People for Ecologically Sustainable Transport

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Submission by People for Ecologically Sustainable Transport (PEST) In response to the Active Transport Strategy by the Commonwealth of Infrastructure. By Alan Parker OAM

INTRODUCING PEST's Objectives on active transport 16-1-2013

1. To promote world best practice in Australia to it is necessary to 'green' the transport system and reduce the road death rate for all road users.

2. Provide lower speed limits as provided by the bicycle friendly countries of Europe, Sweden, Denmark, the Netherlands and Switzerland.

3. Provide better walking, cycling and electric bicycle infrastructure, integrated with the public transport by the provision of safe and secure storage for bicycles at stations.

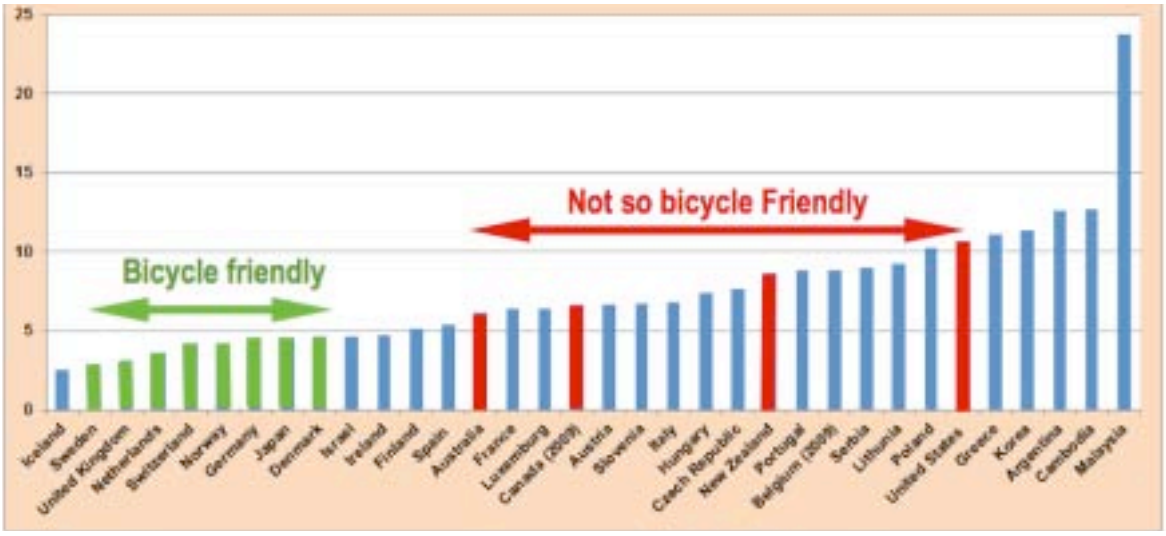
Objective 1: To accept and act upon the fact that countries with bicycle and pedestrian friendly road networks are safer for all road users.

About 1.3 million people die each year as a result of road traffic crashes worldwide. Nearly half of them are "vulnerable road users": pedestrians, cyclists and motorcyclists. Furthermore, the world's fleet of passenger cars peaked at 1 billion in 2010 and car drivers killed most of the 1.3 million people. The World Health Organization believes that road safety generally and bicycle safety in particular need to be given priority in all countries.

This paper focuses on national road death rates per 100,000 population, the number of bicyclists' deaths in countries in the EU, Australian region, the US and Japan . Trends from 1970 to 2010 are charted which suggest that bicycling has become much safer in Japan, Switzerland, Germany, the Netherlands and Scandinavia because of their innovative bicycle planning and intermodal bicycle/ public transport planning practices. Australian cyclists' deaths, which are charted by state and gender, have also declined since 1980.

The road safety role of the WHO is to persuade the rapidly developing countries to manage their road systems in such a way as to constrain the growth in deaths and injuries to achieve similar levels of safety to those countries with good safety records.

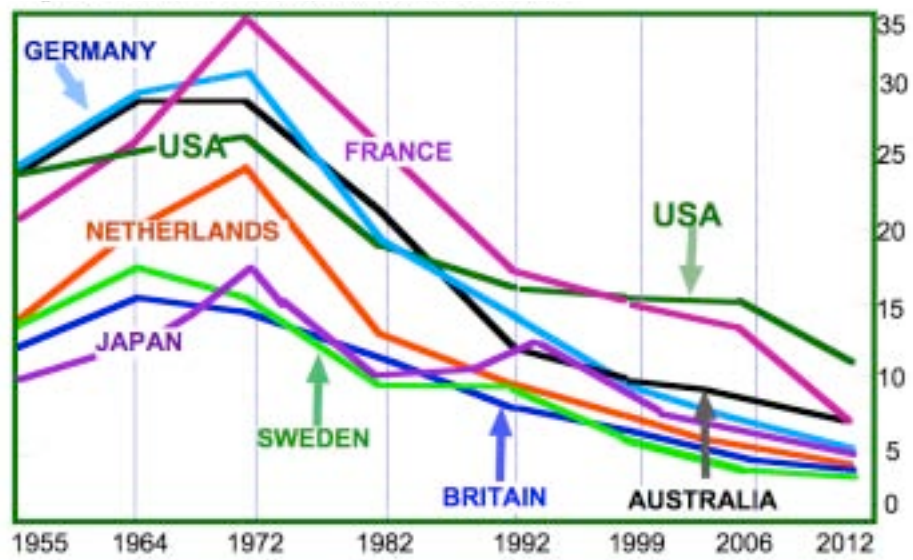
Figure 1 Deaths per 100,000 population in 34 countries showing the relative position of the the bicycle friendly countries in green and not so friendly countries in red and blue.



Source: WHO regional data for Europe 2009 . Green and red additions by author.

The road safety role of the WHO is to persuade the rapidly developing countries to manage their road systems in such a way as to constrain the growth in deaths and injuries to achieve similar levels of safety to those countries with good safety records (shown in green on figure 1)
According to the WHO about 1.3 million people die each year worldwide as a result of road traffic crashes mostly in the poorest and developing countries which have little chance of reducing their road deaths below 23 per 100,000 population (see far right of figure 1). Europe's current road deaths are one fortieth of the current world road deaths. (WHO fact sheet No 358 2011))

Figure 2 : Road death rates per 100,000 population in 5 EU countries, the US, Japan and Australia from 1955 to 2012

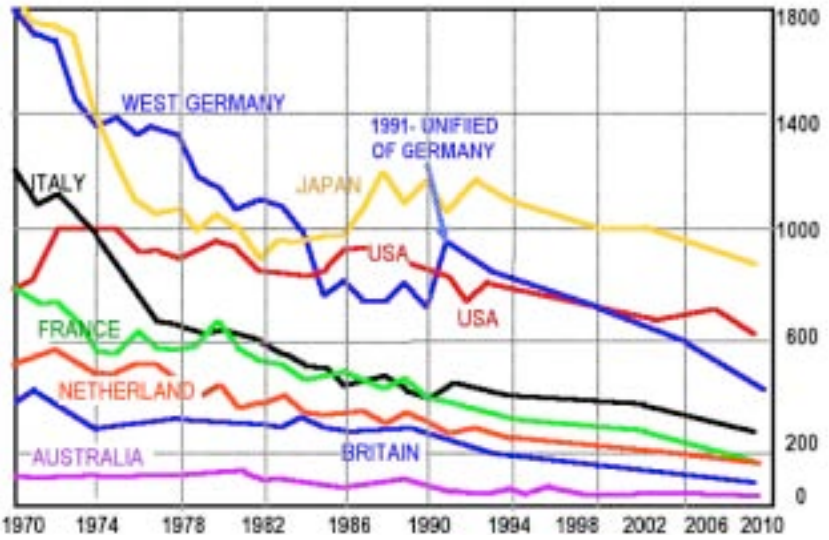


Source: IRTAD (2009 & 2011). 1955-1970 UN Annual Reports of road deaths

Figure 2. shows those European countries and Japan with good road safety records and a not so good record in the USA. The WHO hoped to avoid the mistakes made in the reconstruction of Europe in the 1950s and 1960s. After World War 2, as Europe's car industries expanded, this resulted in 1972 in a peaking of road deaths in the EU countries (shown on figures 2, 3, 4, 5 and 6). After 1972 the growth in car passenger travel was increased but was constrained by traffic management and road law enforcement measures. The greater use of public transport, walking and cycling was encouraged in ways that achieved this outcome; in interestingly different ways from after 1972 to the present time.

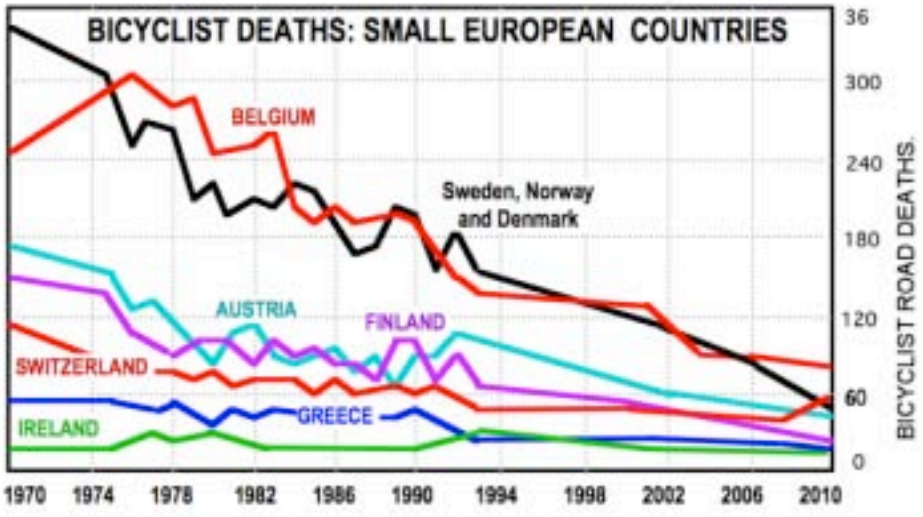
Figure 3 shows that in Europe, Japan , Australia and the USA the number of bicyclist deaths dropped from 1955 to 1970 although they had increased following World War 2 due to the priority given to post war reconstruction of damaged infrastructure in the 1950s and 1960s. However Sweden, from 1964, reduced its death rate and and that was noticed by the powers that be who wanted a united Europe to put an end to war, once and for all. The road death rates of the small European countries and Scandinavia (shown on figure 8) confirm that the early Swedish leadership was important throughout Europe. Indeed this provides a model from which Australia could learn.

Figure 3: The decrease in the number bicyclists road deaths 1955 to 2012 in 5 EU



IRTAD reports 2010 & 2011. Parker (1996)

Figure 4: The decrease in the number bicyclists road deaths from 1970 to 2012 in the small European countries.



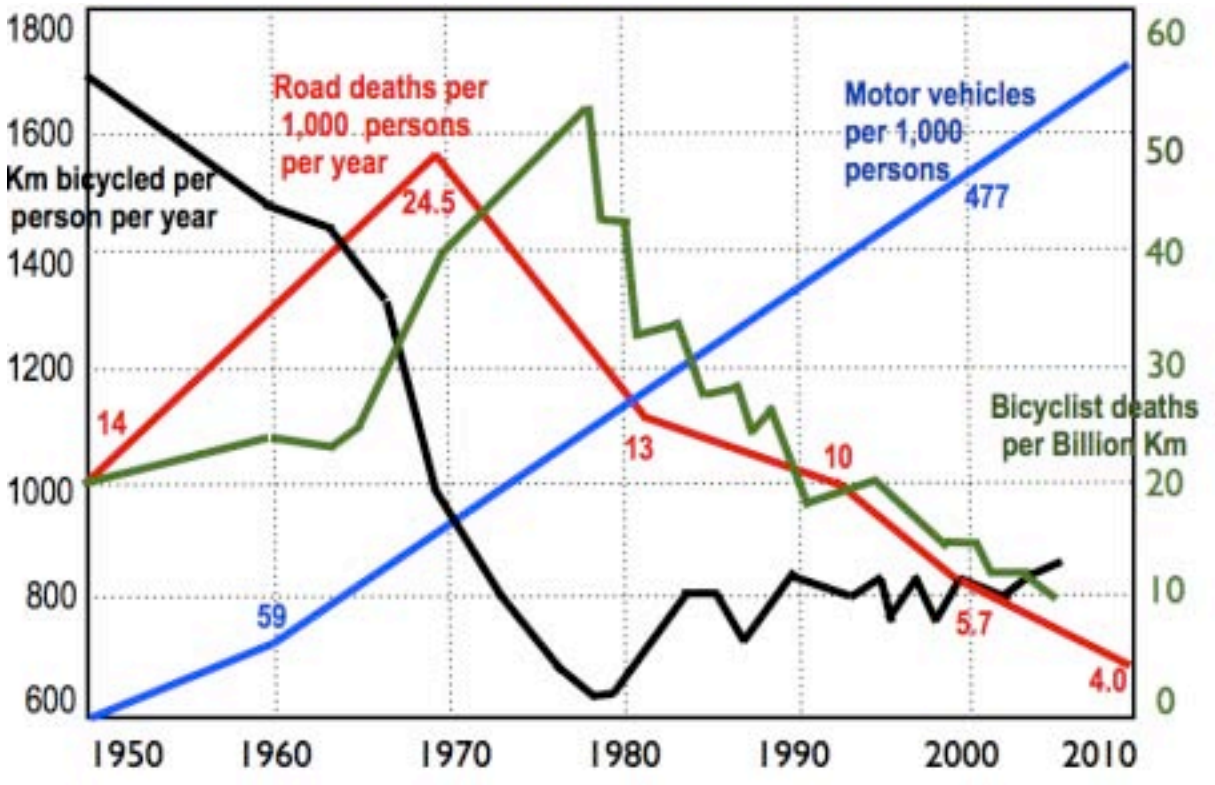
IRTAD reports 2010 & 2011. Parker (1996)

Figure 4 shows a decrease in road deaths in 8 small European countries from 1970 to 1994 with the exception of Ireland. Since 1970 there has been a large increase in their populations and car ownership, but the total road deaths rates per 100,000 people have declined except for Ireland.

As a general rule those countries that have provided the best bicycle infrastructure and have high levels of bicycle use have the lowest overall death rate per million population for all road users. The small European countries provide a model for large states or regions within a country.

In Australia and New Zealand no robust national data are collected regularly for "all walking" and "all cycling trips" which makes it difficult to measure how safe cycling is per distance travelled and the death rate per billion kms.` The only time this was measured in Australia was in 1985 (INSTAT 1989)when the Netherlands was 5.6 times safer for walking and 2.2 times safer for bicycling.

Figure 5 : Netherlands: Showing the growth motor vehicles 1950 to 2010 and road deaths per 1000 population. (numbers marked on the trend lines). Bicycle km ridden is shown on the LH scale and bicycle deaths per billion Km on the RH scale



Source: Netherlands Ministry of Transport (2007) . IRTAD 2011

Jan Gerard, who is perhaps Australia's leading bicycle planning consultant, sums up the merits of learning from world best practice in the Netherlands as follows:-

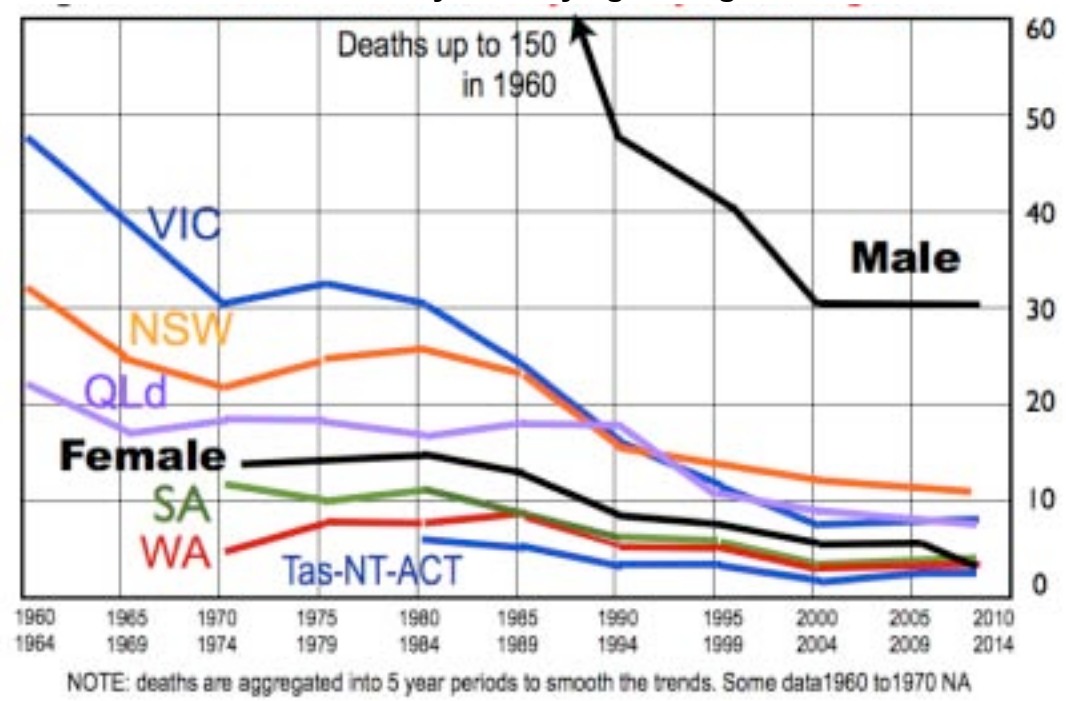
"The Netherlands recognized several decades ago that for the multiple short-to-medium distance trips that characterize daily living, the most efficient vehicle is the bicycle. This is also feasible for Australia, where about 50% of household trips in urban areas are less than 5 km. Despite already having excellent cycling infrastructure, the Netherlands continues to invest about $25 per head per annum in cycling infrastructure.

Annual investment in cycling infrastructure varies across Australia's states, territories and local government areas, but rarely exceeds $10 a head. The Victorian Government's decision to no

longer fund bicycle infrastructure may well mean that Victoria now takes the wooden spoon for state-funded cycling investment" Gerrard, Jan (2012)

Most of Australia's population lives in urban areas; in total the urban areas are not so different from the urban rural areas of the Netherlands. It is pretty clear that in the Australian capital and provincial cities about $20 per head per annum is what could be described as the Australian bicycle movement's demand from all local, state and federal governments. It will be difficult to work out an equitable distribution by the three tiers of government but the time has come to ask for what is needed: $20 per head per annum per urban area and a 13 % cycling mode target.

Figure 6:deaths of Australian bicyclists by age and gender



NOTE: deaths are aggregated into 5 year periods to smooth the trends. Some data1960 to1970 NA

My experience of this problem comes from my own enlightenment when 20 years ago I did a study tour of bicycle facilities in 10 Dutch cities after which I produced long articles in the cycling and planning press in Australia. After my study tour I was advocating to road engineers and urban planners that they travel and study to learn from world best practice in the Netherlands, Denmark and Sweden .

Pedelecs and electric bicycles need to be part of Active transport brief

In 2012 one million e-bikes and pedelecs w ere in use on Dutch roads and this is still growing particularly for cyclists over 46 years. Today one out of every five bicycles sold in the Netherlands is an e-bike and 10% of all households owns an electric bicycle. .A recent study by the Dutch National Cycling organisation (Fietsberaad) found that cyclists ride more kms on an E-bike than a bicycle.

- People up to 46 years old rode 31.3 kms per week on an E-bike compared to 20.7 kms with no power assist.
- In the 46-60 age group 30.9 km rode an e-bike compared to 17.3 kms with no power assist.
- The over 65 age group 31.4 km rode an e-bike compared to just 15 kms with no power assist.
- Dutch Safety researchers (Safety NL) found there there is no difference in safety risk between E- bikes and standard bicycles. See (page 1 Bike Europe Dec 16 2012)

Objective 2 : Provide lower speed limits as provided by the bicycle friendly countries of Europe; Sweden, Denmark, the Netherlands and Switzerland.

Lower speed limits are of greater benefit to these vulnerable users for the simple reason that they are not strapped into place inside a protective steel cocoon that cushions the body from death or serious injury. A tiny minority of road hogs cause a disproportionate number of accidents and a disproportionate number of bicycle and pedestrian fatalities. The best way to deal with this is to use the best technology available to accurately detect speeding and to ensure that offenders are caught even if only at 3 km/h above the posted speed limit as it is done on local roads in Melbourne . This would have the added benefit of reducing impact speed in collisions and the severity of injuries of cyclists.

We are concerned that allowing Councils to choose to establish 30 and 40 km/hr zones within their jurisdiction needs to be done for all of Brisbane SD. An action plan where all these speed limit changes are given and maps showing safe routes for cyclists are needed. We are very disappointed that studies in Unley SA on 40 km/h speed limits in reducing injury severity were not evaluated in the Active Transport Strategy.

Also the speed limit on main roads with unprotected bike lanes needs to be 50 Km/hr with police enforcement for one year to ensure a higher level of compliance with that limit. This would discourage fast moving cyclists riding on the footpaths along main roads, because of fear of motor traffic traveling at 60 km/hr or faster. This would protect pedestrians and child cyclists under 12 years using the footpaths. This submission considers lower speed limits in Geelong, Adelaide, Sydney, some US cities, Japan and the bicycle friendly countries in Europe.

THE 40 kph (25 mph) SPEED LIMIT TRIAL IN CORIO A SUBURB OF GEELONG IN 1975.

The first Australian 40 km/hr speed limit trial on residential streets in Corio, Geelong was part of the Geelong Bikeplan study over a 12 month period and was part of the study brief as an essential safety measure for cyclists and pedestrians . It was advocated by the Bicycle Institute of Victoria and the Minister responsible, Brian Dixon, the patron of BIV and chairman of the Parliamentary Road Safety Committee, who gained the support of the Victorian Cabinet. The Shire of Corio was strongly in support (Geelong Bikeplan 1974) and was supported by other traffic management measures for Geelong generally. These measures still exist and are shown on the Melways Greater Melbourne Street Directory (page 431, see cross reference 7/8 and H/J)

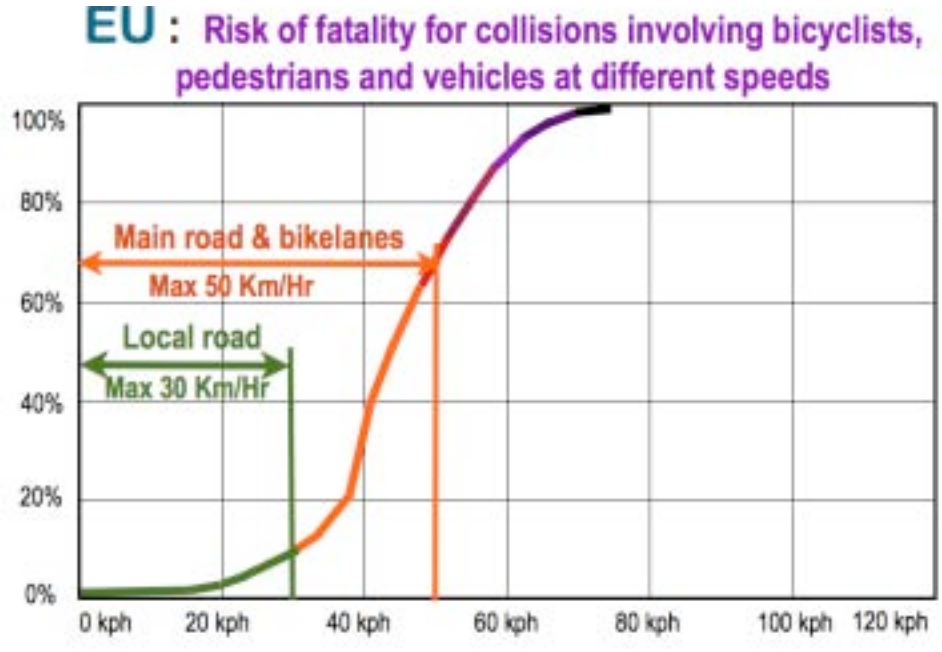
The trial in Corio compared two matched areas, one without signs and the other with, as a control area. The study took place at a time of increasing road speeds generally and speeds went up by 6 km/ph in the control area and down by only 1 km/ph in the trial area resulting in a total speed difference of 7 km. This at the time was mistakenly thought not to be very significant by ROSTA which ignored the huge growth in car ownership from the nearby Ford factory.

Warwick Patterson and Dr. Chips Sowerwine, in an official State Bicycle Committee Submission to the MMBW Hierarchy of Roads Study, took a different and favourable view. They pointed out that police enforcement in the 40 km/ph area was almost entirely absent in the first two months, minimal for the next ten months and that there was no STATCON control or education campaign. They concluded that the limit alone, without supporting measures, had held down speeds significantly and that in the face of a large increase in the control area this suggests that the 40 km/ph experiment was a success.

This conclusion was reinforced several years later when road speeds In Geelong greatly increased due to Ford company employees and other drivers upgrading their cars. Meanwhile car speeds in the Corio 40 km/ph test area did not increase. In 1974 the Bicycle Institute of Victoria (now BV) had run a campaign in the general and cycling press for a 40 km/ph limit on

all residential streets and on access roads that were not main roads. It was argued that this should as acceptable, in Melbourne as it was in many US urban areas. Indeed it would be more effective in conjunction with the education and enforcement measures proposed in the Geelong Bikeplan as a model for all of Victoria's built up urban areas and new urban developments .

Victorian cycling organizations have been advocating the establishment of a 40 km/ph. (25 mph) limit on residential streets since 1976. (Parker, A A 1976) The general arguments put are just as valid today as they were in 1976 but the political will has been lacking to do something about it.



Since that time the international bicycle movement has been active on this issue and around the world there has been a push to reduce speeds for the benefit of cyclists in several countries.

The consensus reached on bicycle policies at the international bicycle planning conference (Velo-City 1993) has been documented in the CTC Digest number 10, which states:

"Lowering motor vehicle speeds is probably the biggest single benefit to cyclists and walkers"

Pedestrian and cycling organizations world wide want lower speed limits and in Europe many driving organizations support such limits. Who wins seems to depend on whether or not road safety experts are experienced bike riders, as many are in the Netherlands and Scandinavia; that is why cyclists and pedestrians get a better deal. In Australia bureaucrats and politicians have been very car oriented since the 1950s but that has changed recently .

Research from Sweden shows that a 7 km/hr difference is very significant and resulted in a 33% reduction in fatal accidents then and the death rate per 100,000 for all road users in 2010 was 3.4. Indeed, the Brisbane Active Transport strategy ignores the fact that lower speed limits are the most important means of reducing traffic accidents, air pollution and carbon dioxide emissions.

Note that the Dutch National Environment and Policy plan has reducing speeds and car use a part of a package of measures to encourage active transport to reduce greenhouse gas emissions. (NEPP3). The graph below shows what are most important speed limits In the Netherlands.

In Victoria I have been lobbying for 40 Km/Hr for 35 years which is a sensible first step towards what the European Parliament is slowly achieving in the EU.and illustrated on the graph above.

The 40 Km/Hr SPEED LIMIT TRIAL IN ADELAIDE

Tom Kenyon, South Australia's Minister for Road Safety, said at the 34th ATRF conference in 2011 that he was passionate about road safety and that 'lower speed limits' and a 'lower speed culture' were bring created for Metropolitan Adelaide and the CBD. He knew it could be done with the low cost traffic management measures trialled in the suburb of Unley in the 1990s which still worked well and recent speed limiting innovations in the CBD.

The longest running Australian 40 km/h speed limit trial was conducted in the suburb of Unley. It began in December 1991 and was completed in June 1996 and the final 200 page report released in August 1996. At the conclusion of the Unley Trial mean speeds across the trial area were a little under 40 km/h. Most significant of all, the trend for the largest speed reductions was in the streets that initially had the highest speeds. Seven surveys of speeds and community opinions undertaken have revealed evidence of the development of a 'lower speed culture' in which people are choosing to drive at lower speeds without enforcement. Resident opinion has remained strongly in favour of the 40 km/h speed limit and the local community perceives a high safety and amenity benefit. One of the tasks of the Brisbane Active Transport is to develop a 'lower speed culture' as they did in Unley (Parker 1995).

It is possible to physically reduce motor vehicle speeds with physical devices. However at $3,000 per hump, $8,000 a plateau and $30,000 a roundabout the cost of physical devices is high. A complete street treatment can cost $80,000 unless smart planning integrates than signage, running a proper education campaign. Most important is using physical traffic management devices at the entrance to residential precincts as they do in Unley. The objective in Unley was to find the most cost effective combination of signage, pavement, markings and low cost physical traffic management devices. Whilst all devices trialed resulted in some form of speed reduction, some elements were more successful than others. The synergenic benitfit of adding the 40 km/h to the use devices was high.

One of the most successful treatments is at the entrance to the 40 kph Zones which uses three elements: the Australian standard sign that is in the proposed road rules, a low cost street narrowing hump and large 40 pavement marking. Another treatment is a mid block section of a residential street within the local areas with two elements: a larger than normal 40 sign and a very large '40' on the road surface.

It is recommended that Commonwealth Active Transport Strategy study team take a trip to Unley and ride ride a bicycle for a couple of hours to see first hand how it works and flag down local motorists, walkers and cyclists. This writer did that many years ago and saw the film made about 40 Km zone, and the local motorists with children who supported the signs on poles and large painted signs on the streets. A well known defensive driving expert gave a dramatic test of how lowering local speeds to from 60 kph to 40 kph could save lives. He showed that emergency braking took 22m less to stop at 40 km/hr than at 50 Km/hr.

The foresight of the City of Unley in promoting the 40 km/hr limit is most welcome and will hopefully become a 30 km limit in time. As it is now in many European cities and many more by 2020. The EU leads the world in Active Transport Planning practice.

In 2012 Sydney and NSW have 40 speed limits.

40 km/h speed limits are in areas where vulnerable road users are present ,such as:
School Zones at (at prescribed times) .

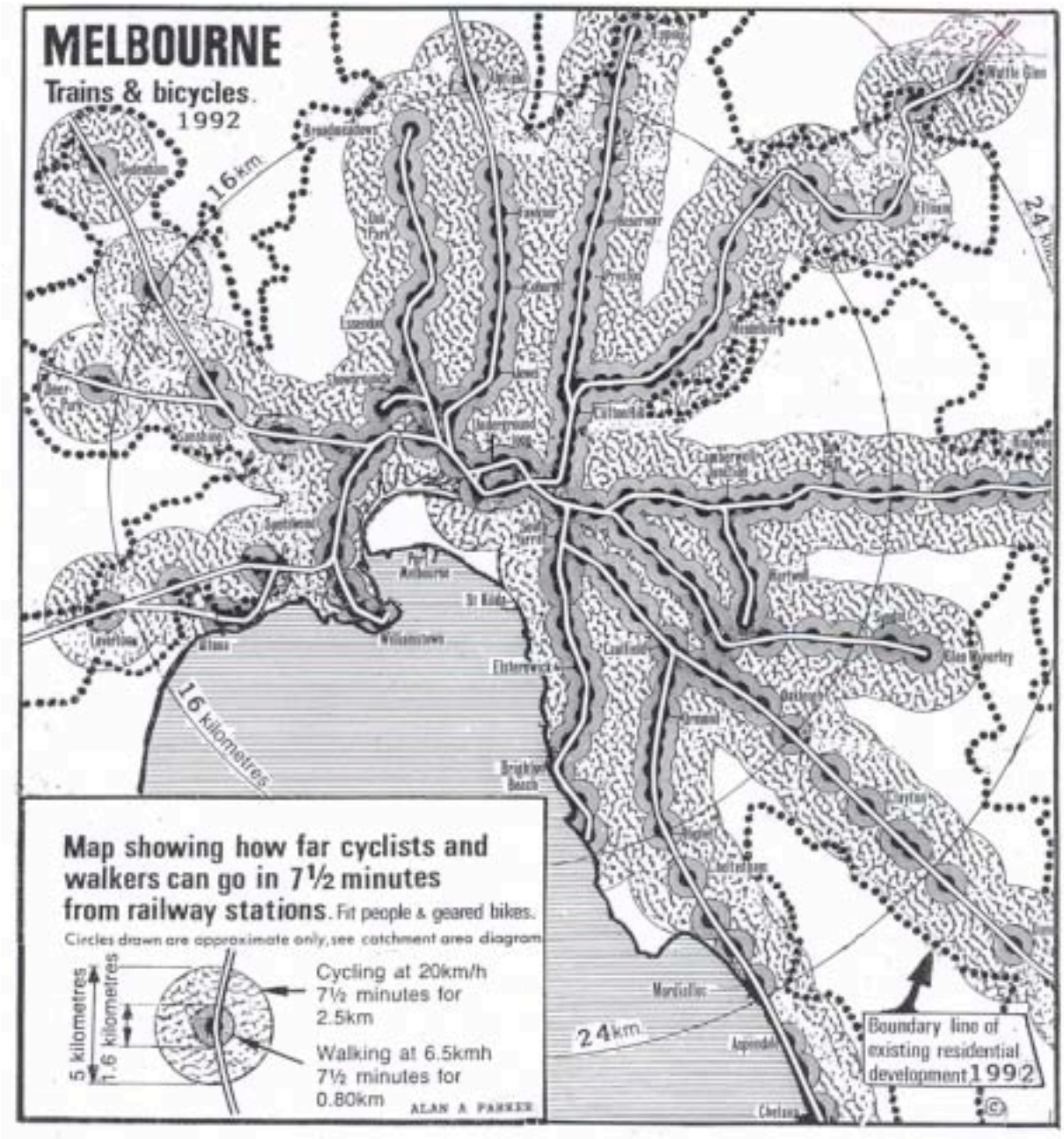
* High pedestrian activity areas.
* local traffic areas.
* Toll plazas.
* School bus blackspot areas.

The Commonwealth Active Transport Strategy should consider all these areas .

Objective 3: Better cyclist access to Australian capital cities is needed from middle and outer urban rail stations and express bus lines to combat congestion

Detailed studies have been done and bicycle security hardware Installed and tested at some rail and bus stations in Melbourne, Brisbane, Perth, Adelaide, Canberra and Sydney. The overall results are useful but failed to significantly increase bicycle access to the pubic transport system in integrated way as is done in the Netherlands.

The hall mark of an integrated transport system is : the humble bicycle is a green machine that can improve access to railway stations and trunk bus routes and used instead of a car for most inner urban trips and middle and outer Melbourne access to the CBD. The Melbourne bicycle and walking access map done by this writer in 1992



shows that railway stations are very important access points to the City of Melbourne. Why then is the need for secure bicycle parking at around 200 stations ignored by the City of Melbourne transport plan? Why is the bicycle theft data not collected for all stations as it used to be for 16 years from 1975 to 1991? Why have ministers transport plans ignored updating the 1992 map?. In all its transport strategies for metropolitan Melbourne why was this never done as a first step?

To reduce road congestion and air pollution cycling can enable many households to do without a second or third car and enhance the mobility of those who don't have a car out of choice or necessity. The map shows that 2.3 million people in Melbourne (75% of the population) live within easy cycling distance (three kilometres) of a station, but only 700,000 were in easy walking distance in 2011.

It is also unfortunately that no mention is made of around 1000 bicycle thefts a year at stations and the active discouragement of potential bike/rail commuters to the CBD via the loop stations.The recommendations of the report (Loder & Bayly and Alan Parker Design 1987) That recommended improvements at 200 rail stations which were mostly ignored. 20 years later only 600 bike lockers were provided.

In 2011 the roles of pedelecs and electric bicycles as access modes to rail stations and express bus stops and modal inter changes was advocated

Recently studies (Martin & Hollander 2009) have been done of the usage the 'Parkiteer' secure bicycle cages and lockers. But no work was done to define the size of the theft problem to find how many bicycle cages were really needed. No scrutiny was made of the reported thefts to prevent the current high rate of theft

The police data base and the police have current estimate of the ratio of reported to unreported thefts. Meanwhile at least 1000 bicycles have been stolen a year from stations since 1970.

PARKITEER LOCKUP CAGE

But exactly how many we do not know, because public transport planners did not want to know about this problem and hoped the problem would go away by simply ignoring the thefts. No reliable bicycle theft data have been available since 1995 which established that around 9000 rail patrons had bicycles stolen or destroyed by vandalism in the previous 20 years.

The stock of 650 bicycle lockers has not increased in the last ten years and due to maintenance problems many have been taken away as scrap metal. The rail planners never wanted them and sought to remove the lockers on station platforms. Who knows how many are left?

Since the Cain Labor government took office in 1984, there have been repeated promises of measures to combat this problem, but only token actions were taken with only 650 secure spaces bicycle lockers and 750 spaces in the Lockup Cages. By 2012 a total of 46 Parkiteer cages were at Melbourne stations for a total of 1,300 bicycle users, mostly commuters.

I knew that at least 1000 bicycles have been stolen a year from stations since then because I was given the reported theft data from 1975 till 1995 from the Victorian police data base. The police also knew the ratio of reported thefts to unreported thefts for car radios at station car parks, that ratio was one to one. I assumed that unreported bicycle thefts at stations was around 500 a year which means the annual theft rate was about 1000 bicycles a year.

The recent report of the Ecologically Sustainable Development working group on transport recommends encouragement of bicycle access to rail, as does the Senate standing committee report *Rescue the Future.* The Senate report says an innovative and cost-effective solution would be to encourage use of public transport through provision of bicycle paths and secure storage facilities.

In fact, even bicycle paths are not necessary for about 80% of stations which are tucked away in quiet back streets. A far bigger problem is the fact that about 100 stations are unstaffed and an open invitation to bicycle thieves and vandals.

Table 1 BRISBANE AND MELBOURNE BICYCLE LOCKERS.

Bike lockers	1979	1982	1986	1992	1994	2001
Total Brisbane	0	0	0	198	546	1700
Total Melbourne	32 ;	119u	145 V	229 t	377 #	630

SOURCES
; Victorian Railways Report (14-10-80) to State Bicycle Committee.
u Victorian Railways letter to Bicycle Victoria 30 -9-82.
V Loder & Bayly and Parker, A A (1987)*"Bicycle facilities at railway stations"* 150 page Report to the Metropolitan Transit Authority .
t PTC report to B. Carolan from D. Bell dated 2-4-93
PTC Letter from G.Payne (Met Trains) dated 9-10-95

Table 2 6 BRISBANE STATIONS: bike locks ups and car parking data.2002

Station and km to CBD	Lock-ups 1992 *	Lock-ups 1994 #	Lock-ups 2001 +	Car Park 2001	Car/bike ratio
Zillmere 15 km	0	6	66	218	3.3
Strathpine 19 km	0	0	28	237	8.4
Bald Hills 20 km	20	30	58	147	2.5
Bray Park 23 km	10	30	58	152	2.6
Lawnton 25 km	0	8	82	159	1.9
Petrie 27 km	10	22	66	450	6.8
Total	40	96	338	1363	4.0

Note, Distance from CBD is along the rail track.
SOURCES
* Source Table C5.1 Bicycle Brisbane Plan 1994
# Chris Gardener Manager Intermodal Passenger Services QR

My research in Brisbane in 2002 showed very clearly that in the outer suburbs locker demand was very high as is shown on Table 2. And the car/ bike ratios show that very clearly. (Gardiner Chris 1993).

In the short term, there is a need for secure bicycle storage in the form of lockers, lock-up rooms and cages, and perhaps closed circuit surveillance. Japan's rail systems already provide such facilities for about 3 million bike-rail commuters. In Germany, the Netherlands and Denmark also bicycle storage facilities and access are a high priority for public transport authorities.

TABLE 3
Bicycle locker capacity existing and proposed to catch up with Brisbane.

Rail system	Commuters.	Com per locker.	Bikes in locker	Locker target
Sydney	207,794	371	560	9,410
Melbourne	97,900	155	630	4,435
Adelaide	7,780	70	110	352
Perth	19,743	48	412	894
Total	333,217	194	1712	15,110
Brisbane	37,500	22	1700	growing demand

Failure to provide such facilities In Melbourne has actually led to a decline of about 9% annually in bike-rail commuting at a time when bicycle sales have been increasing by around 8.5% annually and other types of bicycle use have soared.

The high incidence of theft and vandalism rapidly leads to people, and particularly women, losing confidence in the rail system. If theft had been kept to reasonable levels, it is likely Melbourne would have about 7000 bike-rail commuters today, with potential for more than 20,000 by the year 2020.

It seems public transport authorities are actually contributing to car dependence despite the fact that bicycle locker storage can be provided for around $300 per unit, as against a minimum of $2000, and as much as $ 18,000 for car parking including road way and drainage . It seems around 75% of present car-rail commuters come from within three kilometres of the station, easy cycling distance on flat terrain.

In the 2006 Census, around 140,000 journeys to work were made by train each working day in Melbourne (up from around 120,000 in 2001). The following table shows how these commuters got to the station on Census day in 2001 and in 2006 and 2,850 drove to the station.

As the figures show, barely one in five Melbourne rail commuters gets to the station by car. On the other hand, a clear majority of train travellers walk to the station, while a comparable number arrive by bus or tram as by car (despite the generally very poor provision of these services).

Table 4 Access mode to Melbourne Railway stations 2001-2012
Source: Australian Bureau of Statistics, Method of travel to work (full classification)

ACCESS MODE	2001		2010	
	Passengers	Percent	Passengers	Percent
Walk	68,682	58.0	87,216	61.3
Feeder bus or tram	22,201	18.7	26,718	18.8
Car driver	19,274	16.3	20,208	14.2
Car Passenger	6,493	5.5	6,041	4.2
Bicycle	1,110	0.9	1,282	0.9
Other (mainly taxi)	733	0.6	888	0.6
Total	118,493	100.0	142,359	100.0

What is interesting is that the vast majority of new train passengers in 2006 (those who weren't using the train in 2001) also walked to the station.

In fact, the number walking to the station increased by 27% between 2006 and 2010. Meanwhile the number using feeder buses or trams increased by 20%; but the number driving or being driven to the station increased by just 2%. Assuming that a further 2% of car drivers were parked by 2011 this would mean that around 20,000 cars were parked in working hours in 2011.

What is also particularly interesting is that the vast majority of new train passengers in 2006 (those who weren't using the train in 2001) also walk to the station. In fact, the number of people walking to the station increased by 18,500 (27%) between 2001 and 2006. Meanwhile the number using feeder buses or trams increased by 20%; but the number driving or being driven to the station increased by just 2%

The 2011 Census available in November 2012 showed that ‘walking only’ increased to 56,400 and the use of ‘bicycle only’ to 25,700 (1.66%) This means that target set for secure bicycle parking for 4,400 in bicycle lockers or Parkiteer cages in 2002 is unlikely to be achieved because the growth of Bicycle only indicates that the demand for bike/rail travel is much higher.

If cycling to stations can be greatly increased by giving priority to secure bicycle, pedelec and electric bicycle parking this could greatly increase commutes and enable the elderly too conveniently access “off peak public transport” and do without a car .

Table 5. Rail station catchment area data.

Rail & bus station access	Walking	City bicycle	Racing bike	Pedelec or E-Bike
Effort advantage	1	3.1	3.8	1
Speed Km/hr	6.1	20.	25	24
Distance km	0.8	2.5	3.2	7
Catchment area square km's	1.3	12.4	20	40

Within a street grid layout, which exists in much of greater Melbourne, Table 4 shows the walking and bicycling distance for the same physical effort of 75 watts for 7.5 minutes. Pedelec riding, will double or triple the comfortable riding distance to rail stations. Also in the hilly suburbs, 250 watts pedelecs would enable the elderly and young people to cycle more than they do.

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