

## Harbour Region

**Rate Your Road** 

March 2021



#### **Director's address**

In January 2019, the NRMA launched a report revealing a \$2.2 billion council funding backlog to maintain local roads across NSW. Alongside the report, 'Rate Your Road' was born – a state-wide survey that called on NRMA Members and the community to rate the condition and safety of their local roads.

Within weeks, Rate Your Road attracted more than 23,000 responses, making it the largest transport survey in the state's history. Promising news shortly followed, with the NRMA's policies to address the local roads funding backlog adopted by both sides of politics prior to the 2019 NSW State Election. The NRMA's policies were designed to elevate the condition of local roads across the state to at least a satisfactory level to improve safety and assist in stimulating local economies.

In March 2019, the NSW Government committed \$1 billion to help clear the council funding backlog, replace NSW's worst timber bridges, and transfer up to 15,000 kilometres of council-owned regional roads to the state to lessen the financial burden on councils. In May 2020, the Federal Government announced a \$1.8 billion commitment to provide a much needed boost to road infrastructure focusing on regional roads as part of their COVID recovery package, proving our advocacy has a real impact on Government decision making.

This report presents the results of the Rate Your Road survey for the Harbour Region, which incorporates 16 Local Government Areas across Sydney's metropolitan north, the Eastern Suburbs and the Inner West. Aside from gaining some intriguing insights, the full and public release of the NRMA's survey results will assist in guiding government investment.

If you were one of the tens of thousands who participated in Rate Your Road, thank you for contributing to this outcome.

**Tim Trumper** Chair

## **Table of contents**

**II** Director's address

III Contents

**I** Introduction

**2** About the NRMA

**3** Background

**4** The Bureau of Infrastructure, Transport and Regional Economics

**5** NRMA regions

#### **6 Harbour Region**

**7** Harbour overview

8 Centre for Road Safety

**9** Rate your Road data collection

**10** LGA assessment

**12** Road specific

**14** Other assessments

**15** Local streets

**17** Cost of road trauma



#### Introduction

The NRMA is a national leader in advocating for safer roads and better transport outcomes for NSW and the ACT. Prior to the 2019 NSW State Election, the NRMA undertook a comprehensive survey with the public, asking them to rate roads in their local area against a number of characteristics including safety, congestion, condition and public transport.

The rate your road survey was developed by the NRMA as a platform for the public to identify key roads for improvement. The basis of the survey was that 'no one knows the roads you use like you do' and the analysis may be considered to support all levels of government in guiding funding commitments.

We want to thank NRMA Members and the public for taking the time to respond to the survey. The responses we received were extensive and from right across the state, from Parramatta Road in Sydney, to Billybingbone Road in Gongolgon, The Snowy River Way in Dalgety, and Dolgelly Road in Garah.

And the local division of the

#### **About the NRMA**

Better transport infrastructure has been a core focus of the NRMA since 1920 when our founders lobbied for improvements to the condition of Parramatta Road in Sydney. Independent advocacy was the foundation activity of the organisation and remains critical to who we are 100 years later.

The NRMA has grown to one of the largest tourism and transport companies in Australia, representing over 2.6 million Australians principally from NSW and the ACT. We provide motoring, transport and tourism services to our Members and the community.

Today, we work with policy makers and industry leaders to advocate for transport solutions that help solve key pain points such as congestion, access and affordability and connect people and communities. We're passionate about facilitating travel across Australia, recognising the vital role tourism plays in supporting regional communities.

By working together with all levels of government to deliver integrated transport and tourism options we can provide for the future growth of our communities and continue to keep people moving for generations to come.

#### Background

Regional and Local roads are the backbone of our transport system, making up approximately 80% of the national road network.

In 2019, the NRMA released its Funding Local Roads report which sought to address and quantify the infrastructure backlog on regional and local roads in NSW. Under the national funding system, local government is largely responsible for funding, upgrading and maintaining thousands of kilometres of roadways. The local government tends to fund road infrastructure through payable rates, and though there are grants from the state and federal government, a significant shortfall remains.

Passenger, and in particular freight traffic, has sharply increased in recent times, and the damage to the road tends to be exponentially correlated with the volume and weight of vehicles. The poor condition of roads increases wear and tear to vehicles, increasing servicing costs to the public, and further, poor roads can lead to relatively hazardous driving conditions, potentially leading to higher crash rates, leading to property damage, injury and deaths.

In recent years, interstate and intrastate rail freight services have considerably declined due to competitiveness pressures, and with the ongoing drought, water and fodder are increasingly being moved on regional roads to support regional areas.

The NRMA's Funding Local Roads report outlined that in recent years, the funding backlog increased by almost 30% from \$1.73 billion in 2014-15, to \$2.2 billion in 2016-17, with regional Councils responsible for approximately 75% of the backlog.

Whilst this is part of a broader discussion, subsequent reviews into road use have highlighted that the current road funding environment is unsustainable. Most recently, Infrastructure Australia has stated that 'road use, funding and expenditure is not adequately linked', highlighting that the current status is 'inequitable', 'inefficient', 'unsustainable' and 'not transparent'.

The NRMA is committed to advocating on behalf of Members for a fairer funding and financing system for all road and transport users which is sustainable over the long term.

## Bureau of Infrastructure, Transport and Regional Economics (BITRE)

The Bureau of Infrastructure, Transport and Regional Economics (BITRE) provides economic analysis, research and statistics on infrastructure, transport and regional development issues to inform government policy development.

In the 2018 yearbook produced by BITRE, the following is a summary of the road network, and the demands we place upon it.

In 2017-18, it is estimated that NSW drivers drove a collective 80 billion kilometres, up from approximately 30 billion kilometres in the early 1970s. ACT drivers drove a collective 4.2 billion kilometres in 2017-18, up from 900 million kilometres in the early 1970s.

The freight task of the roads has grown significantly faster. In the early-to-mid 1970s, the freight task was approximately 10 billion tonne kilometres in NSW and

0.2 billion tonne kilometres in the ACT. By 2015-16, BITRE estimated NSW had a road freight task of 62.8 billion tonne kilometres, and the ACT, 0.6 billion tonne kilometres in the ACT.

In 2015, it was estimated that NSW had a collective 207,187km of public road, of which 201,397km was paved. Similarly, in 2015, the ACT had 3,448km of roads, of which 3,348km are paved.

BITRE estimates that road funding in NSW increased from an average of approximately \$6 billion annually during the 2010s, to an average of approximately \$8 billion in recent years. The ACT had road funding of approximately \$200 to \$250 million annually across the last 15 years.

The headline and per capita fatality rate on the roads has steeply declined since the 1970s. In 1971, NSW recorded 1,249 road fatalities, decreasing to 392 in 2017. On a per capita basis, the fatality rate dropped from 26.4 fatalities/100,000 population to five fatalities/100,000 population. Similarly, in the ACT, in 1971, the fatality rate was approximately 15 fatalities/100,000 population, decreasing to 2.5 fatalities/100,000 population during the 2010s.



NRMA has divided NSW and the ACT into six regions, with each region represented by an NRMA Director.

Region	Area	Area (km²)	Population
Сох	Western Sydney and the Blue Mountains	2,718	1,801,605
Harbour	Sydney's metropolitan north, the Eastern Suburbs and the Inner West	599	1,522,003
Hoddle	Sydney's metropolitan south, the Illawarra and the South Coast	18,894	1,221,800
Howe	Sydney's northern suburbs, the Central Coast and the Hunter	30,104	1,385,792
Mann	ACT and southern regional and rural NSW	244,497	1,056,053
Townsend	Northern regional and rural NSW, including Northern Tablelands, North Coast and Far North West NSW	498,144	858,429

# Harbour

6 Rate Your Road - Harbour

#### **Harbour overview**

Burwood	Northern Beaches
Canada Bay	Randwick
Hunters Hill	Ryde
Inner West	Strathfield
Ku-ring-gai	Sydney
Lane Cove	Waverley
Mosman	Willoughby
North Sydney	Woollahra

Cumulatively, these regions cover an area of 599 square kilometres and are home to 1,522,003 residents as of the 2016 census. For the purposes of this report, a 'pin' is a point that a survey respondent identified for the purposes of completing the survey. More than 5,500 pins were dropped in the Harbour region.

## **Centre for Road Safety**

Based on the Centre for Road Safety, the following table identifies the number and types of crashes for the LGAs between the beginning of 2014 and the end of 2018 within the Harbour region:

LGA	2014-2018 Crash History						
	Fatal Crashes	Injury Crashes	Non-injury Crashes	Total Crashes			
Burwood	4	499	256	759			
Canada Bay	5	1,135	524	1,664			
Hunters Hill	2	142	69	213			
Inner West	14	2,279	1,150	3,443			
Ku-ring-gai	10	946	563	1,519			
Lane Cove	3	319	188	510			
Mosman	1	208	128	337			
North Sydney	6	714	347	1,067			
Northern Beaches	16	1,917	1,111	3,044			
Randwick	9	1,376	702	2,087			
Ryde	10	1,399	758	2,167			
Strathfield	7	739	441	1,187			
Sydney	25	3,759	1,465	5,249			
Waverley	4	584	234	822			
Willoughby	9	705	416	1,130			
Woollahra	4	467	293	764			
Total Harbour	129	17,188	8,645	25,962			

The above table is a staggering reminder of the societal cost of road trauma. In the Harbour region, 129 people crashes resulted in someone losing their life, and there were more than 17,100 crashes resulting in injury. The economic cost of these accidents is also significant, in 2019, TfNSW estimated that the economic cost of a

fatal crash in NSW was \$8.586 million, a serious injury resulting in hospitalisation cost approximately \$500,000, a moderate/minor injury crash cost approximately \$90,000 and a property damage only crash cost \$10,000. Based on this, in the Harbour region, the cost of road trauma aggregated to more than \$5 billion.

#### **Rate Your Road data collection**

Data collection ran for approximately one month between January 2019 and February 2019 with members and the broader public encouraged to participate through NRMA media and communication channels. The survey was run through a dedicated website **www.rateyourroad.com.au**, with more than 23,000 surveys fully completed.

The survey asked respondents for their residential postcode, the road they wanted

to rate, the condition, congestion, safety and public transport on the basis of

very poor, poor, average, good or excellent. The survey also allowed people the opportunity to input a free text comment. Finally, the survey asked respondents to identify their age bracket.

#### **Survey Participation**

In terms of summarising participation in the survey on an area and per capita basis, the following table shows a summary.

LGA	Area km²	Population (2016 census)	Density (ppl/km²)	Road length (sealed & unsealed)	Pins	Pins/ 100 km²	Pins / 1,000 population	Pins/popn/ area X 1,000,000	Pins/100 km of road
Burwood	7	36,809	5,258	105.5	24	342.86	0.65	93.14	22.7
Canada Bay	20	88,015	4,400	271.1	290	1,450.00	3.29	164.74	107.0
Hunters Hill	6	13,999	2,333	70.1	27	450.00	1.93	321.45	38.5
Inner West	35	182,063	5,201	570.7	762	2,177.14	4.19	119.58	133.5
Ku-ring-gai	86	118,053	1,372	593.2	1,050	1,220.93	8.89	103.42	177.0
Lane Cove	11	36,051	3,277	139.6	24	218.18	0.67	60.52	17.2
Mosman	9	28,475	3,163	110.3	314	3,488.89	11.03	1,225.25	284.7
North Sydney	11	67,658	6,150	194.4	125	1,136.36	1.85	167.96	64.3
Northern Beaches	254	252,878	995	1,145.2	885	348.43	3.50	13.78	77.3
Randwick	36	140,660	3,907	421.8	148	411.11	1.05	29.23	35.1
Ryde	41	116,302	2,836	455.1	1,134	2,765.85	9.75	237.82	249.2
Strathfield	14	40,312	2,879	142.8	176	1,257.14	4.37	311.85	123.2
Sydney	25	208,374	8,334	494.4	610	2,440.00	2.93	117.10	123.4
Waverley	9	66,812	7,423	147.4	118	1,311.11	1.77	196.24	80.1
Willoughby	23	71,302	3,100	255.6	182	791.30	2.55	110.98	71.2
Woollahra	12	54,240	4,520	160.3	138	1,150.00	2.54	212.02	86.1

Mosman was by far the most strongly represented region by area, population and a combined population-area metric. Ryde and Strathfield were also regions which had high proportional response rates relative to other LGAs in the region. At the other end of the spectrum the Burwood, Lane Cove, Northern Beaches and Randwick had fewer pins based on population and area.

#### LGA assessment

To commence with a strategic assessment, the specific location of the pin was disregarded and considered only by the Local Government Area that pin was

located in. This allows a broad comparison between the various local government areas. The results are as follows:

LGA	Condition Score	Condition Ratings	Congestion Score	Congestion Ratings	Safety Score	Safety Ratings	Public Transport Score	Public Transport Rating
Burwood	41.89	23	52.06	21	52.09	21	72.38	21
Canada Bay	52.22	254	41.42	247	44.92	245	62.27	271
Hunters Hill	53.89	22	61.82	23	49.33	20	66.00	22
Inner West	50.60	679	45.17	662	46.94	674	68.80	720
Ku-ring-gai	60.52	988	46.57	929	52.00	952	67.46	1,013
Lane Cove	56.00	20	39.65	21	37.00	21	59.47	20
Mosman	59.58	309	31.80	270	47.81	284	76.33	299
North Sydney	59.52	110	51.21	101	53.06	111	71.87	100
Northern Beaches	52.18	757	47.17	729	47.77	729	68.61	819
Randwick	55.16	122	48.74	120	51.43	122	63.78	126
Ryde	53.51	1,041	39.56	986	48.98	1018	67.10	1,079
Strathfield	52.86	150	37.53	142	52.99	136	56.82	137
Sydney	53.98	534	42.46	496	48.85	494	69.32	535
Waverley	43.52	101	39.84	93	43.98	94	64.98	87
Willoughby	55.51	152	42.72	150	50.61	150	72.03	165
Woollahra	53.55	123	47.88	116	47.87	118	72.39	128
Harbour Region Average	53.59	5,385	44.30	5,106	48.62	5,189	67.65	5,542
Survey Average	48.92	22,580	49.54	21,521	44.92	21,955	-	-

#### LGA assessment continued:

Within the Harbour region, Burwood and Waverley tend to have the roads in the poorest perceived condition. In contrast, Ku-ring-gai, Mosman and North Sydney tend to have the roads in the best perceived condition.

Hunters Hill has the lowest level of perceived congestion for the Harbour region, it is suggested that this may be the case because Hunters Hill is a peninsular, with no impact of through traffic along its length. In contrast, Mosman had the greater perceived congestion, and it is suggested this can be attributable to limited transport opportunities through the Spit/Military Road corridor.

North Sydney and Strathfield were reported as having the roads with the greatest perceived safety, whilst Lane Cove was reported as having roads which are perceived as the least safe.

Mosman, Burwood, North Sydney, Willoughby and Woollahra reported have the most satisfaction around public transport services, with Strathfield, Lane Cove and Randwick reporting the greatest dissatisfaction with public transport services.

When comparing the averages, roads in the Harbour region tend to be reported in a better condition, are more congested, and tend to be perceived safer than the state average.

#### **Road specific**

Whilst a high level assessment is beneficial in that it allows a macro-comparison, the survey allowed individuals to highlight and rate a specific section of road. 12 roads

received at least 100 votes, accounting for 56% of votes. Roads which received at least 25 votes are outlined below (accounting for 70% of votes in the region).

Road	Condition Score	Congestion Score	Safety Score	Public Transport Score
Bondi Road	39.73	28.40	36.40	45.45
Botany Road	54.38	34.52	41.37	75.45
Cleveland Street	42.83	22.89	27.37	73.00
Condamine Street	56.76	37.33	48.73	78.67
Eastern Distributor	63.16	27.74	56.88	51.88
Epping Road	53.58	28.63	44.11	61.29
King Street	41.87	35.20	28.46	76.05
Lane Cove Road	53.97	25.45	53.81	60.76
Lyons Road	56.10	37.82	46.36	66.89
Military Road	51.59	31.65	48.67	74.07
Mona Vale Road	55.71	40.97	48.44	60.25
New South Head Road	56.29	41.11	53.56	70.54
Old South Head Road	47.48	37.27	48.83	66.43
Pacific Highway	57.33	35.92	55.11	66.72
Pacific Motorway	56.60	44.00	50.59	54.04
Parramatta Road	47.28	33.61	47.93	70.98
Pennant Hills Road	48.39	26.36	45.57	57.57
Pittwater Road	50.63	37.24	47.95	64.60
Ryde Road	74.66	26.75	64.86	64.67
South Dowling Street	42.77	40.75	42.31	60.59

Road	Condition Score	Congestion Score	Safety Score	Public Transport Score	
Southern Cross Drive	58.52	31.85	67.69	60.67	
Spit Road	56.55	24.00	51.32	63.05	
Underwood Road	48.15	22.50	33.60	53.79	
Victoria Road	53.69	34.29	55.12	61.81	
Wakehurst Parkway	55.05	42.31	50.59	69.02	
Warringah Road	43.43	39.23	51.71	58.27	
Average of all Harbour Responses	53.59	44.30	48.62	67.65	

Of these roads, Ryde Road was reported to have the best condition by far, with the Eastern Distributor a distant second. Roads reported to be in poor condition included Bondi Road, King Street, Cleveland Street and South Dowling Street.

As these tend to be major arterial roads, the congestion scores are broadly poor. Relatively speaking, the Pacific Motorway, Wakehurst Parkway and New South Head Road were reported to have the least congestion. In contrast, Spit Road, Underwood Road and Cleveland Street had the worst reported congestion. These roads tend to be gateways to regions of Sydney with limited other options. For example, Cleveland Street is one of the few roads which connects the eastern suburbs, with the inner west. In terms of safety, Southern Cross Drive, Ryde Road and the Eastern Distributor were reported to be the safest roads. King Street and Cleveland Street were reported to be the least safe roads.

Condamine Street, Cleveland Street, Botany Road, King Steet, Military Road and Parramatta Road are all streets reported to have good public transport service, in contrast Bondi Road is a distant last.

#### **Other assessments**

Determining whether there are patterns in the outputs may support the validity of the data. The condition, congestion, safety and public transport scores were tested for their correlation to determine if there are underlying relationships between the outputs. The r-squared was calculated for the relationships between the categories. This is reported as a number between 0 and 1. 0 indicates that there is an absence of a relationship between data points, whilst a value of 1 means that there is a perfect relationship between data points.

	Condition	Congestion	Safety	Public Transport
Condition				
Congestion	0.0007			
Safety	0.559	0.028		
Public Transport	0.0017	0.0461	0.0179	

There is a moderate correlation between the perceived condition of a road, and its perceived safety (0.559). In other words, where the condition of the road is perceived as poor, its safety will also be perceived poorly. In contrast, where the

condition of the road is perceived as good, its safety will also be perceived as good. In simplistic terms, the 0.559 output means that 55.9% of variation in the perceived safety of the road can be explained by (attributed to) its condition.

#### Local streets

It is acknowledged the public did take time to nominate issues that they have with their local streets. As a result of this, the following table highlights a small random selection of local roads and the qualitative comments which were made with them.

Street	Suburb	Comment, verbatim
Gipps St-Burwood Road	Canada Bay	<ul> <li>Many accidents occur at this intersection</li> <li>Too many vehicle accidents</li> <li>Some bus routes cancelled and people are expected to use on demand public transport</li> </ul>
Centennial Avenue	Chatswood	<ul> <li>Joining Centennial Avenue towards Epping Road from Elizabeth Parade is dangerous when mini vans/small trucks are parked on the left side of Centennial Avenue (adjacent to Stringy bark creek. These parked vehicles cuts off visibility of vehicles approaching on Centennial Avenue from Mowbray road.</li> <li>Could be better. Buses to Chatswood have a 15 minute frequency during peak times which is not sufficient. And these buses are always delayed as they come from Sydney Olympic Park. Would have been good if there were more buses to Chatswood station.</li> </ul>
Boundary Road	Roseville	<ul> <li>Roads surface not sealed smoothly a lot of grooves and bumps on both lanes</li> <li>Fix the traffic light lapse time for both Archbold road and penthurst street intersection</li> </ul>
Malabar Road	Randwick	• Exiting Edgecliffe Ave turning right onto Malabar Road is extremely dangerous due to cars parked on the left hand side of Malabar Road making it a blind corner. There is no way of judging approaching cars until you're halfway across the intersection
Mitchell St/Murriverie Rd/ Hardy St	North Bondi	• Require a Traffic Light or Roundabout here. Also need a Pedestrian crossing.
Toothill St-Old Canterbury Road	Marrickville	<ul> <li>Huge volume of traffic in Old Canterbury Road from surrounding highrise large volume of traffic from Toothill Street trying to get into Old Canterbury Road all of this traffic then funnelled into a single lane to get under the railway line at the junction with Railway Terrace.</li> <li>Railway light rail &amp; bus very close &amp; accessible. Good frequency &amp; reliability.</li> </ul>

Street	Suburb	Comment, verbatim
Highgate St	Strathfield	Pot holes everywhere and I have scrapped the underside of my car many times
New Canterbury Road	Lewisham	• Was going to be resheeted 5 years ago. We are still waiting.
Garden St	Pittwater	<ul> <li>In morning and afternoon traffic builds up turning right or left into Pittwater road which is also heavily congested and it can take 10-15min to get onto Pittwater Road</li> <li>Both Garden Street and Pittwater Road heavily congested in morning and afternoon</li> <li>The intersection of garden Street with Taiyul road is a accident hotspot and desperately needs a roundabout to slow down the traffic</li> <li>B Line is wonderful</li> </ul>
Eastern Road	Ku-ring-gai	Cars making right hand turn block the traffic flow

#### Cost of road trauma

Costs of road trauma were analysed using Centre for Road Safety data and Economic Parameter values established by Transport for NSW.

The Centre for Road Safety statistics are reported by LGA and cover the 5 years from the beginning of 2014 to the end of 2018. It is important to be cognisant that these figures represent only the reported crashes, and that over the years, reporting requirements around minor crashes have evolved.

The Economic Parameter Values handbook, aggregates the total economic costs of different types of road crashes, and includes all costs associated with an accident

including (for example), emergency response, hospital care, rehabilitation costs and crash accident research reporting and loss of economic productivity. The costs are generally summarised as follows:

Fatal Accident	\$8,586,767
<ul> <li>Serious Injury Accident</li> </ul>	\$574,265
<ul> <li>Moderate Injury Accident</li> </ul>	\$97,512
<ul> <li>Minor Injury Accident</li> </ul>	\$89,313
<ul> <li>Non-Injury Accident (Towaway only)</li> </ul>	\$10,338

LGA	Deaths	Serious Injury	Moderate Injury	Minor Injury	Towaway	Cost of Trauma (\$)	Cost of Trauma/ person (\$)	Cost of Trauma/ km (\$)	Cost of trauma/ person/km (\$)
Burwood	4	111	199	189	256	137,022,056	3,723	1,320,585	35.88
Canada Bay	5	216	453	466	524	258,184,981	2,933	985,663	11.20
Hunters Hill	2	53	51	38	69	56,689,907	4,050	862,757	61.63
Inner West	14	581	901	797	1,150	624,792,176	3,432	1,127,309	6.19
Ku-ring-gai	10	308	311	327	563	328,093,167	2,779	559,954	4.74
Lane Cove	3	93	113	113	188	102,221,715	2,835	790,568	21.93
Mosman	1	54	75	79	128	55,289,468	1,942	506,445	17.79
North Sydney	6	230	231	253	347	232,310,299	3,434	1,348,582	19.93
Northern Beaches	16	631	725	561	1,111	632,035,798	2,499	550,726	2.18
Randwick	9	413	536	427	702	412,112,707	2,930	991,336	7.05
Ryde	10	392	472	535	758	412,623,873	3,548	938,506	8.07
Strathfield	7	136	276	327	441	198,885,130	4,934	1,475,096	36.59

LGA	Deaths	Serious Injury	Mod Injury	Minor Injury	Towaway	Cost of Trauma (\$)	Cost of Trauma/ person (\$)	Cost of Trauma/ km (\$)	Cost of trauma/ person/km (\$)
Sydney	25	935	1,458	1,366	1,465	1,030,926,174	4,947	2,259,925	10.85
Waverley	4	176	211	197	234	176,006,493	2,634	1,219,466	18.25
Willoughby	9	214	249	242	416	250,368,455	3,511	1,020,835	14.32
Woollahra	4	146	167	154	293	151,257,498	2,789	953,544	17.58

The headline cost of trauma varies in the Harbour region from over \$1 billion in the City of Sydney, to around \$55 million in Mosman. There is significant variance of these due to the population and size of the road network of the respective LGAs. But on average, the cost of road trauma is approximately \$300 million per LGA (median of \$165 million).

When adjusted per head of population, each LGA is in a much narrower band of approximately \$2,000 to \$5,000 per person. It is also important to remember that LGAs such as Sydney have a significant number of people who are employed within it, but might not be a resident for the purposes of population.

Some LGAs might have a disproportionately large or small road network, and a road trauma cost/km may be beneficial. On average, each kilometre of road network has around \$1 million worth of road trauma. Adjusting for both population and road network size might be considered a pseudo-equitable outcome. On this specific metric, the Northern Beaches LGA represents the 'safest' LGA in the NRMA Harbour region, with a road trauma cost of \$2.18/person/km. In contrast, Hunters Hill is the 'least safe' LGA, with a road trauma cost of \$61.63/person/km. This means that even after accounting for the significantly higher population and area of the Northern Beaches LGA, the Hunters Hill LGA has nearly 30 times more road trauma on a normalised basis. This is despite the Northern Beaches LGA having a headline cost 11 times higher than Hunters Hill.

