

New Zealand all-age mandatory bicycle helmet law

A public health and safety disaster

New Zealand is one of only three countries in the world with national all-age mandatory bicycle helmet laws, the others being Australia and the United Arab Emirates. Israel repealed its mandatory helmet law for adults on cycle paths in 2011.

The New Zealand law was introduced on 1 January 1994 and government road surveys in 2012 reported 92% of New Zealanders wearing helmets when cycling.

Below are charts produced by the [New Zealand Ministry of Transport](#) in 2012, illustrating cyclist numbers and injury rates in the years before and since mandatory helmet law enforcement in 1994.

The law has significantly reduced cycling while not increasing the safety of remaining cyclists.

Chart 1

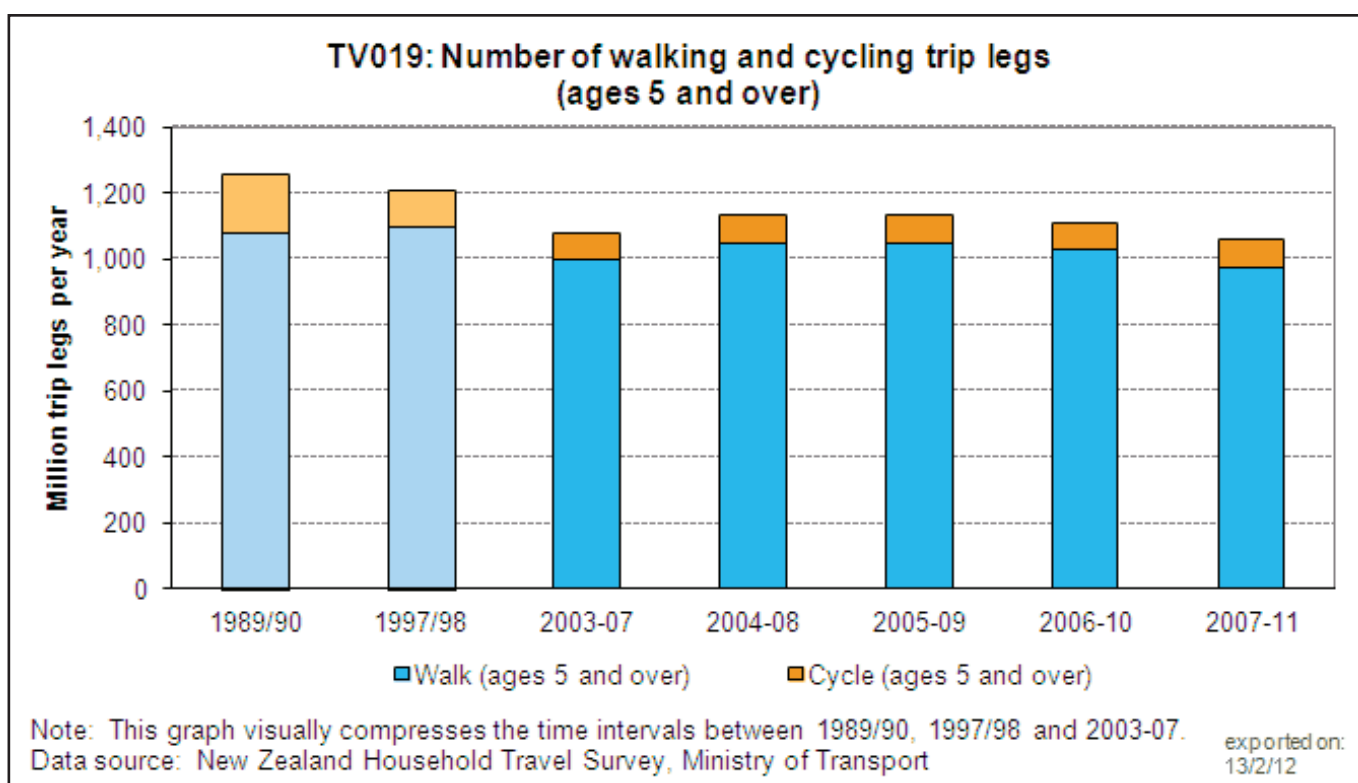
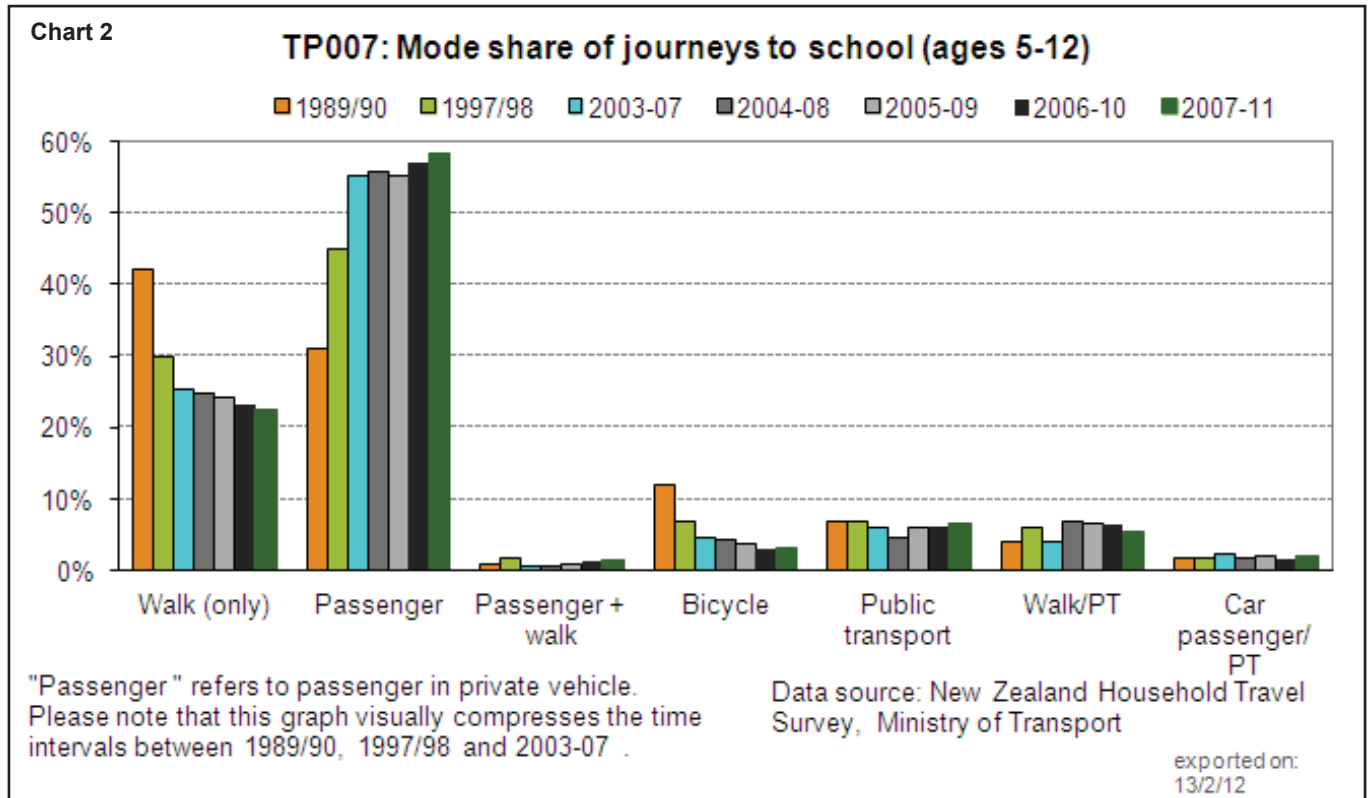


Table 1

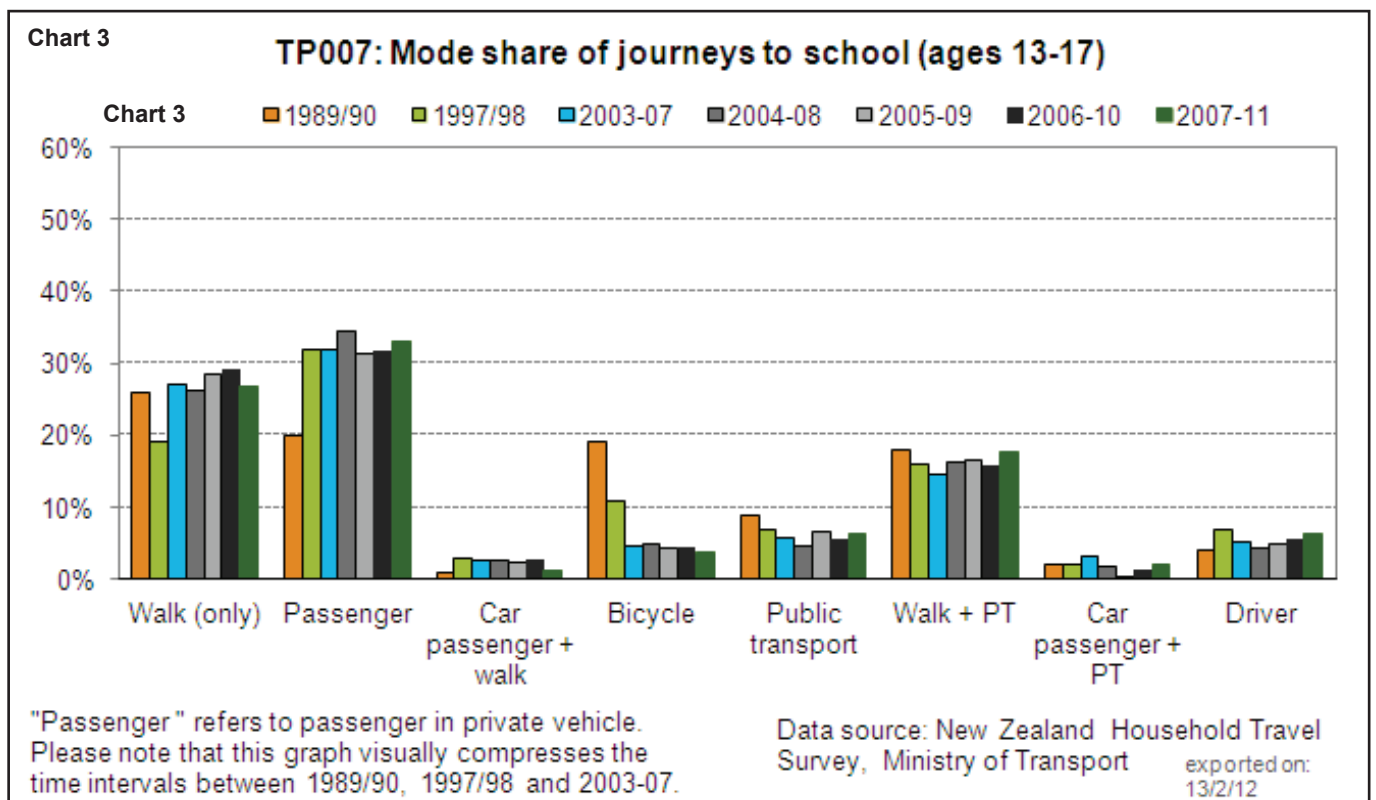
Number of walking and cycling trip legs (Million trip legs per year)							
	Helmet law 1994						
	1989/90	1997-98	2003-07	2004-08	2005-09	2006-10	2007-11
Walk (ages 5 and over)	1080	1100	1000	1050	1050	1030	975
Cycle (ages 5 and over)	180	110	79	82	83	82	86
Walk (all ages)	n/a	1150	1050	1100	1110	1080	1027
Walk + Cycle (all ages)	n/a	1260	1130	1190	1190	1170	1114

The New Zealand Government data charted below show primary school children aged 5 to 12 significantly reduced their cycling, with a lesser decline in walking and a large increase in car passenger trips by parents.

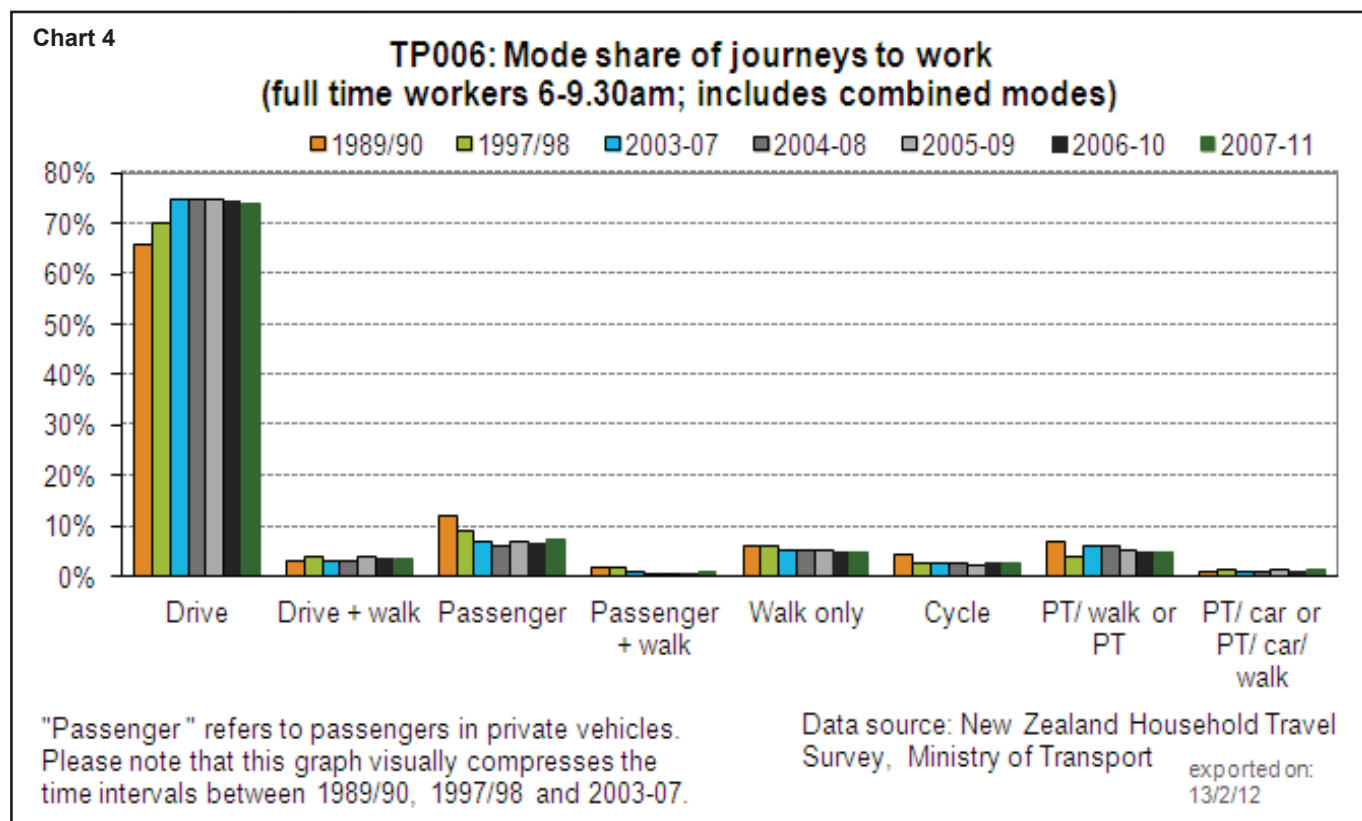
Car journeys were the favoured alternative transport for youngsters who either no longer wished to ride or were forbidden because of parental road safety fears reinforced by the bike helmet law.



The proportional decline among teenage secondary students aged 13 to 17 was even greater than among primary students, bearing in mind that the minimum legal driving age in New Zealand is 16.



The decline in people cycling to work was greater than 30%, as charted below.



New Zealand Land Transport data show that from 1989-90 to 2003-06:

- annual cyclist trip legs fell by 51.8% (181 million to 89 million)
- annual hours spent cycling fell by 43.6% (39 million to 22 million)
- annual kilometres travelled fell by 28.6% (350 million to 250 million)

Despite this plunge in public cycling participation, the Ministry of Transport chart below shows no commensurate reduction in cyclist deaths and injuries as reported by police.

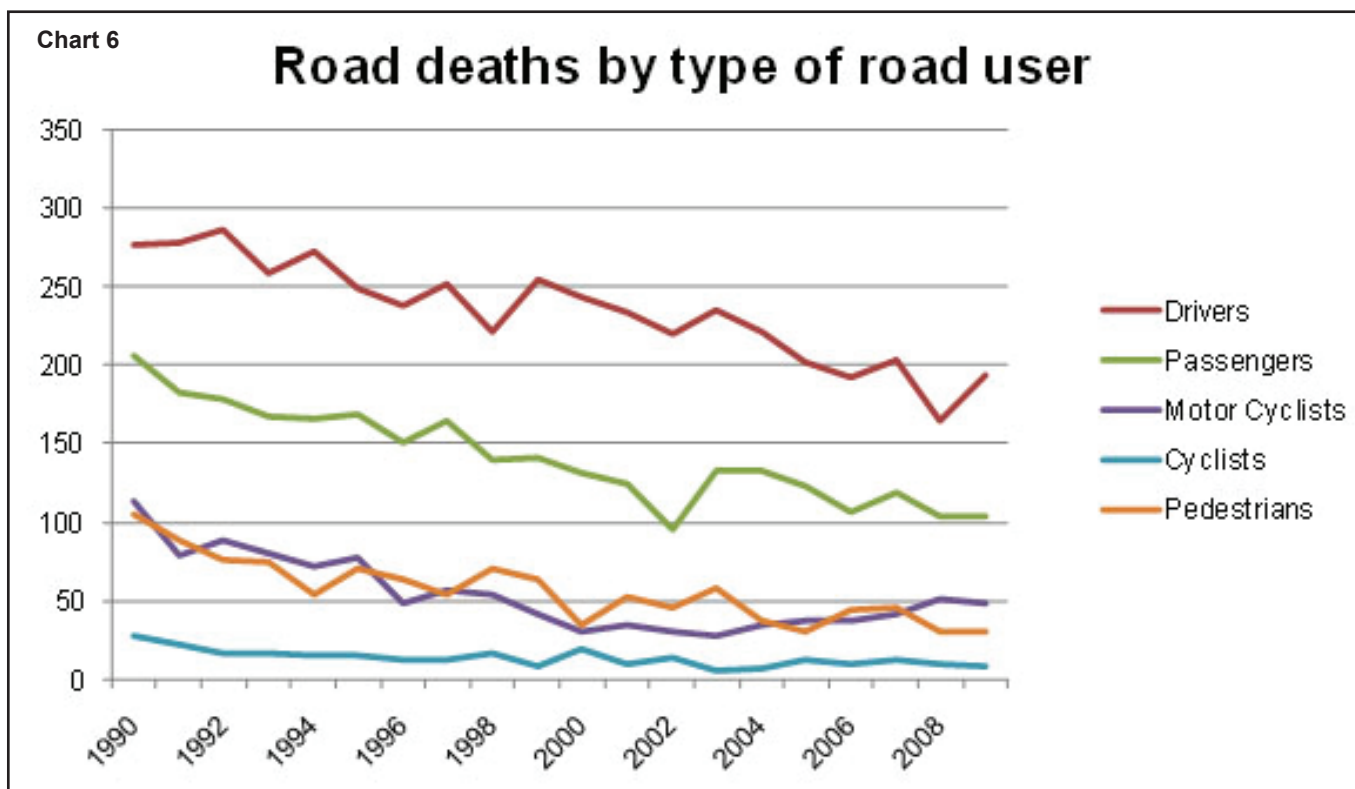
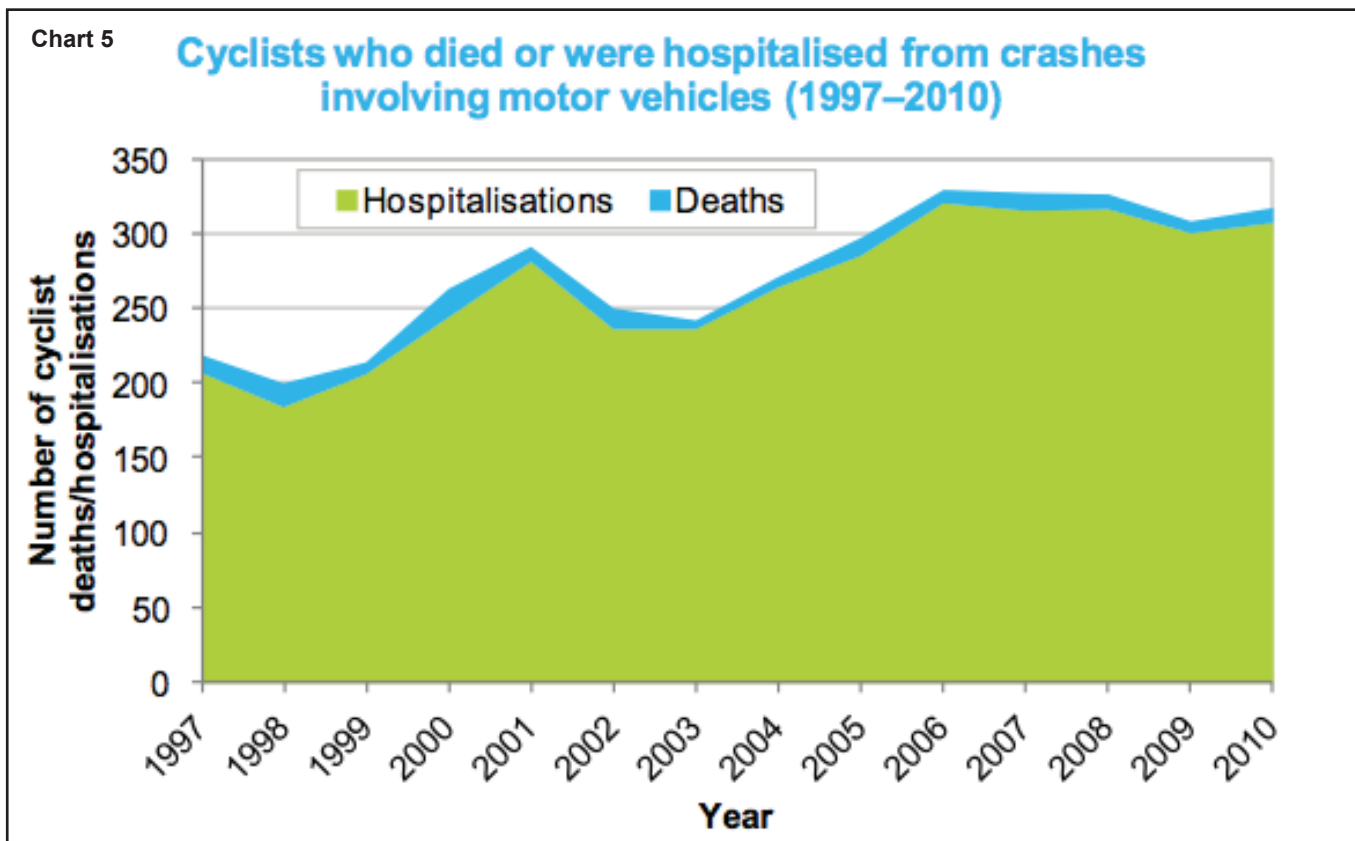
Table 2 Cyclists deaths and injuries, 1990–2010 (Police-reported crashes)

Year	Fatal		Injury	
	Number	% of all fatalities	Number	% of all injuries
1990	27	3.7%	1054	6.0%
1991	22	3.4%	1000	6.0%
1992	17	2.6%	941	5.8%
1993	17	2.8%	910	6.0%
1994	15	2.6%	882	5.3%
1995	15	2.6%	813	4.8%
1996	13	2.5%	754	5.1%
1997	12	2.2%	724	5.4%
1998	16	3.2%	626	5.0%
1999	8	1.6%	619	5.2%
2000	19	4.1%	559	5.1%
2001	10	2.2%	696	5.6%
2002	14	3.5%	771	5.6%
2003	6	1.3%	722	5.0%
2004	7	1.6%	716	5.1%
2005	12	3.0%	751	5.2%
2006	9	2.3%	833	5.5%
2007	12	2.9%	880	5.5%
2008	10	2.7%	895	5.9%
2009	8	2.1%	825	5.7%
2010	10	2.7%	844	6.0%

The Transport Ministry data suggest that, based on trip legs declining from 180 to 86 million per year from 89-90 to 07-11, public cycling participation dropped by 52.2%. The New Zealand population increased by 32.3% from 1990 to 2011 (3,329,800 to 4,405,200).

Despite this cycling decline, there was no corresponding reduction in hospitalised cyclist injuries, which fell 6.6% from 1988-93 to 1994-99 and rose 3.5% from 1988-93 to 2006-11.

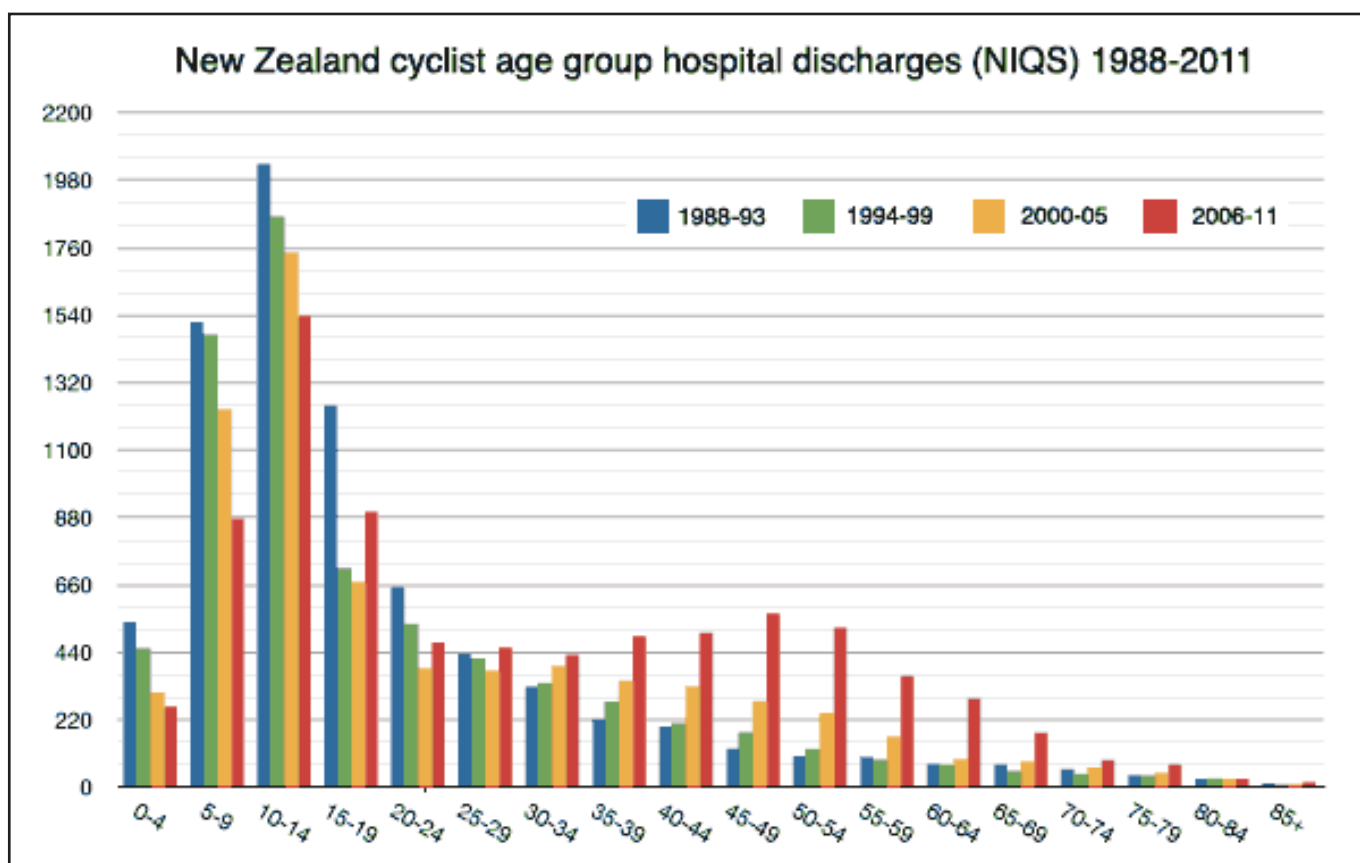
The Ministry charts below show that cyclist injuries continued to rise and the fall in cyclist deaths was far less substantial than among other transport modes, the overall fatality reduction due to increasing traffic regulation and improving road infrastructure.



Below are data charts from the [National Injury Query System](#) (NIQS) maintained by New Zealand's Otago University, showing annual trends for injuries requiring public hospital admission among cyclists, pedestrians and motor vehicle total victims/occupants.

Primary school children had a 6.7% reduction in cycling injuries from 1988-93 to 1994-99 (2,055 to 1,929 for 0-9yo) and secondary students had a 21.4% reduction (3,276 to 2,576 for 10-19yo). Cyclist injuries aged 20+ fell by 2.9% from 1988-93 to 1994-99 (2,499 to 2,426).

Chart 7



The chart above is drawn from the Otago University data below.

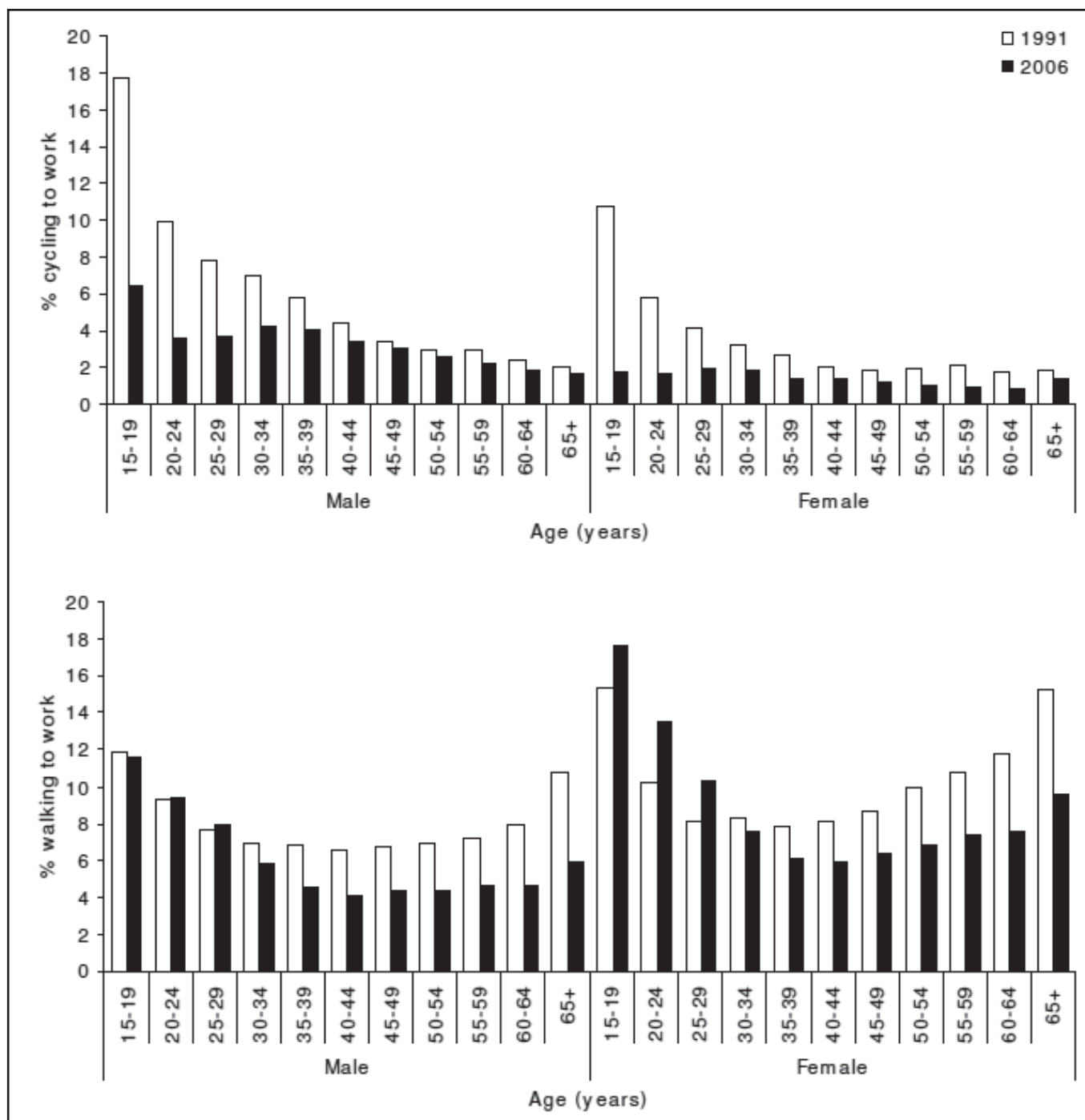
Table 3

	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+	Total	
1988-93	538	1517	2032	1244	652	436	329	222	197	125	102	100	75	73	59	38	28	13	7780	
Helmet law																				
1994-99	453	1476	1861	715	533	420	341	280	209	179	126	91	73	53	44	38	30	9	6931	
2000-05	308	1234	1744	669	389	381	396	348	330	282	243	165	93	85	64	47	27	11	6816	
2006-11	263	876	1536	898	472	456	432	493	503	566	520	362	289	178	89	73	28	17	8051	

The extract below from [Cycling and walking to work in New Zealand, 1991-2006: regional and individual differences, and pointers to effective interventions](#) shows the proportion of people who cycled and walked to work on the New Zealand Census day by age and gender from 1991 to 2006.

The census data show the percentage reduction of cycling to work in age brackets of 15 or older was far greater than their respective percentage reductions in hospital discharges from 1988-93 to 2000-2011, with a disproportionately high drop in females cycling to work compared to males.

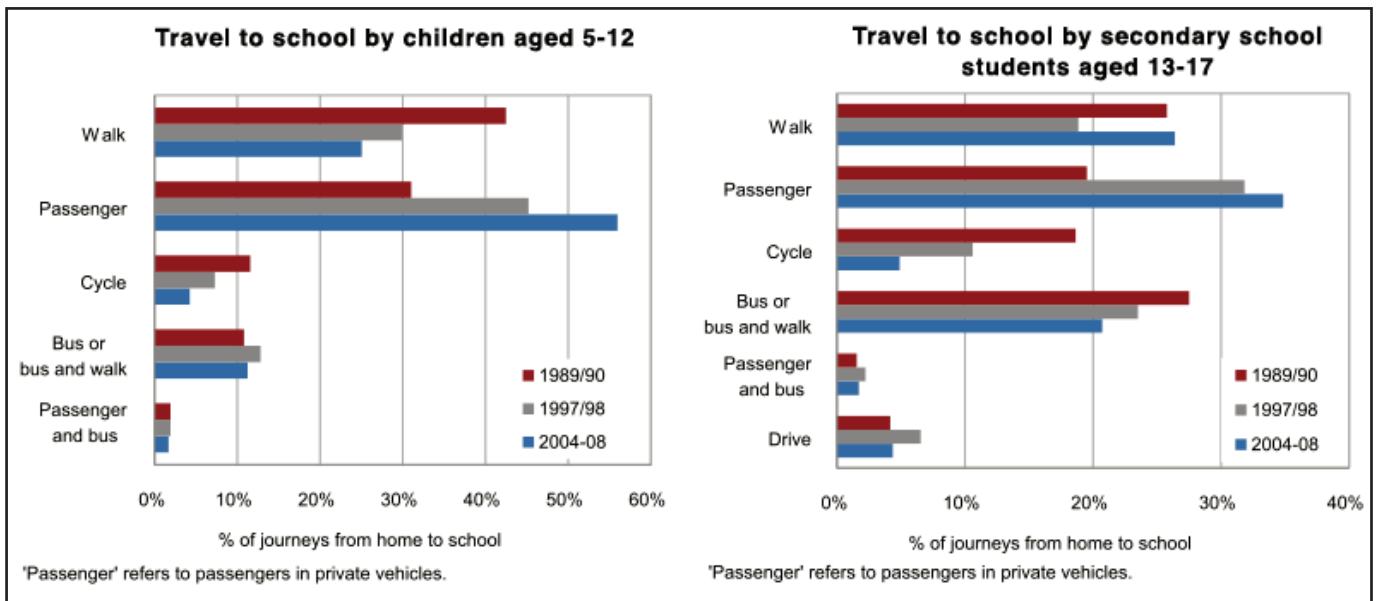
Chart 8



A comparison between school age child cyclist road numbers and public hospital discharge rates (NIQS) can be made from the proportion of school travel modes from 1989-90 to 2004-08 in the chart below extracted from [How New Zealanders Travel](#) published in 2009 by the New Zealand Ministry of Transport.

The percentage reduction in public hospital injuries for child cyclists was far less than the reduction in cycling as a mode of travel to school.

Chart 9



The chart below from the NZ Transport Ministry shows that overall child cycling declined by a far greater proportion than did hospital discharges aged 5-17 following mandatory helmet law enforcement.

Table 4

Age group	Estimated minutes cycling per person per week			Estimated km cycling per person per week		
	1989/1990	1997/1998	2005 - 2008	1989/1990	1997/1998	2005 - 2008
5-12	28	15	8	2.8	2.0	1.0
13-17	52	31	12	7.9	4.8	1.8
18+	8	5	7	1.4	1.2	1.6
TOTAL 5 OR OVER	15	9	7	2.2	1.6	1.5

The cyclist hospital discharge charts below show an increase above pre-law injury levels from 2002 as more New Zealanders took up cycling, even though government data show participation remains well below enforcement of the law in 1994, both in numbers and distance travelled.

Chart 10

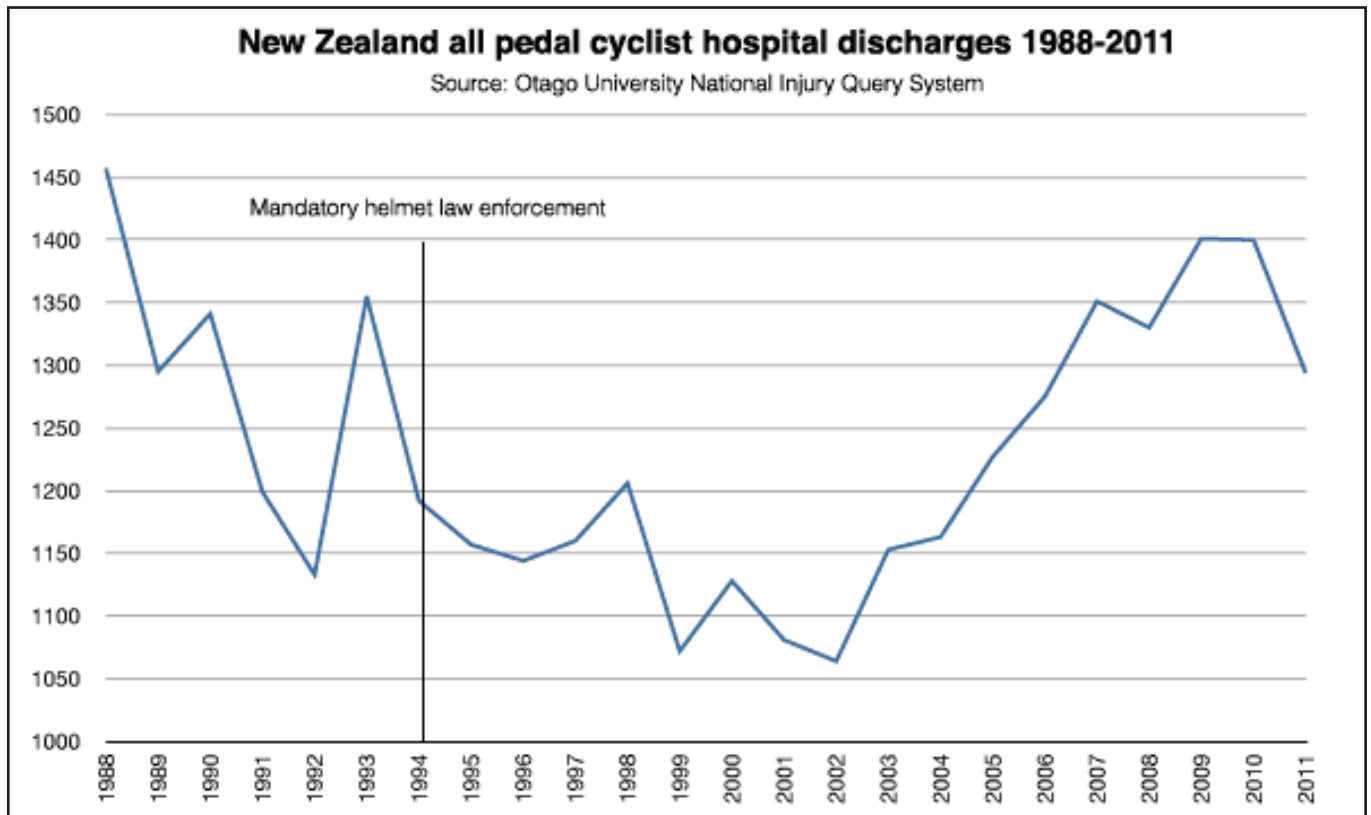
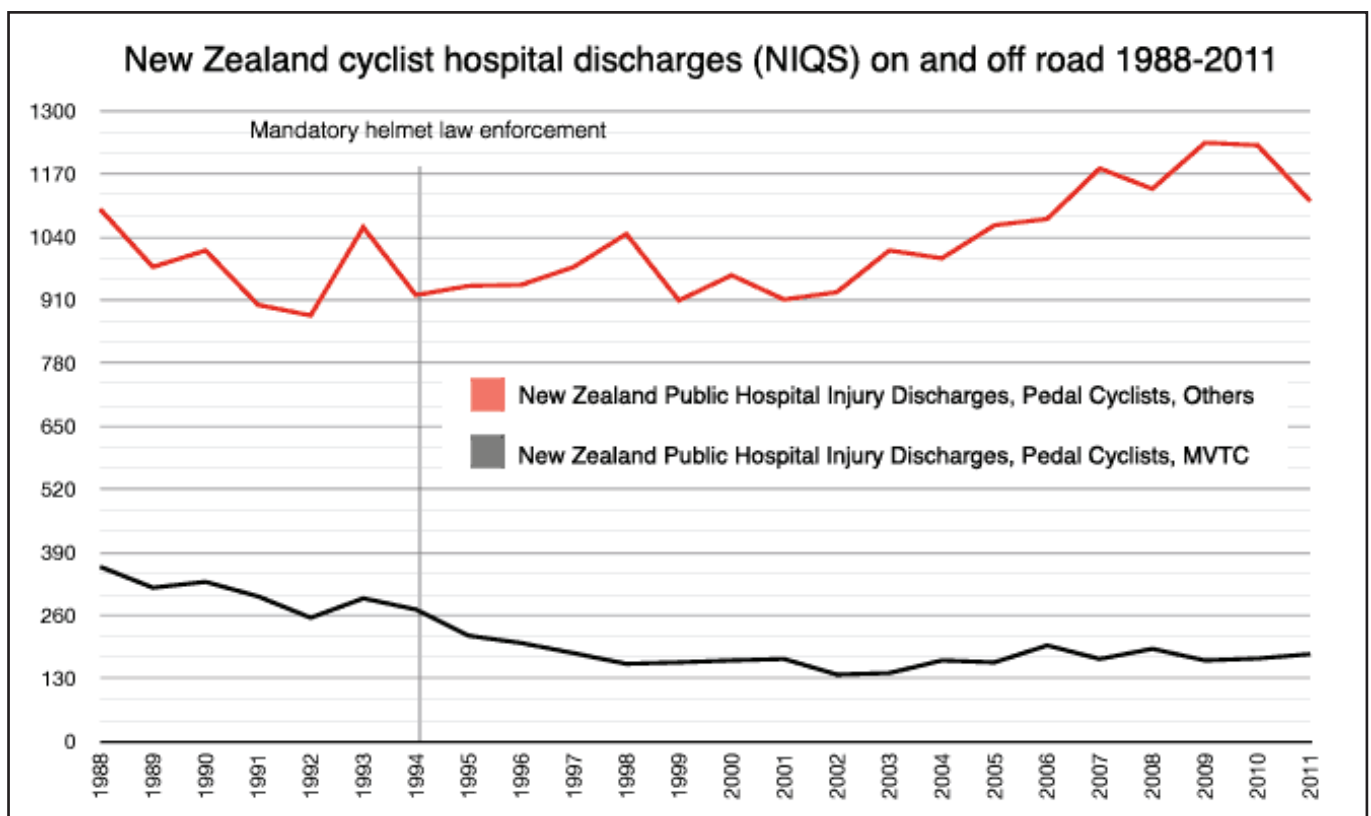


Chart 11



The Transport Ministry / NIQS data can be compared to calculate the percentage increase in injuries per cyclist following mandatory bicycle helmet law enforcement in 1994.

Table 5

New Zealand cyclist injuries per trip 1989-2011							
	<small>Helmet law 1994</small>						
	1989/90	1997-98	2003-07	2004-08	2005-09	2006-10	2007-11
New Zealand population (millions)	3.33	3.81	4.23	4.27	4.32	4.37	4.41
Average million trip legs per year	180	110	79	82	83	82	86
Average annual trip legs per person	54.05	28.87	18.68	19.20	19.21	18.76	19.50
Reduction trips per person pre/post law	-	46.6%	65.4%	64.5%	64.5%	65.3%	63.9%
Average hospital discharges (NIQS)	1376	1183	1234	1269	1317	1351	1355
Average trips per hospital discharge	130,814	92,984	64,019	64,618	63,022	60,696	63,469
Increase injuries/trip pre/post law	-	28.6%	50.8%	50.4%	51.6%	53.4%	51.2%

The chart below extracted from [How New Zealanders Travel](#), with comparative deaths/injuries, distances and time spent travelling by mode, shows that cycling is the only mode that has become more dangerous since 1989.

Table 6

	Deaths/injuries per year			Distance travelled per year (100 million km)			Time spent travelling per year (million hours)		
	1989/90	1997/98	2003 -08	1989/90	1997/98	2003 -08	1989/90	1997/98	2003 -08
Motorcyclist	2386	1084	1039	3.1	1.8	2.4	10	6	8
Cyclist	1018	632	765	3.5	2.8	2.8	39	26	22
Car driver	7648	6410	8265	183.2	251.6	303.7	526	681	817
Car passenger	4152	3081	3141	115.5	132.9	153.8	296	327	376
Pedestrian	1146	927	979	8.4	8.9	8.7	191	203	198
Bus passenger	90	17	45	15.2	17.9	16.0	54	59	62

New Zealand **pedestrian** injuries had been falling since 1988 but suffered a sudden increase in 1994, possibly reflecting discouraged cyclists instead walking and/or an increase in traffic density risk as a result of discouraged cyclists instead driving motor cars.

The NIQS data show motor vehicle pedestrian injuries resumed their decline after the increase whereas non-vehicle pedestrian injuries immediately rose to a higher plateau that has been maintained since 1994-95.

Chart 12

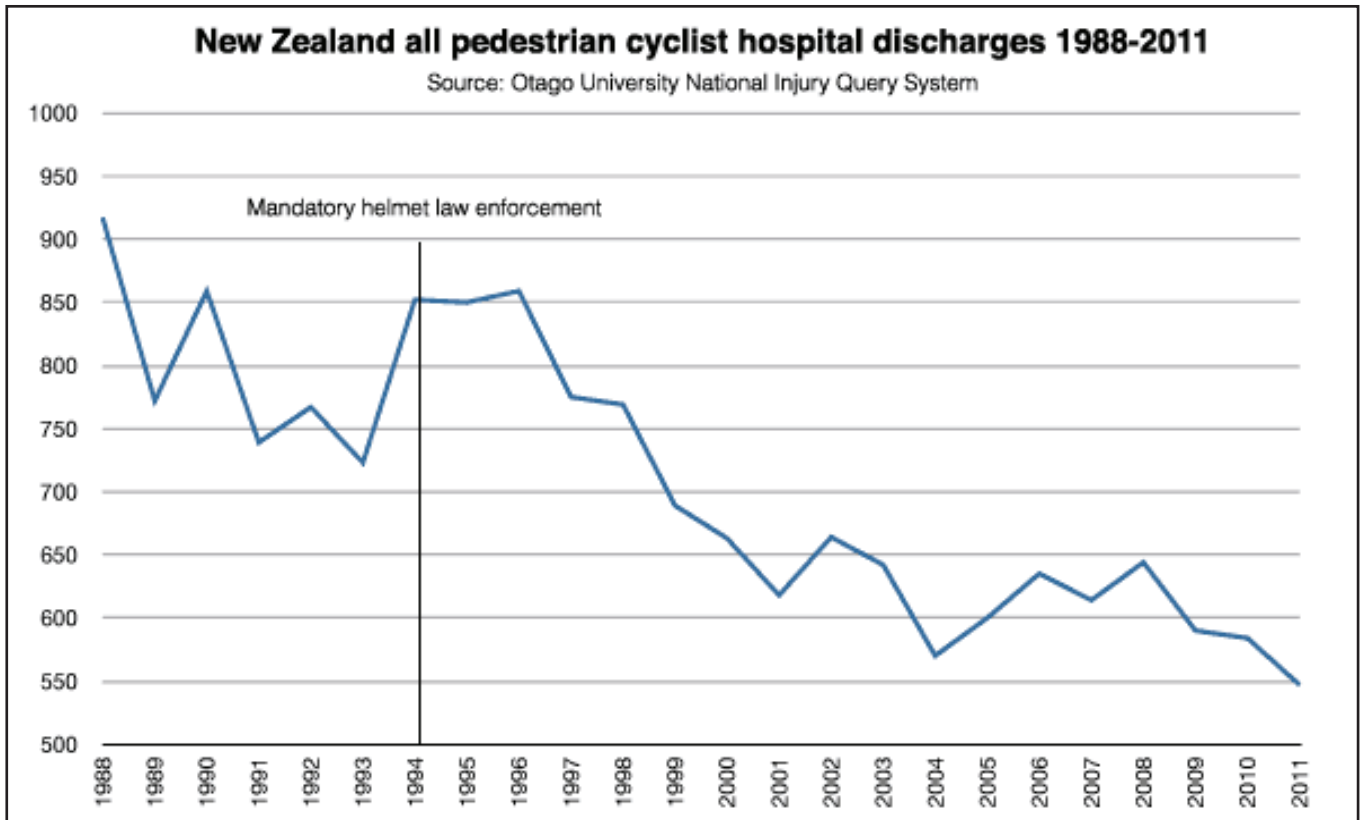
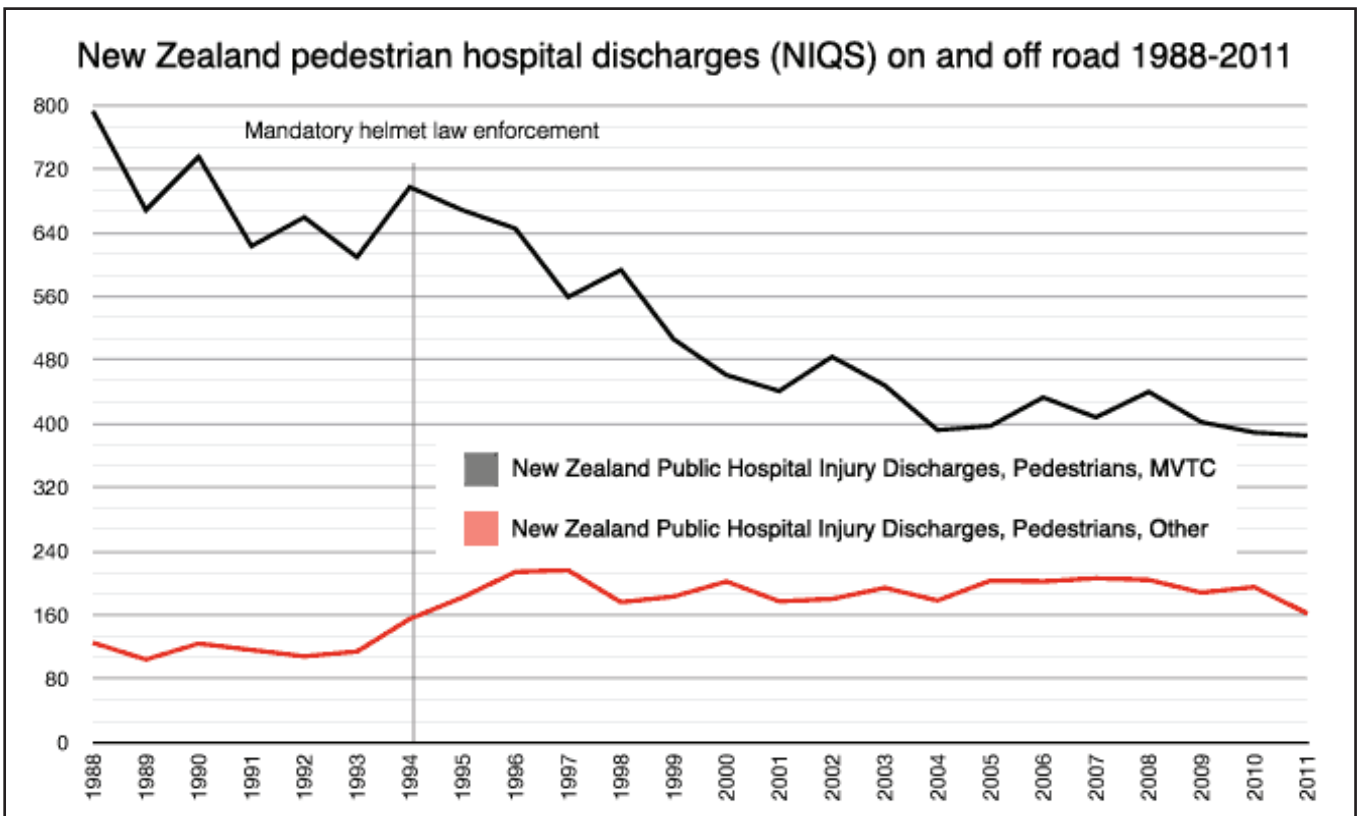


Chart 13



Motor vehicle traffic crash injuries in New Zealand showed a consistent decline since 1988 but, as with pedestrians, a sudden increase in 1994 coinciding with the introduction of mandatory bicycle helmets, both for all crash victims and for vehicle occupants.

This again suggests increased traffic density as discouraged cyclists instead drove a motor vehicle.

Chart 14

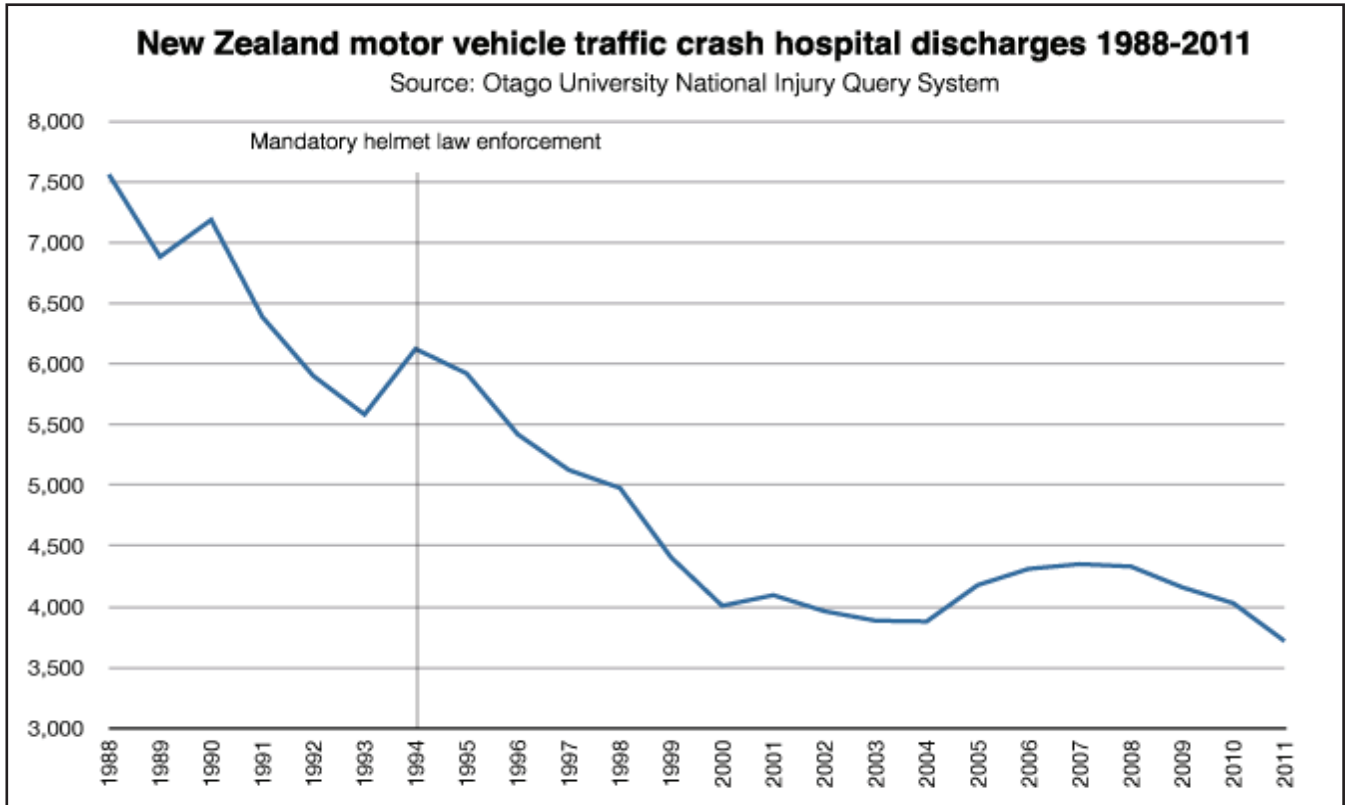
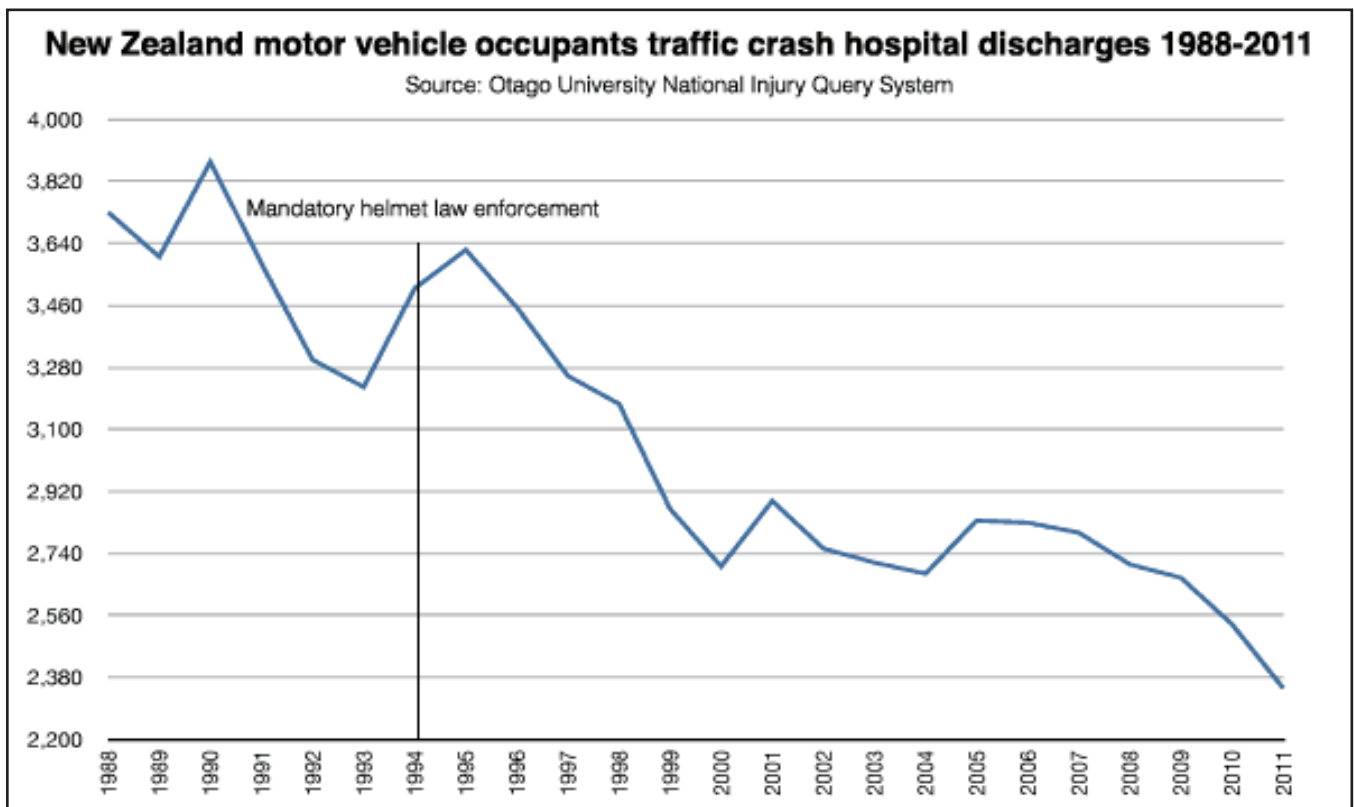


Chart 15



The **pedestrian hospital discharge charts** show an immediate injury increase of 129 in 1994 and the numbers don't fall below pre-law levels for five years.

Most of this increase was caused by a sharp rise from 1988-93 to 1994-2011 in non-vehicle pedestrian injuries averaging 74.6 additional victims per year, establishing a consistent non-vehicle injury plateau 64.8% above pre-law levels.

The **motor vehicle hospital discharge charts** also show an immediate increase of 540 total car crash victims and an increase of 286 car occupant crash victims in 1994, before resuming a downward trend due to tougher drink-driving and speeding laws, safer cars and improving road infrastructure.

It is likely the coincidental 1994 against-trend increase in pedestrian and motor vehicle injuries reflects increased road traffic density as a result of discouraged adult cyclists instead choosing to drive, and discouraged children instead choosing or having to be car passengers.

Greater car density is also a likely contributor to cyclist injuries showing little decrease for 11 years before rising above pre-law levels, the 50% decline in cycling participation masking a higher accident/injury rate.

The New Zealand Transport Ministry travel mode charts suggest discouraged cyclists did not alternatively walk or use public transport. This applies to all ages, with the ministry data showing adults instead driving to work and children instead being taken to school by car.

It should be noted that approximately 2% of the entire New Zealand population was prosecuted for not wearing a helmet while cycling during the 10 years to 2012.

Government and university data suggest a higher accident/injury risk for all road users due to increased car use following mandatory all-age bicycle helmet law enforcement.

The plunge in motor vehicle crash injuries from 1988 to 2011 suggests safer road traffic conditions in New Zealand that should lower risk for all road users, but cyclist injuries have worsened despite fewer cyclists on the roads.

Mandatory bicycle helmet laws in New Zealand have influenced injury trends for all road users, substantially damaged long-term public health by discouraging regular recreational exercise, and are a public health and safety disaster.

[Evaluation of New Zealand's bicycle helmet law](#) (2012, New Zealand Medical Association)

[Changes in head injury with the New Zealand bicycle helmet law](#) (2001, Accident Analysis and Prevention)

[Bicycle Helmet Research Foundation](#)

[Injuries to pedal cyclists on New Zealand roads, 1988-2007](#) (BMC Public Health 2010)

[Mandatory Bicycle Helmet Law in New Zealand](#)

Glossary:

NIQS - National Injury Query System

MVTC - Motor Vehicle Traffic Crashes