of putting you in my shoes, or fully sharing with you the reasons I ride (the good), and my concerns while riding (the bad).

I ride a bike almost every day of the year, and I appreciate that to someone who does not ride as often or as confidently as I do, my views may seem odd, counter-intuitive, or just plain wrong. I would like to encourage the Coroner to use this submission as a starting point; to investigate further the suggestions made; to take an on-road bicycle safety course such as Bikeability grade 2 or 3, or one of the bike/bus driver workshops.

It's exciting to think that I may be able to influence the outcome of this inquiry, but "exciting" also

hints at an element of fear; there is a possibility that the hearings will lead to recommendations that, despite the best intentions of the Coroner's Office, will make bicycling in NZ less safe. I hope that the Coroner will do everything reasonable to not just listen to what bicyclists have to say, but as much as possible to step into bicyclists' shoes and really understand what it's like riding a bicycle on New Zealand's roads; the good and the bad. Only then can proper conclusions be reached, and proper recommendations made.

4) "Bicycle Safety" or "Road Safety"?

It may be implied by this submission that I have strong opinions regarding "bicycle safety". While this is true, and there are actions which would directly benefit bicyclist's safety, my perspectives as a bicyclist are also shaped by my experiences as a pedestrian and a motorist. is the more inclusive concept of "road safety", of which we are all beneficiaries. Education and infrastructure for ALL road users is needed to improve on-road safety.

5) Why do people ride bicycles?

In considering any "solutions" that affect those who bicycle, it must be understood that different people have different reasons for bicycling, and thus different conditions under which they bicycle. Some people ride exclusively on sealed roads, while others put their bikes on a car-rack and drive their bikes to an off-road park. Some people ride to save money, while others ride because they can't afford alternatives. Some people ride to enjoy nice weather and sunshine, while others ride every day and night of the year. Some people ride competitively, while others ride for recreation. Some people ride to stay in peak health, while others ride to improve poor health. Some people ride simply because they enjoy it, while others ride as a means of transportation. All of these varied reasons, and others, motivate people in New Zealand, and all around the world, to ride bicycles; and all of these people call themselves bicyclists.

Considering the varied motivations, budgets, lifestyles, abilities and goals of different bicyclists it must be understood that there is not likely to be a "one size fits all" approach to bicycling, nor to bicycling safety, nor "solutions" for many bicycling problem. It is therefore essential that recommendations acknowledge these different types of bicyclists.

It should be noted here that I use a bicycle primarily for transportation, I ride almost exclusively on sealed roads, day and night, all year round, and this will necessarily influence my observations, opinions, and suggestions.

6) Is bicycling dangerous?

Implicit in a Coronial Inquiry into bicycling deaths is the notion that bicycling is dangerous. In the ten years from 1998 through 2007 there have been 135 bicycling deaths (NIQS) or about 13.5 deaths per year.

It must be acknowledged that **ALL** modes of transport have inherent hazards and risks. The risks are often overlooked and very often poorly assessed: We all know, academically, that commercial air travel is one of the safest modes of transport, but many people don't really understand that they are about 1000 times more likely to be killed while driving to the airport than to be killed during a commercial flight[1] (although here in New Zealand, one is more likely than that to die while driving to the airport).

It is my assertion that bicycling is not dangerous; **the dangers of not riding a bike actually**

1 http://www.cotf.edu/ete/modules/volcanoes/vrisk.html

outweigh the dangers of riding a bike. In fact it has been documented in several peer reviewed studies (with more being published quite frequently) that the health benefits of bicycling far outweigh the risks of bicycling.

> *"Compared with car users the estimated annual change in mortality of the Barcelona residents using Bicing (n=181 982) was 0.03 deaths from road traffic incidents and 0.13 deaths from air pollution. As a result of physical activity, 12.46 deaths were avoided (benefit:risk ratio 77)."* - **The health risks and benefits of cycling in urban environments compared with car use: health impact assessment study** – *BMJ 2011;343:d4521*
>
> It should be noted that the above study's findings show a **benefit:risk ratio of 415** if we look only at traffic deaths and exclude deaths related to air pollution, and bicyclists in Barcelona are not required to wear helmets or hi-viz.

"*For the people who shift from car to bicycle use for short trips, we estimated that the beneficial effect on all-cause mortality rates of the increased physical activity due to cycling is substantially larger (relative risk, 0.50–0.90) than the potential mortality effect of increased inhaled air pollution doses (relative risk, 1.001–1.053) and the effect on traffic accidents (age-specific relative risk, 0.993–1.020). The estimated gain in life expectancy per person from an increase in physical activity ranged from 3 to 14 months (*Table*)* 6*. The estimated life expectancy lost because of air pollution (0.8–40 days) and traffic accidents (5–9 days) was much smaller. On average, the benefits of cycling were about 9 times larger than the risks of cycling, compared with car driving for the individuals making the shift... The estimated number of life years gained still exceeded the losses when the lowest estimate for physical activity was compared with the highest estimate for air pollution and traffic accidents (benefits/risks ratio of 2).*" - **Do the Health Benefits of Cycling Outweigh the Risks?** - *www.ncbi.nlm.nih.gov/pubmed/20587380*

> *"On Leisure time physical activity was inversely associated with all-cause mortality in both men and women in all age groups. Benefit was found from moderate leisure time physical activity, with further benefit from sports activity and bicycling as transportation."* - **All-Cause Mortality Associated With Physical Activity During Leisure Time, Work, Sports, and Cycling to Work** - *www.ncbi.nlm.nih.gov/pubmed/10847255*

"*There is evidence of increased accident risk per cycling-km for cyclists wearing a helmet. In Australia and New Zealand the increase is estimated to be around 14%. The introduction of a bicycle helmet law in these countries has additionally lead to a reduction of cycling-kilometers of 22%.*" - **Making Vision Zero real: Preventing pedestrian accidents and making them less severe** - The Institute of Transport Economics , Norweigen Centre for Transport Research report 889/2007 - https://www.toi.no/getfile.php/Publikasjoner/T%D8I%20rapporter/2007/889-2007/889-2007-nett.pdf

While bicycling is actually a safe and healthy activity that contributes to longevity, improved health and quality of life, there are nonetheless actions which can make it even safer. It is these issues on which the rest of the submission will primarily focus.

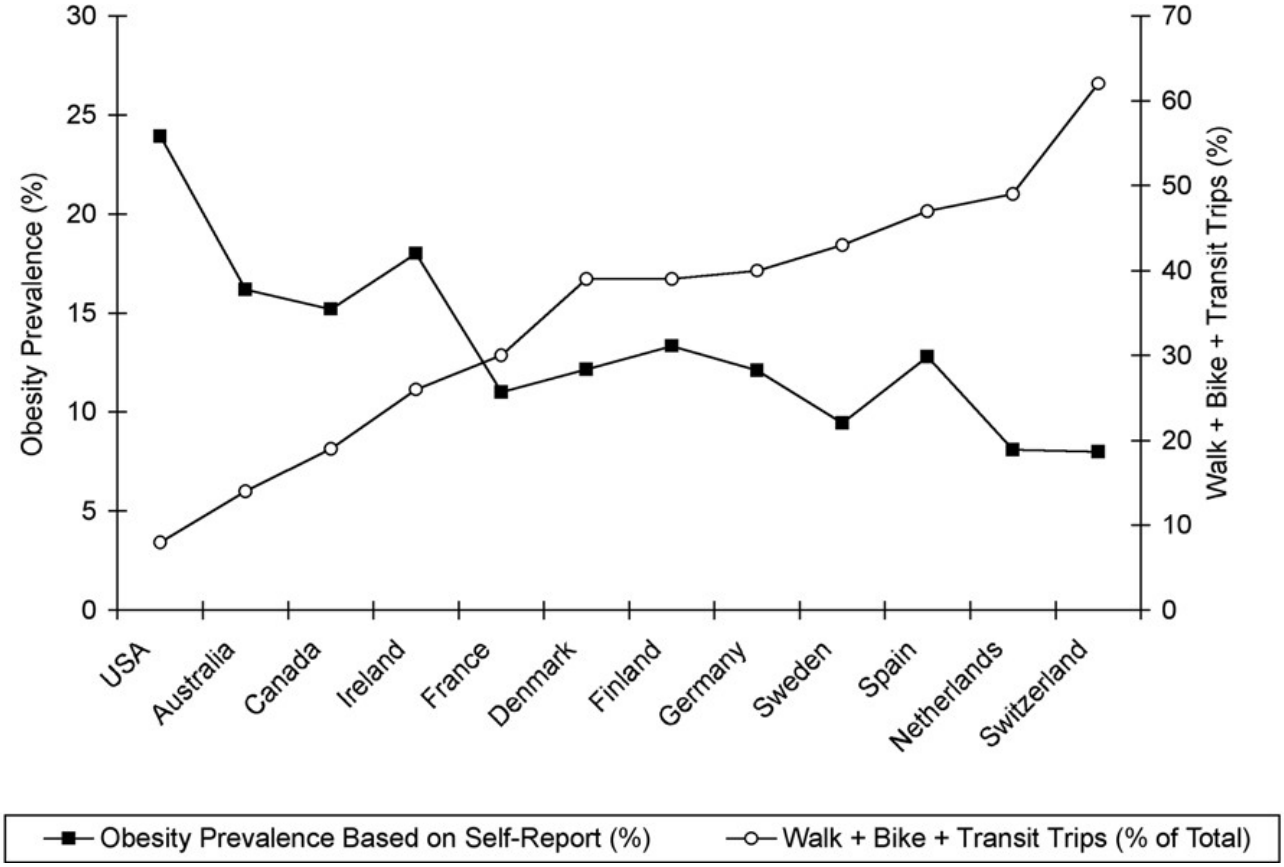
7) Why and how should we encourage bicycling?

7.1.1) Health

New Zealand does not have an epidemic of bicycling deaths. In fact 2012 saw only two bicyclist fatalities[2]; this improved on 2011's seven bicycle fatalities which is already about half of what would be considered “normal”.

So there's no epidemic of bicycling fatalities: What concerns me is New Zealand's epidemic of obesity[3], heart disease[4], diabetes[5], and other ailments that are directly caused by, or exacerbated by, sedentary lifestyles. Intuitively, and supported by more and more research, diseases of sedentary lifestyles are becoming the biggest dangers to health and life in modern society. Active transportation such as walking and bicycling have been documented as among the best ways of preventing and even reversing these types of diseases.

It's sad when the fear of an unlikely event (eg, being injured or killed on a bicycle) promotes behaviour that makes a comparably dangerous event (eg, heart attack or stroke) more likely, but this is frequently becoming an unintended consequence of “making things safer”.



Graph from:

http://cyclingwellington.co.nz/2011/09/critical-mass-for-health-and-safety/

2 http://www.nzta.govt.nz/resources/road-deaths/toll.html
3 http://www.health.govt.nz/our-work/diseases-and-conditions/obesity/obesity-key-facts-and-statistics
4 http://www.heartfoundation.org.nz/know-the-facts/statistics
5 http://www.stuff.co.nz/marlborough-express/news/community-papers/5829717/Managing-the-diabetes-epidemic

http://www.8-80cities.org/Articles/Walk%20Bike%20Obesity%20Rates.pdf

7.1.2) Economics

New Zealand's largest imports, by dollar amount, according to Statistics New Zealand, is "petroleum and petroleum products" (#1) and "vehicles, parts and accessories" (#3). This means that New Zealanders are working hard to pay for fuel (a consumable) and cars (depreciating assets).

Internationally and here in New Zealand, bicycle infrastructure projects typically have a price tag orders of magnitude lower than comparable roading projects, and an ROI several times higher; well planned bicycling infrastructure often has a BCR more than an order of magnitude higher than car-centric infrastructure.

Although it seems out of scope, I will comment since the issue has been raised during the course of the inquiry: ***Who pays for bicycle infrastructure?*** It should be no surprise that we all do, since we all pay for roads, we all pay for footpaths, we all pay for libraries and hospitals, etc. We would no sooner charge bicyclists for bike paths than we would charge pedestrians for footpaths. In fact most motorists in New Zealand do not pay to use the roads. There is a common misconception that motorists pay for roads, but in fact we all do. New Zealand motorists pay a "fuel excise tax" that effectively serves as an emissions tax (thus bicyclists are already paying their fair share: zero). Operators of diesel vehicles and operators of heavy vehicles do pay a "road user fee" but this is the exception, and it does not give them any right to the road beyond what is afforded to all other road users, including pedestrians. The "road user fees" and "fuel excise taxes" are pooled into the National Land Transport Fund (NTLF) which typically covers about half the cost of roading projects, the difference coming from general taxation (GST, PAYE, rates, etc). The NTLF also subsidizes public transportation and some active transport projects, all of which benefit motorists and the general public by reducing congestion, reducing emissions, reducing demand for road-space, reducing wear and tear of roads, etc.

Where would the money for bicycle infrastructure come from? The money is already there, but it's being spent on roads that will barely reach an BCR of 1:1. World class bicycling (and walking) infrastructure projects with high BCRs can be completed for a very small percentage of the billions of dollars that are currently being squandered on "big roads" projects (and with long term oil prices only going up, who will be driving on those big roads in 10-20 years?). **We're not lacking money to fund world-class bicycle infrastructure and training programs**, we're lacking political will to spend the money on something that a lot of people consider "weird", only benefits "them", and it's not clearly presented how these projects benefit society.

> ***"For the equivalent cost of a single mile of freeway, we have a bike infrastructure."*** **- Portland Mayor, Sam Adams[6]**
>
> Portland is consistently ranked among the top ten US bicycle-friendly cities.[7] [8] [9]

More people on bicycles (and more people walking and taking public transport) means less people in cars. Less people in cars means less time in traffic, less wear and tear on the roads, less money exported for fuel and cars, less traffic injuries and fatalities, improved health and improved quality of life, etc.

An important question that few people think to ask: *Who pays for traffic crashes, obesity, diabetes,*

6 http://www.politifact.com/oregon/statements/2011/mar/19/sam-adams/portland-mayor-sam-adams-says-portlands-spent-its-/
7 http://www.bicycling.com/ride-maps/featured-rides/1-portland-or
8 http://intelligenttravel.nationalgeographic.com/2009/11/16/portland_a_top_bikefriendly_ci/
9 http://www.bicycling.com/news/featured-stories/bicyclings-top-50

heart disease, etc? Again, the answer in New Zealand is that we all pay.

7.1.3) Environment

Encouraging the use of bicycles for transportation not only helps New Zealand cut carbon emissions, it also reduces pollutants that contribute to asthma and other repository diseases, especially in cities. The reduced use of cars further decreases pollution related to processing, transporting and storing fuel, and disposal of motor vehicles.

7.1.4) Peak oil

Whether we like it or not, our civilisation is on the cusp of peak oil. The longer we ignore this fact and fail to prepare for the "other side" of the peak, the longer we will paint ourselves into a corner. While it is unlikely that we will wake up one day and find everyone walking to work, we must accept that the long term trend will be higher fuel costs. Pragmatically, rising fuel costs will simply serve as a motivation for people to find alternatives to driving a car. This fact has been addressed by Parliament ("The next oil shock?" Parliamentary Research Report, 2010) but action is desperately lacking. As fuel costs rise, public transportation, walking and bicycling will displace significant percentages of our current car-centric transportation, but the New Zealand Government is not preparing for this inevitability. The more we prepare (education, infrastructure, etc) the less disruptive this inevitable shift will be.

7.2) How should we encourage bicycling?

We don't have to reinvent the wheel to encourage bicycling. There are cities and countries around the world that have been transforming themselves into bicycling Meccas, and they are eager to tell us how it's done. In its simplest: Education and infrastructure.

7.2.1) Education

Bicycling education in school gives children the confidence and basic skills to ride a bike. As children get older, this skill set can be expanded on through further training, which serves three purposes:

1) It makes them better bicyclists
2) It makes them better pedestrians
3) It makes them better motorists

The first two points have an additional benefit of encouraging physical activity, thus reducing the risk of obesity and related health problems.

The skills that children learn in a bicycling course help generally by giving them an understanding of personal transportation, but also in many specific circumstances, eg, bicyclists know what it's like to be passed unsafely; when everyone driving a motor vehicle has on-road experience as a bicyclist, bicyclists are much safer. This may seem like a fantasy, but it's exactly how things work in the Netherlands. Dutch children have "traffic gardens" where they learn how to interact on "streets". Here in New Zealand, perhaps we should start by teaching children how to walk across a street; apparently this is a skill that many adults in New Zealand have not yet mastered.

7.2.2) Infrastructure

If we want to encourage bicycling, we need to spend money making it desirable and accessible.

75% of the people in Wellington who would like to ride a bike don't, because they don't feel safe on the road. As mentioned previously, bicycling infrastructure is remarkably affordable, has exceptional BCRs, and reduces the pressures needed to build more roads to facilitate more cars, which scares more people away from getting on a bike. The better alternative is to build more and better bicycling (and walking) infrastructure, which then encourages people to leave their car at home, which helps more people feel comfortable walking and bicycling while taking pressure off the demand for “more roads”.

7.3) Growing pains

As new bicyclists (especially adults without recent experience or training) discover the benefits of bicycling, we can expect to see periods of conflict between bicyclists and other road users. As their skills increase, they can be more seamlessly integrated into the transportation infrastructure without conflict. This can be mitigated by making bicycle safety and skills training widely available to everyone who is interested, and by encouraging bicycling now. The sooner we start encouraging bicycling, the better job we can do in preventing “spikes” in new bicyclists, which will lead to “spikes” in on-road conflict.

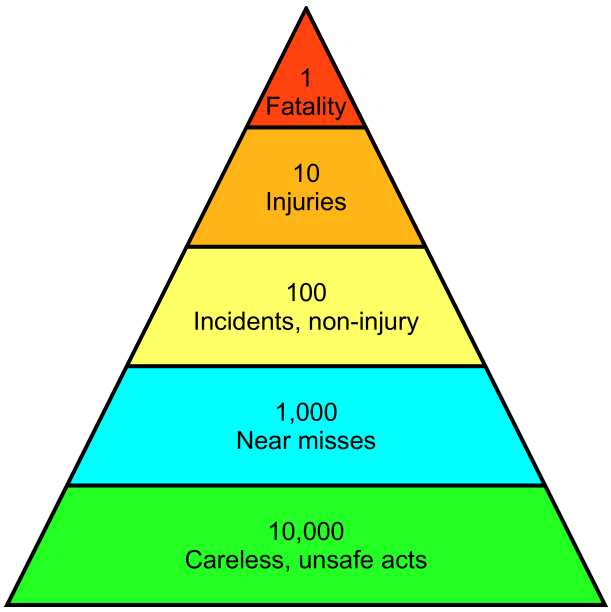
8) What is killing bicyclists?

The most obvious conclusion from NIQS data is that >80% of bicycling fatalities involve motor vehicles, while <20% do not. In raw numbers (1998-2007) that's 110 bicyclists killed by motor vehicles (average of 11 per year) compared to 25 bicyclist fatalities that do not involve motor vehicles (average of 2.5 per year).

While no death should be taken lightly, the 2.5 bicycle fatalities per year (not involving motor vehicles) may be considered “just accidents” and statistically trivial; there is not any obvious pattern in those fatalities, based on the data I've had access to. As noted, all modes of transport have risks, and these risks must be accepted. For comparison, during the same period (1998-2007) NIQS identifies 15.9 pedestrian fatalities per year that are not motor vehicle related.

9) The safety pyramid and the lamp-post effect

The safety pyramid was originally proposed in the context of industrial accidents. While industrial safety has always been concerned with preventing accidents, how best to do this has not always been clear. The safety pyramid, introduced by Herbert William Heinrich in the 1930s, is now universally recognized as explaining how human-factor accidents happen. In understanding that, we can understand how to prevent accidents. The actual numbers can vary, depending on the particular field of study, but a typical safety pyramid looks like this:



In simple terms: We all make mistakes, and we always get away with it: Until we don't.

Using NIQS data (1998-2007), we can determine the top two tiers of certain types of incidents:

All motor vehicle traffic crashes:

4,461 Fatalities

42,054 Injuries

??? Incidents, non-injury > Injuries

??? Near misses > Incidents

??? Careless, unsafe acts > Incidents

Bicyclists in motor vehicle crashes:

110 Fatalities

1,637 Injuries

??? Incidents, non-injury > Injuries

??? Near misses > Incidents

??? Careless, unsafe acts > Incidents

Pedestrians in motor vehicles crashes:

473 Fatalities

4,563 Injuries

??? Incidents, non-injury > Injuries

??? Near misses > Incidents

??? Careless, unsafe acts > Incidents

Looking at the top two tiers of these crashes from this perspective, and seeing how closely they come to a 10:1 ratio that is most often demonstrated with safety pyramids, I will assume (at least for demonstration purposes) that the root cause of the 4,461 motor vehicle fatalities is approximately 43,332,000 careless or unsafe acts; the root cause of the 473 pedestrian vs motor vehicle fatalities is approximately 4,646,500 careless or unsafe acts; and the root cause of the 110 bicyclist fatalities is approximately 1,368,500 careless or unsafe acts[10].

If we can reduce the unsafe and careless acts, then it is simply a natural consequence that injuries and fatalities will be reduced.

The lamp-post problem can be best explained with an old joke:

> *A man loses the keys to his house and is looking for them under a lamp-post. A policeman comes over and asks what he's doing.*
>
> *"I'm looking for my keys" he says. "I lost them over there".*
>
> *The policeman looks puzzled. "Then why are you looking for them all the way over here?"*
>
> *"Because the light is so much better over here".*

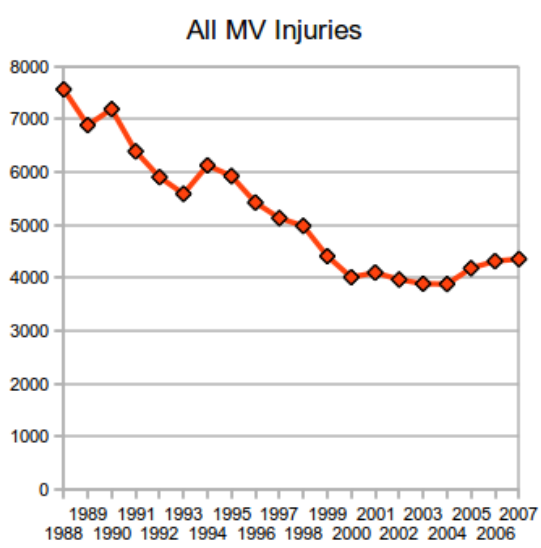
When the Office of the Chief Coroner holds in inquiry into bicycling fatalities, the temptation may be to focus on solely on fatalities. This approach would be to epitomize the lamp-post problem. Bicycling fatalities happen in the context of much larger problems of road safety in New Zealand, and unless these root causes of the problem are identified and addressed, then we will be looking for our keys were the light is.

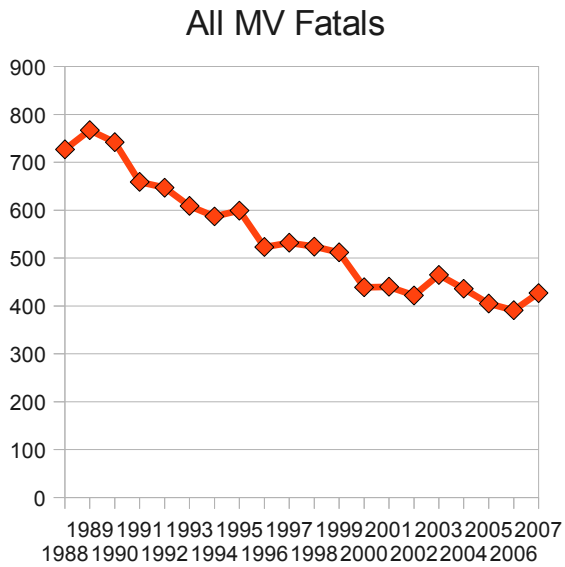
Applying the lamp-post effect to the safety pyramid and traffic safety: The light shines brightest and harshest at the fatalities on the small peak, but the keys are at the careless & unsafe acts that form the large base.

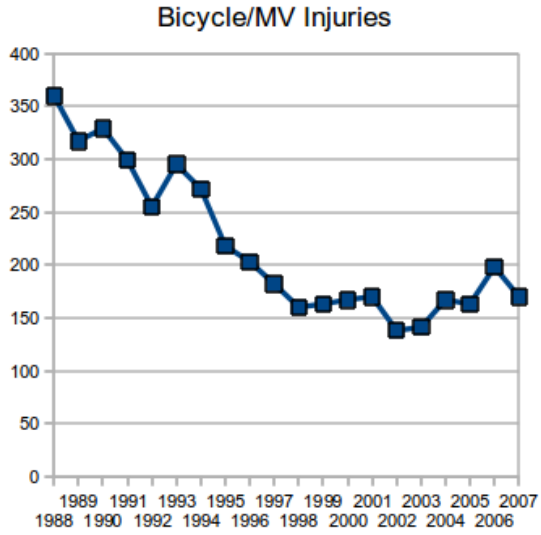
10) Who's to blame?

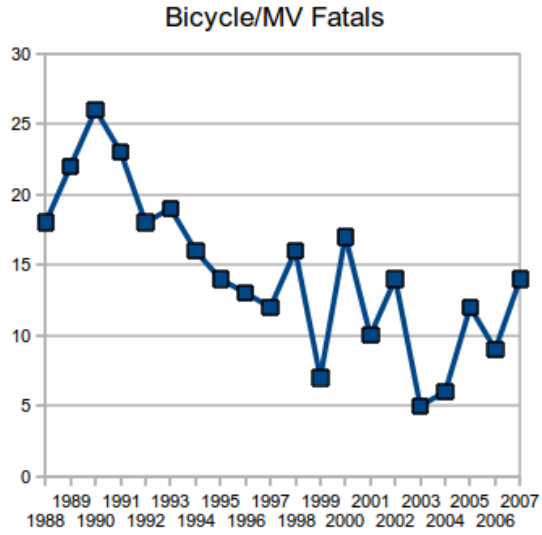
The charts below (data from NIQS) show injuries on the left and fatalities on the right. Fatalities in land transport tend to be nothing more than severe injuries combined with bad luck: We should avoid the temptation to be distracted by fatalities (and the statistical noise in the graphs on the right); instead we should focus on the injuries and understand that if we reduce injuries then it is a natural consequence that fatalities will be reduced.

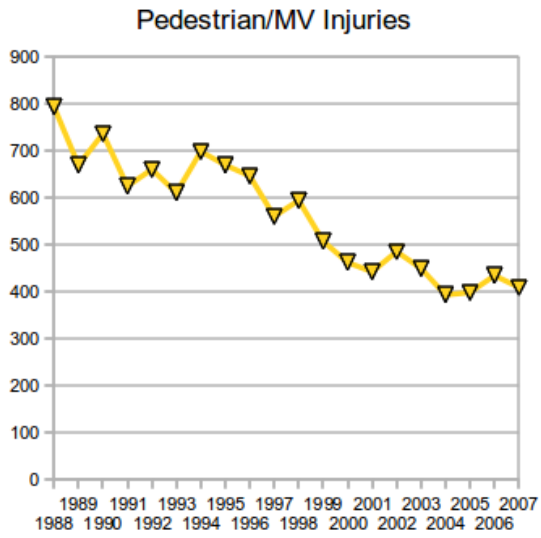
10 Calculated by multiplying fatalities by ten and averaging with injuries; multiplying injuries by ten to estimate non-injury crashes, multiplying non-injury crashes by ten to estimate near misses, and multiplying near-misses by ten to estimate careless & unsafe acts. These numbers are not intended to be accurate or authoritative, but they are likely close to, and demonstrative of, real-world numbers.

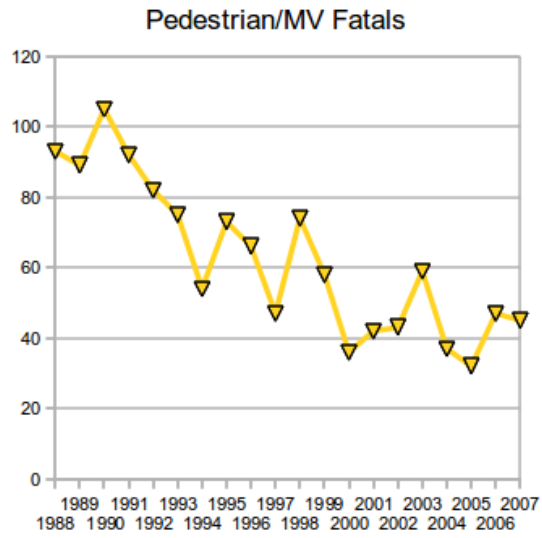












What's apparent in these charts is how closely overall motor vehicle injuries and fatalities correlate to bicyclist/MV and pedestrian/MV injuries and fatalities. This correlation tells a simple, but disturbing, story: **Motorists in New Zealand are killing each other, killing themselves, and killing anyone who happens to be on or near a road.** While this inquiry is ostensibly concerned with bicycling fatalities, I consider these merely a subset of, and directly correlated to, motor

vehicle fatalities. If we focus on the more inclusive concept of “road safety” then everyone, including bicyclists and pedestrians, comes out ahead.

The #1 cause of sudden death among those aged 0-19 (30.9% of deaths, 1999-2008; 31% of deaths 2004-2008) was occupant in motor vehicle traffic crash (NIQS)[11]. Again, if we try to make the roads safer for bicyclists by focusing on bicyclists, we're doing it wrong. If we focus on training, habits and behaviours of motor vehicle operators, the roads become safer for everyone.

Among OECD countries, New Zealand is among the most dangerous place to be on or near a road. Considering the poor standards of driving in New Zealand, it's actually surprising that the number of bicyclist and pedestrian fatalities isn't much higher.

Placing the bulk of blame on motorists is consistent with police reports which indicate that motorists are at fault in most bicycle vs motor vehicle incidents.

The trend is identified and clearly shows that the biggest risk to bicyclists in New Zealand is motorists. In a way, bicyclists are serving as a “canary in the coal-mine” to highlight just how poor the standard of driving is in New Zealand. Remedies that attempt to burden the bicyclists (eg, helmets and hi-viz) ignore the larger problem, and leave New Zealand's roads among the most dangerous in the developed world.

11) Problems and remedies

11.1) Motorist problems

11.1.1) Education & attitudes

It's easy for New Zealand motorists (and to be fair, this also applies to some bicyclists) to maintain an “Us vs Them” attitude on the road. One of the reasons why Dutch roads are among the safest in the world is because everyone is a bicyclist, even when they're driving cars and trucks. Too many New Zealand motorists lack this experience and perspective.

Education needs to start in primary school and focus on “road safety”, starting with how to cross a street. From there it can incorporate bicycling skills, and move onto motor vehicles as students approach licensing age. If we follow the Dutch example, we can have a new generation of careful, conscientious and considerate drivers getting their licenses in about ten years. Of those who don't drive motor vehicles, we can expect the highest standards of walking and bicycling.

11.1.2) Laws & enforcement

In most jurisdictions outside of New Zealand, motorists have to deal with civil consequences of inflicting injury or death on others, and to varying degrees this serves as an incentive to drive safely. Here in New Zealand, people can cause injury and death on the roads and rarely suffer consequences more severe than paying a fine and small compensation and losing their drivers license for a few months. In other jurisdictions (to varying degrees), someone can face homelessness and bankruptcy for inflicting even minor injuries. I don't want to suggest that New Zealand should simply abandon the current ACC system, but what we lack in civil penalties needs to be compensated for with other penalties.

11- 1999-2008 saw 758 0-19 year-olds killed INSIDE of motor vehicles, while during the same time, only 104 bicyclists (all ages) were killed in crashes with motor vehicles (NIQS). Again, here in NZ, we have a road-safety problem, not a bicycle-safety problem.

11.1.2.1) Speed

Hit by a car at 30km/h, 1 out of 10 pedestrians will be killed.

Hit by a car at 50km/h, 5 out of 10 of pedestrians will be killed.

Hit by a car at 60km/h, 9 out of 10 pedestrians will be killed.

Those numbers are compounded by the fact that a doubling of speed typically quadruples stopping distance; conversely, reducing speed by 50% typically reduces stopping distance by 75%, making it easier for slower traffic to avoid crashes altogether.

Speed is the single biggest factor that will determine life or death in a crash. This applies to pedestrians, bicyclists and motorists. Speed limits in urban, suburban and residential areas generally need to be lower. On rural and high-speed roads accommodations need to be made to facilitate safe bicycling.

11.1.2.2) Overtaking

New Zealand Police are lacking tools to effectively protect bicyclists on the road, particularly with regard to “close passing”. While many other jurisdictions have laws that require motor vehicles to slow down and move over when overtaking bicyclists (often specifying 1-1.5m, or 3-4.5 ft as a minimum clearance), New Zealand has a vague statute (2.6 of the Land Transport (Road User) Rule 2004) which states: “*A driver must not pass or attempt to pass another vehicle [defined to include a bicycle] moving in the same direction unless (a) the movement can be made with safety; and (b) the movement is made with due consideration for other users of the road*”.

I have raised this issue with a senior police sergeant in Wellington, and I'm told that, with regard to unsafe passing, there's nothing he can do to pursue charges against a motorist unless they actually hit someone.

Recently I was riding on the road when a truck passed within 20-30cm of my bike, to get ahead of me and stop at the back of a queue a few car lengths ahead. I immediately caught up to the truck and told the driver that he was dangerously close to me. The driver's response was, “Yeah, so what?” I informed that driver that if anything pushed me under his wheels it would be a problem, to which the driver responded, “So, it's not my problem.” The unfortunate thing is that the driver is correct. The laws in New Zealand simply don't effectively protect bicyclists from impatient motorists who simply don't care about risking someone else's life to “get in front”.

The case of Jane Mary Bishop highlights the problems of safe passing, correct lane position, following distances, and sharing the road with bicyclists. Charges were filed (but ultimately dismissed) against the motorist who opened a door into Bishop's path, but no charges were filed against the truck driver who ran her over. As is clearly evident from the outcome of that fatal crash, the truck driver was not providing a safe space between the truck and the bicyclist, and should have been charged accordingly. This also highlights a lack of training that New Zealand motorists (in this case a professional truck driver) are not aware of how to safely share the road with bicyclists.

When a faster moving vehicle overtakes a slower moving vehicle, the burden of passing safely rests almost entirely with the overtaking vehicle. Unfortunately, bicyclists in New Zealand do not enjoy any effective legal protection from this impatient and aggressive manoeuvre; this manoeuvre seems to be the most common “close call” reported by bicyclists. Referring to the safety pyramid, it's a numbers game that determines when this manoeuvre will be deadly. It's a perfect example of motorists taking chances with a bicyclist's life, usually to save a few seconds at most.

There is generally confusion in New Zealand as to whether or not it's legal to cross a solid yellow-line or encroach a flush-median to overtake slow-moving vehicles. In other jurisdictions, it is

explicitly legal to cross a solid yellow line (or the local equivalent) to overtake a stopped or slow moving vehicles, under statute, generally “when it's otherwise safe and lawful to do so”. This needs to be clarified in legislation and/or in driver training material. It can not be an excuse that a motorist knocks a bicyclist down because they didn't want to cross a centre-line to overtake safely, or wait until an overtake could be done safely.

11.1.2.3) Suspended licenses

Here in New Zealand it is well documented[12] that “high-risk drivers” are disproportionally responsible for injuries and fatalities on our roads. The worst of these HRDs are the recidivists who have their drivers licenses suspended, revoked, or disqualified. Having one's driving privileges suspended, revoked, or disqualified, in itself, is a “gentleman's punishment” that assumes the punished person will comply with the punishment. In cases were these offenders are caught driving, the typical fine is $400. We must treat these offenders as if lives are at stake, and simply confiscate whatever vehicle they are driving when caught, then sell the car at auction. This is the disincentive that is needed to keep these recidivist bad drivers from choosing to get behind the wheel and put themselves and others at risk. It doesn't matter who owns the car; What would make this work is that no one wants to tell their mum, their boss or their girlfriend that the car was seized by police; it places a very real social pressure on someone to respect the fact that they are not allowed to drive. Since these recidivists have demonstrated that they have no respect for the rule of law, let them subject themselves to the rules of social consequences (and possibly civil consequences) if they want to illegally drive someone else's car. At a certain level, the safe and lawful use of a vehicle rests with the owner of the vehicle; it is the responsibility of a vehicle owner to make sure the vehicle is not used unlawfully.

If someone commits a firearms offence without proper licensing for the firearm, they wouldn't expect to have firearm returned. Likewise, if someone commits a motor vehicle offence without proper licensing, why should they expect to have the motor vehicle returned?

In the event that someone's drivers license is suspended, revoked, or disqualified, the law should require a full retest in order to have the license reinstated.

11.1.2.4) Careless driving causing injury or death

If someone is killed with a gun, kitchen knife, garden tool, or anything other than a motor vehicle, New Zealand police can charge a culpable person with manslaughter, and the courts have an extraordinary discretion when imposing a sentence, which could include life in prison. New Zealand law includes the more specific statutes for killing a person with a motor vehicle, and the maximum penalties are imprisonment for a term not exceeding 5 years or a fine not exceeding $20,000, and disqualification from holding or obtaining a driver licence for 1 year or more. Why is preferential treatment given to those who kill with a motor vehicle?

Operating a motor vehicle is no less a responsibility than handling a firearm. In fact motor vehicles account for 668% more fatalities than firearms in New Zealand (1998-2007, NIQS).

The current laws regarding injuring and killing with a motor vehicle support a relaxed environment where the penalties for causing injury or death are not in proportion to the damage caused. This is exacerbated by an effective lack of civil consequences that one may face in New Zealand after causing injury or death with a motor vehicle.

The statutes regarding injury or death with a motor vehicle should be abolished, allowing such cases to be heard as “manslaughter” or “assault with a weapon” cases. Killing a person with a motor

12 http://www.transport.govt.nz/research/Highriskdriversstatistics/

vehicle should not be treated any differently than killing a person with any other thing, and courts need to have greater discretion in these cases.

11.1.2.5) Demerit points

The purpose of a "points" system is to identify and disqualify drivers who repeatedly commit offences that put themselves or others at risk on the roads. Unfortunately, current statutes fail to apply points for several serious moving violations (eg, running a red light; not staying in a lane), but do apply points for some "nuisance" offences such as operating a vehicle that is too loud.

The points system needs a review to identify and assign points for violations that are actually dangerous, and limit the penalties for nuisance offences to simply paying a fine. All moving violations should incur points. Points for non-moving violations should be very carefully considered (or abolished entirely), or the validity of the point system is put into question.

11.1.2.6) Other penalties

New Zealand is fairly unique in having an ACC system, while many other jurisdictions require private car insurance to cover medical expenses resulting from crashes. In all or most of those jurisdictions, drivers who accumulate points on their licenses are liable to pay increased premiums, since they've demonstrated that they are higher insurance risks than drivers who do not accumulate points on their licenses. If they get too many points, they effectively demonstrate that they carry too high a risk to insure, and the insurance companies can cancel their policy; depending on the jurisdiction, this can leave a person unable to legally drive their car until they obtain a new insurance policy, usually at an exorbitant rate. Here in New Zealand, ACC does not have the power to cancel a person's coverage, regardless of how much that person demonstrates that they present an unacceptable insurance risk. Collectively, we are all subsidizing that risk.

Just like other jurisdictions, New Zealand drivers who acquire points are demonstrating that they pose a safety risk to themselves and others, and a financial risk to their insurer (not to mention cost burdens on cities, emergency service providers, victims, etc). As such, I would suggest that an ACC levy be imposed against individuals based on demerit points. This can be payable along with a fine, or payable over time, but must be enforced with a penalty of license suspension if the levy is not paid.

If someone is guilty of "failing to give way at pedestrian crossing", this would incur 35 points. If points are assessed at $100 per point, they would have to pay a $3500 levy to ACC, which is reasonable since ACC would be required to pay significant costs arising from a crash which is made more likely by the unsafe act of failing to give way at pedestrian crossing. There are many variations that would provide a graduated system of assessing the levy; the goal here isn't to bankrupt someone who makes an honest mistake, but it should serve as a big enough "stick" to encourage safety and compliance, discourage recidivism, and provide for individuals who present a higher risk essentially pay a higher premium. These people would likely be the first to complain about subsidizing someone else's bike-path, but they probably don't mind when the rest of us subsidize their accident insurance.

11.1.2.7) Graduated offences

Current statutory law does not differentiate between different grades of hit and run. Under some circumstances, there may be a calculated gain in a drunk driver leaving the scene of a crash, at least long enough to sober up. Leaving the scene of a crash should be a graduated offence:

1) Leaving the scene of a crash resulting in a fatality

2) Leaving the scene of a crash resulting in a serious injury
3) Leaving the scene of a crash resulting in an injury
4) Leaving the scene of a crash

Grades 1-3 should have penalties more severe than drunk driving. Grade 4 should have penalties more severe than assault with a weapon.

Likewise, current statutes regarding compliance with traffic lights do not distinguish between "blowing through" a red light, as compared to stopping and proceeding. There are obviously different levels of risk, and there should be different penalties.

11.2) Bicycling problems

Not all problems on the road are the fault of motorists, and I appreciate the opportunity to point out what can be done for and by bicyclists to make bicycling safer.

11.2.1) Mandatory helmet laws

An impartial review of New Zealand's mandatory all-ages helmet law is required. Despite any evidence to suggest that a bicycle helmet may be safer for an individual, there is strong evidence to suggest that mandatory bicycle helmet laws makes bicycling less safe for a population. If this is found to be correct, then the only reasonable thing to do is immediately repeal the mandatory helmet law.

As it relates to fatalities, >80% of bicyclist fatalities involve motor vehicles. Bicycle helmets are neither designed nor tested to withstand the forces of a motor vehicle collision. In fact there is a very narrow range of "real world" scenarios where bicycle helmets would have any beneficial effect, and at least as many "real world" scenarios where a helmet could make injuries worse (eg exacerbating rotational forces to the head, brain and neck).

Looking at New Zealand Household Travel Survey data, it seems that the helmet law "coincided" with a reduction in bicycling rates by as much as 30% (this drop seems to be among more casual bicyclists; while the number of bicycle trips was reduced, average trip distance over the same period increased, suggesting that more "serious" bicyclists were not deterred by the helmet law). During the same time, injury and fatality rates (NIQS) of bicyclists held fairly steady. This tells us that the helmet law (which by most accounts has >90% compliance rates) does absolutely nothing to reduce the raw numbers of injuries or fatalities, but it does reduce the number of people on bikes (nearly identical trends have been recorded in Australian states as helmet laws came into effect). The overall effect then, is that our mandatory helmet law has made bicycling significantly more dangerous, per person. At the same time, it has discouraged a significant percentage of people from riding bikes, increasing their likelihood of developing diseases that are actually much more dangerous to their health and longevity than bicycling in traffic.

As it relates to head injuries, no one in New Zealand seems to have bothered keeping accurate statistics to compare before and after the helmet law, but NIQS data suggests that the helmet law did not prevent head injuries.

Some studies suggest that mandatory bicycle helmet laws result in "risk compensation", which puts bicyclists at higher risk of injury: eg "*I've got a helmet, I can't get hurt.*" Other studies show "external risk compensation" in the form of motorists providing less clearance when overtaking bicyclists with helmets than bicyclists without helmets: eg "*They've got a helmet, they can't get hurt.*"

I appreciate that this may seem highly unintuitive, and to many people this is an emotional (read:

not rational) issue with most of the “data” supporting helmets being in the form of testimonials (“*the helmet saved my life*” or “*if they were wearing a helmet...*”) or discredited by impartial research.

More information on this topic: http://helmetfreedom.org

11.2.2) Hi-viz

Like bicycle helmets, hi-viz may improve safety on an individual basis (and like bicycle helmets, there's little or no data to support that) but, like helmets, just because something may be good for an individual does not necessarily mean that it should be mandated under law.

Hi-viz for bicyclists is a red herring, since we do not account for the colour of cars when cars crash into each other, and we do not critique the fashion sense of pedestrians who are hit by cars while they are wearing all black (as is quite popular in New Zealand). In such cases we just assign fault along the principles of “due care”. Legislating mandatory hi-viz serves as a way of “doing something”, or rather, making “them” do something; shifting the burden of not-crashing-into-bicyclists from motorists (who should be fully engaged and focused on driving) to bicyclists (who, presumably, must be responsible to “make drivers see them”, even under broad daylight). Instead of blaming the victims, maybe we should just make them dress funny?

The data on bicyclist fatalities in New Zealand simply does not suggest that wearing hi-viz makes motorists less inclined to crash into bicyclists; if anything it's likely to induce risk compensation among poorly educated bicyclists, as they may think that hi-viz “*makes drivers see them*”.

As noted in TRL's recent report[13] (of motorcyclists' use of hi-viz), there are real-world conditions where the greatest conspicuity is achieved by simply wearing white clothing, or in other conditions, black clothing; “hi-viz” is not a real-world solution.

Another part of a mandatory hi-viz debate needs to be focused on the distinction between “seeing” and “noticing”. Eyes are objective, but visual processing centres of the brain are incredibly subjective. The topics of “inattention blindness” and “perceptual blindness” along with a host of related areas of cognitive psychology come into play. The short version is that people can fail to see a flashing neon sign, if they're not looking for it (this also explains why I, like many males, often suffer from “kitchen blindness” and can't find a can of beans in the cupboard). While hi-viz can be encouraged, the fact is that many people will consider the “dork factor” too high, and this will result in less bicyclists. To make the roads safer, we need more bicyclists, even if they're not wearing hi-viz.

Half of the bicyclist fatalities between 2006-2011 (in cases where clothing was noted) were wearing hi-viz; they're just as dead as the other half, which wasn't wearing hi-viz. Also, with and without hi-viz, many of these fatalities involved motorists who did see the bicyclists before the crash, but failed to take evasive action to avoid a crash. Mandatory hi-viz is a straw-man argument, not a solution to an actual problem; first we have to properly identify the actual problem (it likely has more to do with inadequate bicycling facilities, high speeds and motorist inattention; problems that are not solved by hi-viz).

http://www.youtube.com/user/dothetest/videos

There is ONE form of “hi-viz” that has been shown to increase the conspicuity of bicyclists at night[14]: Reflective ankle (and knee) bands. I've never seen or heard of commercially available knee-

13 - Transport Research Laboratory, PUBLISHED PROJECT REPORT PPR638 - Literature review of interventions to improve the conspicuity of motorcyclists and help avoid 'looked but failed to see' accidents

14 - Cyclist visibility at night : perceptions of visibility do not necessarily match reality - http://eprints.qut.edu.au/38338/

reflectors, but ankle-reflectors are a common accessory. This singularly effective form of “hi-viz” is essentially already required under NZ law: When riding a bicycle at night, it is a legally enforceable requirement that the bicycle is equipped with pedal reflectors, which serve nearly the same function as ankle-reflectors; if the bicycle is not equipped with pedal-reflectors, the rider must wear reflective clothing. To the extent that research supports the efficacy of “hi-viz”, NZ law more or less already mandates it.

11.2.3) Helmets, hi-viz, and unintuitive conclusions

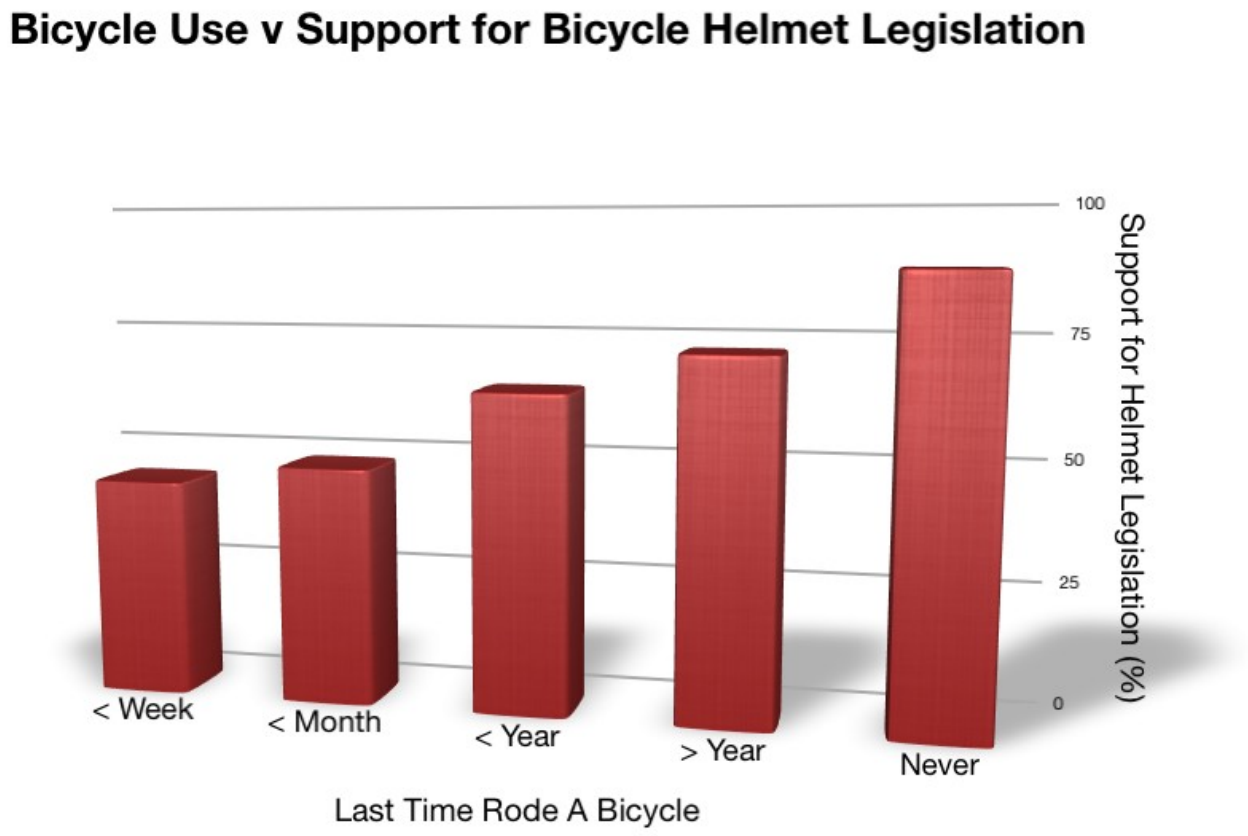
Think about whether you agree or disagree with these three hypothetical statements:

- I'll always wear a bicycle helmet, but I'm against mandatory bicycle helmet laws
- I'll always wear hi-viz when I'm riding, but I'm against mandatory hi-viz
- I'm vegan, but it shouldn't be mandatory that everyone be vegan

Most people would not understand the “logic” of the first two statements, but most people would strongly agree with the “logic” of the 3rd statement. This is simply because most people don't ride bicycles, and are not directly affected by the consequences of the first two statements. Everyone eats, and would be directly affected by the consequences of the 3rd statement. The “logic” of all three statements (that I would not want to impose my practices on others) is identical, the only difference is whether or not you are personally and directly affected by them.

In other words, the “debate” around mandatory helmets and mandatory hi-viz tends to demonstrate the desire to “do something”, when that something intuitively seems like a “good thing” and regulates what “other people” do. This is why support for helmets and hi-viz may be popular despite a lack of supporting evidence, but support for lower speed limits is unpopular despite overwhelming supporting evidence.

Ultimately, we all have to recognise that New Zealand is not a country that serves as an international example of getting bicycle safety right. As such, we're better off following the paths of other countries, like the Netherlands (where helmets and hi-viz are as rare as fish-fur). When we have the safest bicycling statistics in the world, then we'll be in a position to try new things; for now, let's follow, not try to lead.



Graph from: *http://helmetfreedom.org/1372/do-as-i-say-not-as-i-do/*

It's noteworthy that many bicyclists who do wear hi-viz and helmets do not endorse mandatory hi-viz or helmets, but of the bicyclists that do endorse mandatory hi-viz and helmets, all of them wear hi-viz and helmets. Would you want these bicyclists telling *you* how to dress?

Let's look at what bicyclists are wearing in Copenhagen, which is one of the safest cities in the world to ride a bike:

Images from www.copenhagencyclechic.com, a web-site dedicated to style conscious bicyclists. The “cycle chic” theme, complete with blogs, has spread to hundreds of cities around the world, including New York, London, Paris, Wellington and Auckland.

If we look to the countries with the best road safety records for bicyclists, there is NO EVIDENCE to suggest that New Zealand is benefiting from our mandatory helmet law or lacking hi-viz. The more likely conclusion is that we're lacking in training (of ALL road users), we're lacking in traffic enforcement, we're lacking in safe and convenient bicycling infrastructure, and most importantly we're lacking in bicycling mode-share; the last of which is already hindered by mandatory helmet laws, and would be further hindered by mandatory hi-viz, for the very simple reason that most "regular" people don't want to look like dorks.

More information on this topic:

http://aucklandcyclechic.blogspot.co.nz/

http://wellycyclechic.blogspot.co.nz/

http://nycyclechic.blogspot.co.nz/

http://www.copenhagencyclechic.com/

11.2.4) Lights & reflectives

The current statutory lighting requirements for bicycles were mostly written or updated in 2004. Since then, LED and battery technologies have advanced tremendously; some of the newer bicycle lights are brighter than a car's high-beams (but the prices keep them out of reach of most bicyclists, for now). Some may refer to this as an LED or bicycle-lighting "arms race", and I think that is a very appropriate term, since these lighting technologies have advanced alongside mobile phones, texting, GPS systems, and a slew of other "driver distraction systems".

The current requirements that front and rear lights be "visible from 100m" is far too low a threshold; a candle can meet this requirement. Modern lights are easily capable of being "visible" from 500m or more. The key here is that most motorists aren't looking for bicycles; this requires that bicycle lights should be "conspicuous", not just "visible", before a motor vehicle is within stopping distance of the bicycle. Requirements should also account for "off axis" visibility.

While enforcement would likely require a "field test" such as "visible from 200m", New Zealand should adopt or create standards for bicycle lights that can be imported, manufactured or sold within New Zealand. Any suitable standard would have to account for off-axis vertical and horizontal light output.

The Lawless case highlights discrepancies in the statutory requirement that need to be clarified. Particularly, is it legal to have bicycle lights mounted on the rider, or do bicycle lights need to be mounted directly to the bicycle? There are valid arguments on both sides of this, so I would suggest that this matter be investigated further before any decisions are made. In any case, it should be legal to supplement bicycle-mounted lights with additional lights on the rider.

Bicyclist education should include awareness of conditions that decrease visibility, and be encouraged to use good lights ANYTIME when visibility may be compromised.

11.2.5) Bells & horns

When operating on shared bicycle/pedestrian infrastructure, bicycles should be required to have an "audible warning device" reasonable for alerting pedestrians to the presence of a bicycle. This should encourage bicyclists who frequent such facilities to install a bell or horn, but it should be vague enough to allow a bicyclist to use their voice (eg, "Bike!") to alert pedestrians of their presence.

11.2.6) Speed

Bicycles are not required to have speedometers, and as such there should be a statutory exemption from speed limits, provided that bicycles are operated at a speed that is reasonable under the circumstances. In the UK, for example, speed limits apply only to motor vehicles, but bicyclists are still responsible to operate their vehicles at safe speeds.

11.2.7) Laws & enforcement

11.2.7.1) Proposed mandatory use of bike lanes

The assumption of motorists (and more generally, those who don't bicycle; including legislators) is that bike lanes provide safe and comfortable facilities for bicyclists. Based on this assumption, it only seems reasonable that bicyclists have no legitimate reason to leave these facilities, where they exist.

The question that must be asked, then, is WHY would bicyclists not use bicycle lanes when they are available? The underlying assumption is incorrect. Too often, bicycle-lanes are not fit for purpose. They may be too narrow, in the “door zone”, not maintained, preclude a bicyclist from taking a safer lane position; among a nearly countless number of reasons why using a bike lane may not provide for safety or comfort.

With rare exception, requiring that bicyclists use bike lanes, when provided, decreases bicyclist safety. Such “mandatory use” laws also encourage motorists to “bully” bicyclists into unsafe bike lanes by encouraging an attitude that “that's where bicyclists belong”. Such mandatory segregation is the exact opposite of “sharing the road”. The result of making (or even suggesting) the use of bike lanes mandatory reveals an ignorance about the legitimate needs of bicyclists, and perhaps more alarming, it reveals an important structural biases: That motorists' convenience is more important than bicyclists' safety.

Like a bus-lane or a carpool lane, the purpose of a bike-lane is to exclude other traffic from using

the lane; not to require designated traffic to use it.

11.2.7.2) Prohibition of bicycling on footpaths

Generally, New Zealand law currently prohibits the use of bicycles on footpaths. My eight-year-old son rides a bike that is illegal to ride on a footpath, but he does not have the ability (or desire) to ride on busy roads. A more welcoming approach would be to allow bicycling on a footpath unless it is specifically prohibited, but put the burden of interacting with pedestrians on the bicyclist (eg presumed liability would favour the pedestrian). Such laws are already in place in many jurisdictions, including Portland[15], Oregon.

It's important to acknowledge that bicycling on a footpath has risks to bicyclists that are different than bicycling in traffic, and Portland's laws manage these risks by requiring bicyclists on a footpath to operate at walking speed when passing pedestrians and approaching intersections; rather than simply making it illegal to bicycle on a footpath, they make it illegal to bicycle “unsafely” on a footpath: This is a very simple and very enlightened approach to the issue.

There are many locations in Wellington where the combination of steep hills, fast traffic, narrow lanes and lack of alternate routes makes riding on the footpath the ONLY safe option for bicycling[16] (regardless of whether or not it's legal). Even a strong headwind can reduce a strong bicyclist to little more than a walking pace, at which point it is neither safe nor practicable to be riding in the street. In such situations, a bicyclist may follow the letter of the current law, instead of using the footpath, and ride in the centre of the lane (1.5m from the curb) causing other traffic to travel uphill at bicycle-speed. A bicyclist who feels it's safer to “hug the curb” would, in fact, be putting themselves at risk of being “clipped”. It should be clear that the most reasonable approach is to bicycle uphill on the footpath, at no more than a walking speed when encountering pedestrians, driveways and intersections.

While it may be safer to walk ones bicycle on the footpath, rather than ride it, this is not the most practicable solution for those with special bicycling shoes (cycling cleats), those with certain types of bikes (eg recumbent bicycles), or those with certain health conditions (eg weak knees or ankles). Perhaps a bicyclist's rear light has failed; a very reasonable solution is to ride safely on the footpath, where a rear-end crash is highly unlikely. Bicycling on the footpath should be allowed, so long as it's done safely.

Local councils should maintain the ability to prohibit footpath bicycling on as as-needed, where-needed, when-needed (eg during shop hours) basis as there are areas where even careful bicycling on a footpath is likely to cause conflict and/or alternate routes are available.

In places such as New Zealand, allowing bicycling on the footpath fills in gaps that are left from inadequate bicycling facilitates. Requiring an “audible warning device” while riding on a footpath would encourage those who regularly bicycle on footpaths to install a bell, but should allow a “road cyclist” (who may not want to be burdened by the weight of a bell) to use their voice as needed if they briefly need to use a footpath.

Pedestrian crossings, in this regard, should be treated the same as footpaths.

For many aspiring bicyclists in New Zealand, allowing bicycles on the footpath would provide the “missing link” along a journey that is otherwise perceived as too dangerous, because of a small trouble-spot. It would also make it legal for me to ride a bike on the footpath with my eight year-old son; as we need to do during part of his bike ride to school.

15 http://www.youtube.com/watch?v=-HViAMpQXaA
16 http://www.youtube.com/watch?v=udrUmqcNsU8

11.2.7.3) FLAP (As far left as practicable)

Section 2.1 of the Land Transport (Road User) Rule 2004 states: "*A driver [defined to include a cyclist], when driving, must at all times drive as near as practicable to the left side of the roadway*".

This is one of the least understood and most often misrepresented laws affecting New Zealand bicyclists. It's often cited (often by senior police personnel) as "Far left as *possible*" and more often cited as "Get the hell off the road!"

According to NZTA's Official Road-Code for Cyclists:

> *Road rules state that road users should keep as 'near as practicable' to the left side of the roadway. This means that you should keep left, but not to the extent that it compromises your safety.*
>
> - *Ride in a position where you have a good view, and where other road users can see you. Cycling in a straight line (ie not swerving in and out) will help other road users predict your movements.*
> - *Never ride so closely to the kerb or edge of the road that you are in danger of cycling into the kerb or off the road.*
> - ***Never ride in the 'door zone' (the space where car doors open) when cycling past parked cars. Allow at least one metre between you and a parked car.***
> - ***If the road is too narrow to safely allow vehicles to pass, you are in danger of being run off the road or hit by a passing car. In this situation it is acceptable to move further out into the path of traffic to prevent other users from passing you. If you do have to move further out, remember to find a gap, signal your intentions and move across when it is safe. Once you have moved out try to ride as quickly as you can and allow the following traffic to pass when the road widens.***

That's a brief outline of what any bicycle safety advocate can explain, and it hints at why "hugging the curb" or "riding in the gutter" often feels safe to bicyclists who are lacking experience or confidence, but it's often much safer to be "occupying" the lane. Unfortunately, the statutes do not make this clear, and many police (not to mention motorists) are not familiar with it.

Taking it a step further, NZTA's Official Road-Code [for Motorists] advises motorists as to sharing the road with bicyclists:

> *Safe driving around cyclists*
>
> - *Hazards like parked cars, potholes, glass, litter and opening car doors may cause cyclists to veer off-line and move into your path. Because of this, give cyclists plenty of room when passing them. Ideally,* ***allow at least 1.5 metres between you and the cyclist****.*
> - *Wait for a clear space before passing a cyclist on a narrow road.*
> - *At intersections, apply the same rules to cyclists that you would to any other vehicle on the road. Take care to indicate turns.*
> - *Only drive across cycle lanes when entering or leaving side roads, driveways or parking spaces.*
> - *If you are crossing a cycle lane, give way to cyclists before you cross.*
> - *Take extra care around young cyclists.*
> - *You must not drive in a cycle lane except for a maximum of 50 metres when entering or leaving side roads, driveways or parking spaces.*
>
> *Cyclists may ride away from the kerb or occupy a lane – not because they want to annoy drivers, but to:*

- *avoid drains, potholes or roadside rubbish*
- *be seen as they come up to intersections with side roads*
- *discourage drivers from squeezing past where it's too narrow.*

Maths time. NZTA recommends bicycling at least 1m away from parked cars (1.5-2m is a more reasonable distance to allow room for a car door to open). NZTA further recommends that motorists allow “at least 1.5m” of clearance when overtaking a bicyclist. A typical bicycle and rider might be 0.5m wide. Now if we add up 1.5m from parked cars, 0.5m of bike and rider, and add to that 1.5m of clearance when overtaking, we are talking about an overtaking car being one full lane away from parked cars. This is exactly what many other jurisdictions have specified in legislation: That bicycles are entitled to use a full lane; overtaking cars must use another lane to pass.

Above: **Bicycles May Use Full Lane** Sign (R4-11, as designated in the US MUTCD)

Right: The Airport Flyer overtaking a bicyclist with about 0.7m of clearance, while travelling approximately 50kph.

The current recommendations already support bicyclists taking the lane for safety, and requiring motorists to allow a safe clearance when passing. What's needed is explicit statutory requirements that put an enforceable burden on motorists to either pass safely, or wait until passing can be done safely.

Let's “share the road”, but not share the lane.

Legislation that specifically allows bicyclists to use a lane, and requires overtaking vehicles to use another lane would greatly increase the real and perceived safety of bicycling. Exceptions could be made if the overtaking motorist is travelling under a certain speed (eg <30kph), and of course we shouldn't require cyclists (including motorcyclists and mopeds) to use separate lanes while passing each other (unless the overtaking vehicle is travelling above a certain speed, eg >70kph). Nonetheless, under a "take the lane law" there would be a much less ambiguous expectation of motorists, and a more objective way for police and courts to consider charges. Ultimately, it would provide something we currently lack: A clear, unambiguous, and objectively enforceable rule for motorists to GIVE CYCLISTS ROOM. This could/should also justify repealing the "two abreast" law, as bicyclists may be able to safely stagger themselves more than two abreast in wider lanes; this would benefit motorists by making the group of cyclists shorter, from front to back.

11.2.7.4) Presumed liability

Some jurisdictions have “strict liability” or less strict “presumed liability”. This shifts some burden of liability towards the party who is less likely to be injured in a crash, unless they can demonstrate

(not “prove”) that the other party was at fault. It's not clear how this might work in New Zealand were individuals are generally not at risk for civil liability due to causing injury or death, however I would suggest a road user hierarchy that encourages less vulnerable road users to be more careful of more vulnerable road users.

- Children, elderly and disabled pedestrians
- Pedestrians
- Bicyclists
- Motorcycles & scooters
- Cars, Buses, Trucks

Under such a system, if there's a crash between a pedestrian and a bicyclist on a shared path, we would presume the bicyclist to be at fault. Likewise, if there's a crash between a car and a bicycle on a street, we would presume the motorist to be at fault.

Obviously, a presumption of fault is just that, and all parties would still be entitled to present evidence and have their cases heard by an impartial arbiter. What this would accomplish is to provide an incentive for all road users to be more careful, especially in regards to “looking out” for more vulnerable road users.

Most non-cyclists would support a system of presumed liability if it only applied to bicyclists and pedestrians, but that proves another case of regulating “them”. For the same reasons that it would make sense between bicyclists and pedestrians, it makes sense for all road users.

11.2.7.5) Idaho stop

Perhaps the most counter-intuitive of all recommendations in this submission is the “Idaho Stop” law. In 1982, Idaho (US) passed a law that allows bicyclists to:

- Treat a stop sign as a give-way
- Treat a red traffic light as a stop sign

This law has been in effect in Idaho for 30 years, and has a proven track record of improving bicyclist safety. In the year after the law was passed, bicyclists' injuries were reduced by 14.5%[17] while bicycling increased in popularity. Recently, other jurisdictions have been adopting or trialling similar laws.

The important thing is that the law gives bicyclists discretion to do something safely, while still making them responsible if they do something unsafely; so “blowing through” a busy intersection or weaving through a crowded pedestrian crossing is still illegal. Essentially the law gives bicyclists the discretion to take liberties at stop signs and red lights, provided that they do not endanger themselves or others. The result: Demonstrably improved safety.

> ***“In 2007, an internal report for Transport for London concluded women cyclists are far more likely to be killed by lorries because, unlike men, they tend to obey red lights and wait at junctions in the driver's blind spot.” - BBC - http://news.bbc.co.uk/2/hi/uk_news/magazine/8296971.stm***

The arguments against an Idaho Stop law can all be summarised as “It’s not fair.” Some people would like to argue that Idaho Stop isn’t safe, but there’s no evidence to support that assertion. If someone unsafely blows through an intersection under an Idaho Stop Law, it’s still illegal.

17 http://theathleteslawyer.com/2009/07/06/bicycle-injuries-145-lower-a-year-after-the-idaho-stop-law/

Some intersections would remain inherently unsafe to apply these Idaho Stop rules, and may be posted to indicate “BICYCLISTS MUST WAIT AT RED” or “BICYCLISTS MUST STOP”. Similar signs are used in jurisdictions that allow all vehicles to turn right-on-red (in the US) but some specific locations are posted as “NO TURN ON RED”.

With or without an Idaho Stop, the law should recognise that some traffic light sensors fail to detect bicycles, motorcycles, and other small vehicles; sometimes these lights will stay red indefinitely. Many jurisdictions address this issue by allowing any vehicle to proceed through a red light, if it's otherwise safe to do so, after waiting at the light long enough to determine that the light is not functioning as intended.

11.2.7.6) Drunk driving & drunk bicycling

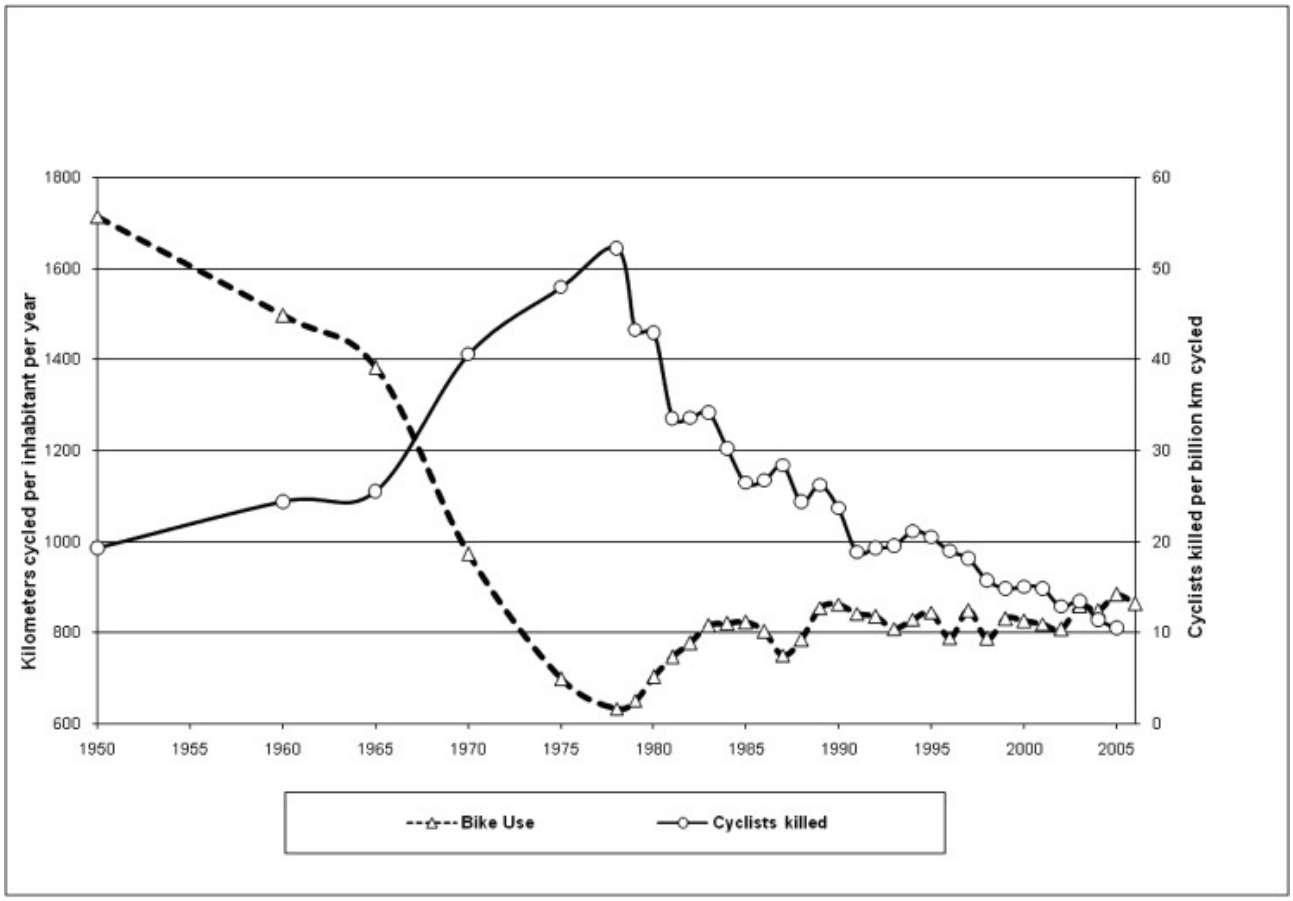
It seems that current drunk driving laws in New Zealand are “motor vehicle” offences. Bicyclists should be held to the same standards of sobriety as motorists when operating their vehicles on the road. I don't necessarily advocate that the penalties for “drunk bicycling” be as harsh as “drunk driving” (the potential for causing damage is greatly reduced, and seems to be closer to “drunk walking” than “drunk driving”) but it should be unambiguous in statutory law that this behaviour is unacceptable, and the police should have the tools to keep bicyclists under the influence of alcohol or other drugs from harming themselves or others on our roads.

Jurisdictions such as California addresses this issue under statutory law[18] [19] by providing a fine up to $250 for “bicycling while drunk (or under the influence of drugs)”. This is substantially less than the penalties for DUI/DWI with a motor vehicle.

18 http://www.criminalattorneysanjoseca.com/2011/07/can-you-face-a-california-dui-for-riding-a-bicycle-while-drunk.shtml

19 http://www.1800duilaws.com/article/cycling_under_influence.asp

11.3) Safety in numbers



Source: Netherlands Ministry of Transport (2007)

Graph from:

http://cyclingwellington.co.nz/2011/09/critical-mass-for-health-and-safety/

http://www.policy.rutgers.edu/faculty/pucher/Irresistible.pdf

*"**It was found that a noticeable 'safety in numbers' effect exists.** Generally, the overall increase in cycle and pedestrian accidents was not substantial and the crash rate per cyclist and pedestrian reduced with increases in their numbers." – http://www.nzta.govt.nz/resources/research/reports/289/docs/289.pdf*

*"New Zealand has found that the crash rate per cyclist reduces as the cycle volume increases; **the 'safety in numbers' effect**." –* http://www.nzta.govt.nz/resources/research/reports/389/docs/389.pdf

A concept that comes up often when discussing bicycle safety is the "safety in numbers effect". This describes the well documented effect that in places were there are a lot of bicyclists, bicycling is safer; in places where there are fewer bicyclists, bicycling is less safe. It is further documented that more bicyclists increase the safety of all road users[20].

20 http://www.streetsblog.org/2011/09/21/fact-places-with-high-numbers-of-cyclists-are-safer-for-pedestrians/

This is generally attributed to the “training” and “expectations” of motorists, as to whether or not they're looking for and expecting bicyclists.

This is often referred to in the context of mandatory helmet laws (helmet laws discourage people from bicycling, so helmet laws make bicycling less safe) and the Idaho Stop (the law encourages more people to ride bikes, and that makes bicycling safer). The same argument applies to mandatory hi-viz (like helmets, it would discourage people from bicycling, and make bicycling less safe).

The “safety in numbers effect” is very well documented, and can't be ignored if our ultimate goal is to make bicycling safer. This means that helmets, hi-viz, Idaho Stop Laws, bike lanes and wide shoulders (aka, de facto bike lanes) and anything else that we consider in the context of bicycling safety has to account for whether it ultimately encourages or discourages bicycling; and accept that the answer to that one question, even if it's counter-intuitive, may determine the success or failure of promoting bicycle safety more than anything else.

11.4) The paradox of promoting safety

For the last several years I have been researching bicycle safety issues, and one thing has become clear: When governments promote bicycle safety they inevitably make bicycling less popular and less safe. When governments promote bicycling, they make bicycling more popular and more safe.

This is what I call the paradox of promoting bicycle safety. Government efforts that focus on bicycle safety (mandatory helmets, mandatory bike lanes, mandatory bells, etc) NEVER make bicycling safer. Meanwhile, government efforts that simply promote bicycling (mostly by installing bicycle infrastructure that makes people feel safe and welcome) achieve the highest increases in bicycling and become the safest places to bicycle. It happens every time.

The more we focus on making bicycling safe, the harder we will fail. The more we focus on making bicycling accessible, viable and enjoyable, the more we will succeed at making bicycling safe.

11.5) Under-reporting

As pointed out above, this inquiry risks a clash of the lamp-post problem with the safety pyramid concept. This is compounded by under-reporting of crashes, “near misses” and other incidents.

The NZ Police have a “Roadwatch” system for reporting minor incidents and making informal complaints. It is a very imperfect system, but using it to report minor incidents and “close calls” should be encouraged.

11.6) Law enforcement – education, training & bias

Police who deal with and respond to traffic incidents need to have proper education as to bicyclists, laws, practices, and safety. Successful completion of a Bikeability course up to grade 3 should be a minimum requirement for law enforcement personnel in these roles. My first encounter with New Zealand Police was after filing a complaint against a motorist; my complaint clearly stated that I was bicycling about 1.5m away from parked cars, along a one-way street with two lanes available for traffic. After reading my complaint, the senior officer called me at work and, after introducing himself, began the conversation by asking me what the hell I was doing riding my bike in the middle of the road. This senior officer who was following up on my traffic complaint had no idea that NZTA (along with every bicycle safety advocate and training program in the world) encourages bicyclists to stay away from car doors that might open.

When a bicyclist files a Roadwatch complaint (ie, an informal complaint) against a motorist, or when police contact a motorist regarding a formal complaint by a bicyclist, this is a great opportunity for police to remind the motorist of NZTA's recommendations, particularly:

- *Hazards like parked cars, potholes, glass, litter and opening car doors may cause cyclists to veer off-line and move into your path. Because of this, give cyclists plenty of room when passing them. Ideally, allow at least 1.5 metres between you and the cyclist.*
- *Wait for a clear space before passing a cyclist on a narrow road.*
- *At intersections, apply the same rules to cyclists that you would to any other vehicle on the road. Take care to indicate turns.*
- *Only drive across cycle lanes when entering or leaving side roads, driveways or parking spaces.*
- *If you are crossing a cycle lane, give way to cyclists before you cross.*
- *Take extra care around young cyclists.*
- *You must not drive in a cycle lane except for a maximum of 50 metres when entering or leaving side roads, driveways or parking spaces.*

Further advice for sharing the road with bicyclists can be found online - http://www.nzta.govt.nz/resources/roadcode/about-other-road-users/sharing-road-with-cyclists.html

Police should formally adopt that information into a form-letter or pamphlet that can be sent to motorists, when bicyclists file complaints. This will help some people to realize that they've made a mistake and be more careful in the future, while for others it may serve as a "notice" which can be raised if they later claim ignorance as to safely sharing the road. In the latter case, this may be sufficient that police, upon subsequent complaints being made, will not be tempted to drop the severity of a charge out of concern that a more severe charge would not reach the threshold for prosecution (this has been pointed out by police as justification for pursuing lesser charges).

12) International best practices

We should be importing expertise as to best practices regarding bicycle safety, minimizing conflict with other road users, and other ways to encourage bicycling as a safe and enjoyable form of transportation and recreation for everyone. The Dutch Cycling Embassy[21] was created for just that purpose, so they can share their world-leading bicycling expertise with other cities and countries. There's no reason to try to reinvent the wheel, when the expertise is readily available.

Nationally and locally, expertise such as this should be consulted in all transportation projects and training programs.

13) Further reading and closing

Over the last few years there has been an increasing stream of published studies relating to the "safety in numbers effect", sharing the road, visibility and conspicuity, the health benefits of bicycling, the health risks of not bicycling, etc.

Although I haven't yet read it, **City Cycling** by John Pucher and Ralph Buehler is said to be the most current and authoritative policy handbook to date. - http://mitpress.mit.edu/books/city-cycling-0

"Living Streets" - http://en.wikipedia.org/wiki/Living_street

As stated at the beginning of this submission: *I appreciate that to someone who does not ride as*

21 http://www.dutchcycling.nl/

often or as confidently as I do, my views may seem odd, counter-intuitive, or just plain wrong. I would like to encourage the Coroner to use this submission as a starting point; to investigate further the suggestions made; to take an on-road bicycle safety course such as Bikeability grade 2 or 3, or one of the bike/bus driver workshops.

I would like to invite the Coroner to research these points further, especially the points that seem wrong, or contact me directly if clarification is needed. I'm confident that CAN would also be able to provide expertise, if requested.