

REAAA[®]
Driving Progress

ROAD ENGINEERING ASSOCIATION OF ASIA & AUSTRALASIA (NZ)

Safer Bridges – Bridge Barrier Risk Screening

Michael Woodward - WSP

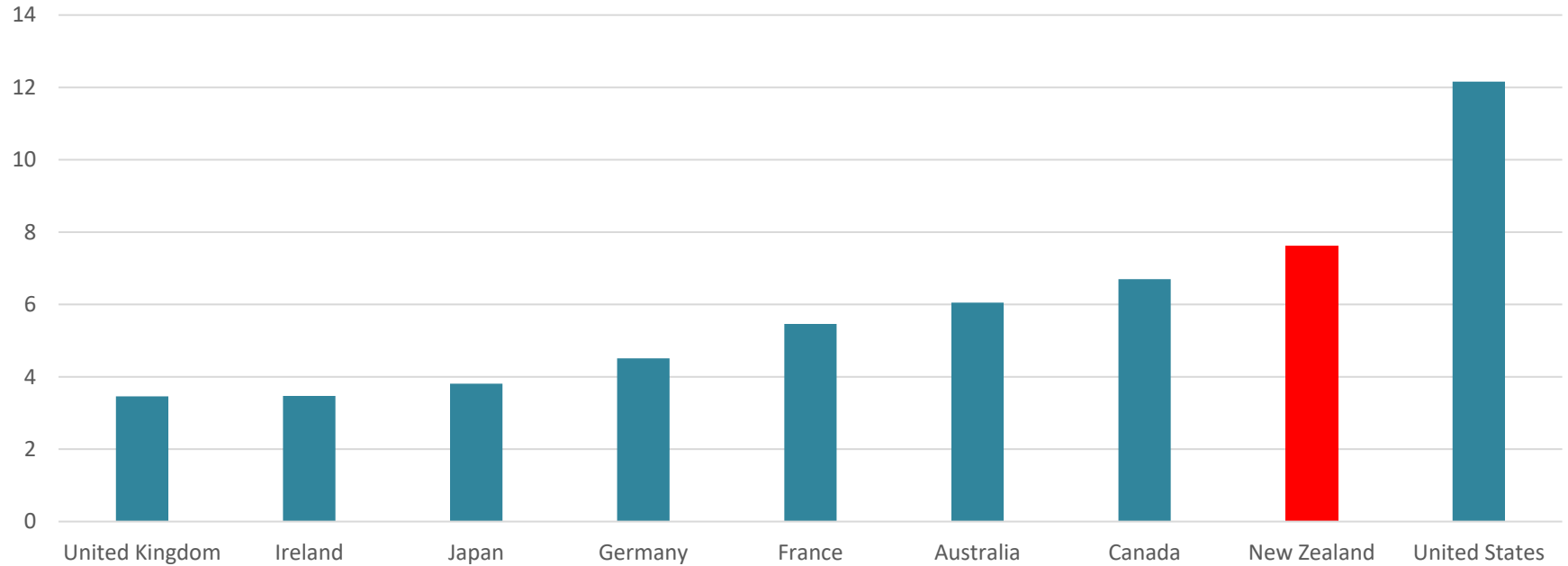
LOW
VOLUME
ROADS
WORKSHOP
2022



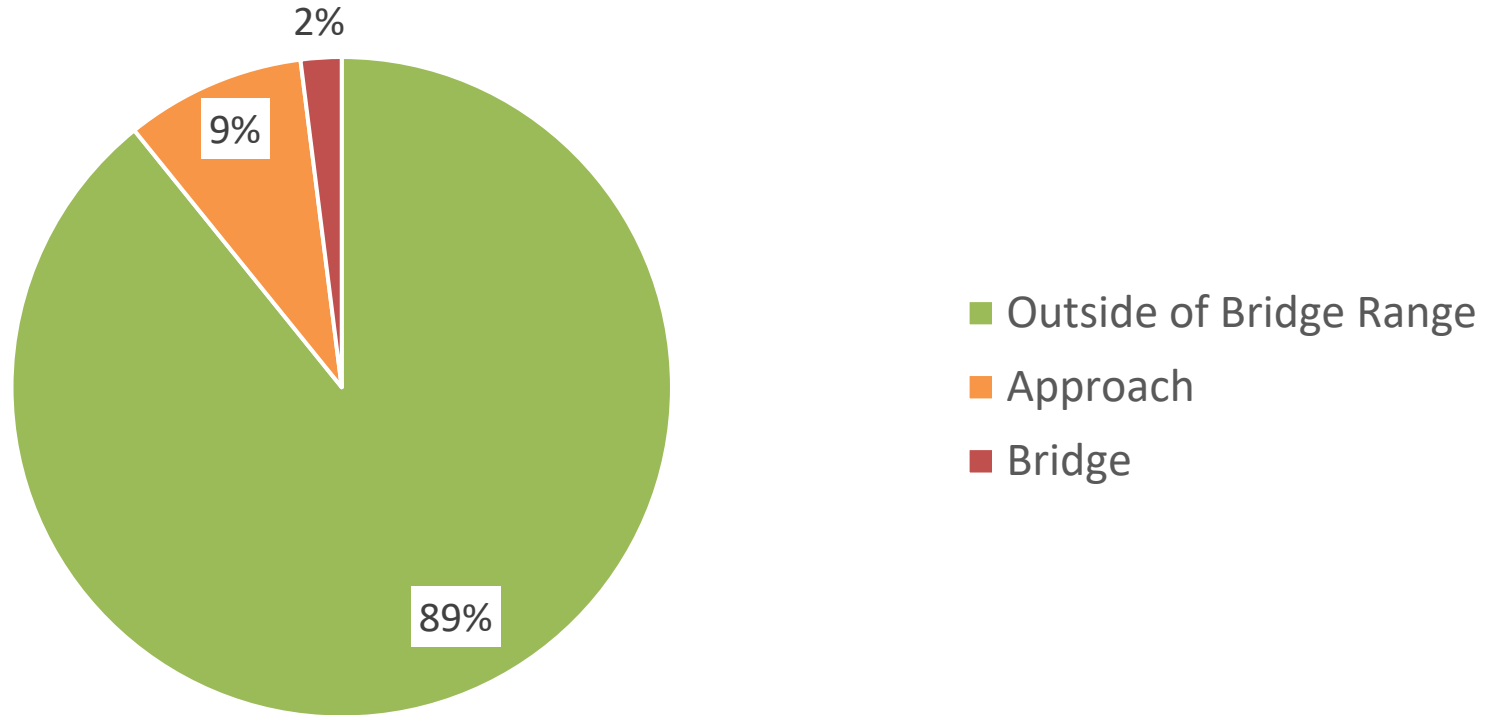
Why are so many New Zealanders dying from crashes at bridges?

Global Road Deaths

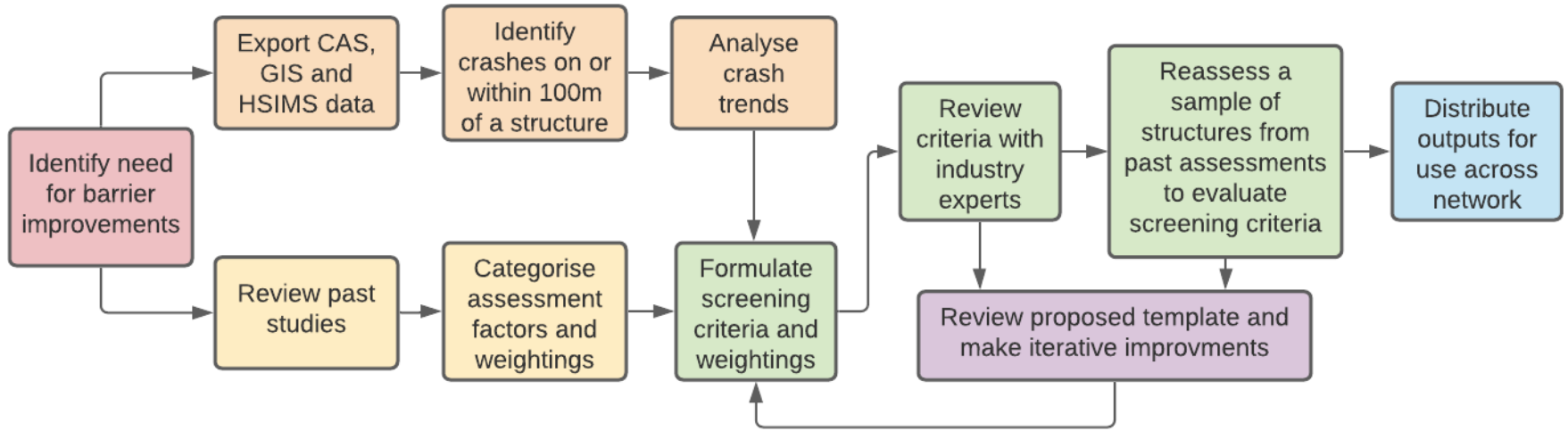
Road Fatality Rate per 100,000 people



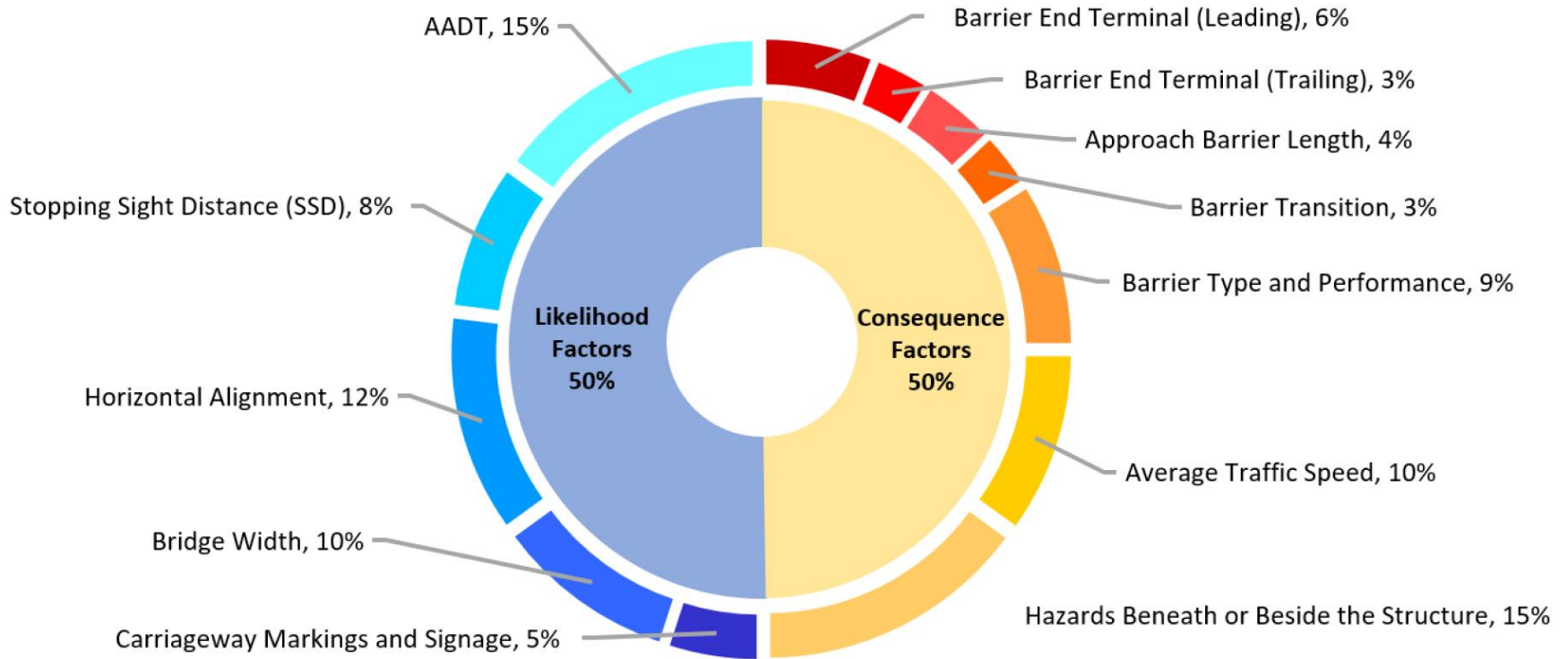
2010 – 2019 State Highway Fatalities



Screening Process



Screening Background



High Quality Bridge Barriers



High Risk Barriers



High Risk End Terminals



Te Ngawai River Bridge – 1058 (High Risk)




- Single Lane
- Out of Context Curves
- Substandard Barriers
- Exposed Kerbs
- High-Speed Environment
- Large Drop Height

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Te Ngawai River Bridge – 1058 (High Risk)

Structure Details	Key Risk Factors	Current Risk Score	Option	Option Description	Option Cost	Mitigated Risk Score
308 – Te Ngawai River Bridge (Te Ngawai Rd) AADT: 826 vpd	 <p>Single lane, out of context curves, exposed kerbs, substandard barriers, high-speed environment, large drop height</p>	1053 (High)	A	Paint stop lines and install additional give way signage	\$10,000	972 (High)
			B	Option A plus: Install 2x approach guardrails (northern approach) with transition kerbs	\$70,000	888 (High)
			C	Option A plus: Install 4x approach guardrails with transition kerbs	\$120,000	768 (Medium)
			D	Option C plus: Install thriebeam guardrail over bridge	\$320,000	564 (Medium)
			<p>Option Justification: Both approaches are curved and provide no protection from the exposed kerb ends of the bridge. However, the length and straightness of the bridge mean that the benefits of a thriebeam guardrail installation are limited. Therefore, Option C is recommended.</p>			

Works Prioritisation

Priority	Structure ID	Option	Current Risk Score	Mitigated Risk Score	Rough Order Cost	Improvement Type	Risk Reduction per \$1000 spent	Weighted Risk Reduction
1	308	C	1053	768	\$120,000	Approach Barrier Improvements	2.5	2.7
2	321	A	874	713	\$60,000	Approach and Bridge Barrier Improvements	3.1	2.7
3	284	A	866.4	775	\$30,000	Approach Barrier Improvements	3.6	3.1
4	312	A	820.8	650	\$70,000	Approach Barrier Improvements	2.6	2.1
5	323	A	799.25	598	\$90,000	Approach Barrier Improvements	2.4	1.9
6	14	B	792	280	\$110,000	Approach and Bridge Barrier Improvements	4.7	3.7
7	341	B	720	462	\$90,000	Approach Barrier Improvements	2.3	1.6
8	246	B	720	369	\$160,000	Approach and Bridge Barrier Improvements	2.3	1.7
9	35	B	712.8	495	\$90,000	Approach Barrier Improvements	2.5	1.8
10	232	A	712.8	475	\$100,000	Approach Barrier Improvements	2.5	1.8
11	50	A	699.3	491	\$90,000	Approach Barrier Improvements	2.5	1.8
12	347	A	693	462	\$80,000	Approach Barrier Improvements	3.1	2.1
13	318	B	684	371	\$120,000	Approach and Bridge Barrier Improvements	2.8	1.9
14	223	A	684	496	\$100,000	Approach Barrier Improvements	2.0	1.4
15	133	A	723.6	663	\$2,000	Delineation Improvements	30.3	21.9

Barrier Screening Benefits



Barrier Screening Benefits



Barrier Screening Benefits

Risk Management



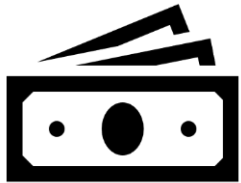
Identifies dangerous sites and prioritises improvement works.

Standardised Approach



Consistent approach allows for national comparisons.

Financial



Supports funding applications for safety improvements. Ensures targeted spending.

Community



Reduces crash risk at bridges and saves lives.

Bridge Barrier Screening Summary



Tried, tested and suitable
for all bridge networks



Identifies high-risk sites



Prescribes and prioritises
improvement solutions

A photograph of a paved road curving through a rural landscape. In the background, a large field of green corn stretches across a hillside. The road is flanked by tall grasses and trees. A white sign with a blue border and the text 'Thank you' is overlaid in the center of the image. The sign is rectangular with rounded corners. The text is in a bold, blue, sans-serif font. The background shows a clear sky and a utility pole in the distance.

Thank you