



Rural Intersection Safety

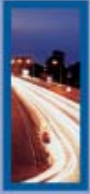
Shane Turner
Aaron Roozenburg





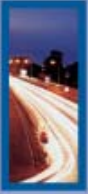
Introduction

- Objective – To develop models that can be used to estimate the accident risk at rural intersections
- Wider study considered priority, signalised and roundabout controlled junctions in high-speed areas
- Applications:
 - Economic evaluation (WAP)
 - Development related work
 - Performance Assessment



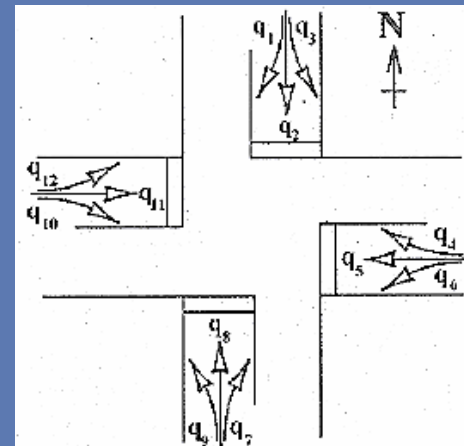
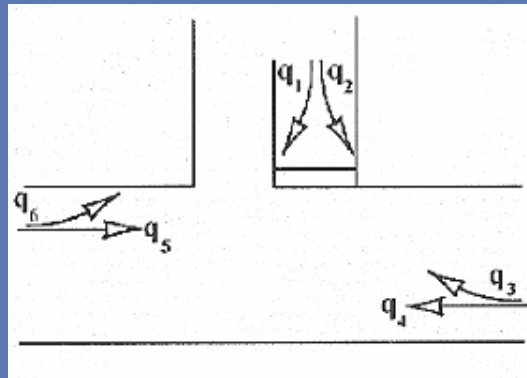
Data and Sample Size

Region	Number of Sites	
	Crossroads	T-junctions
Auckland	16	15
Waikato	20	10
Bay of Plenty	-	20
Taranaki	23	9
Manawatu-Wanaganui	2	10
Wellington	7	2
Canterbury	33	34
Total	101	100

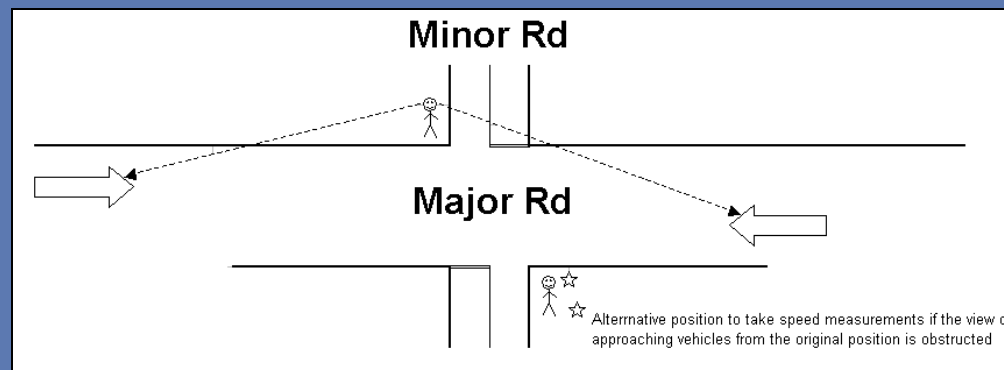


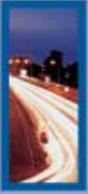
Variables

- Traffic Volume (movement & approach)



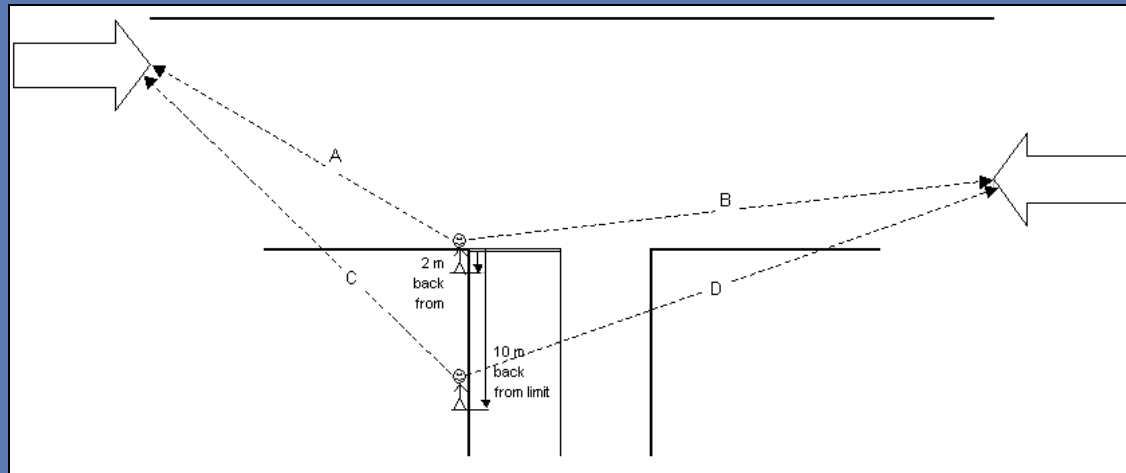
- Speed (mean and standard deviation)



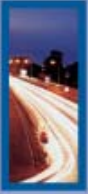


Variables

- Visibility (to left and right & combined)

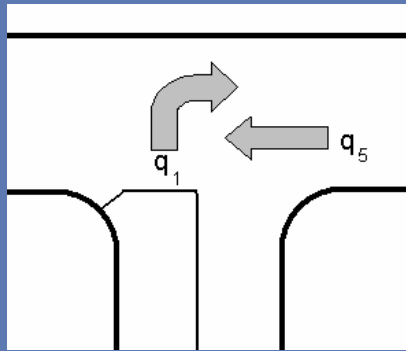


- Comparison with Austroad SD standard
- Right Turn Bay (discrete variable)
- Others (lighting & control type)



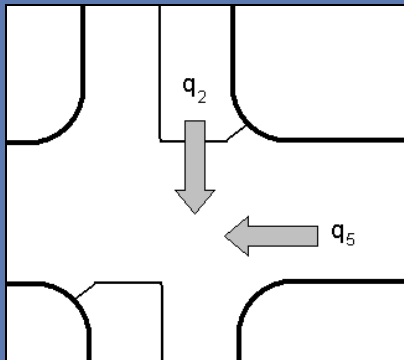
Accident Prediction Models

■ Rural Priority T-junctions



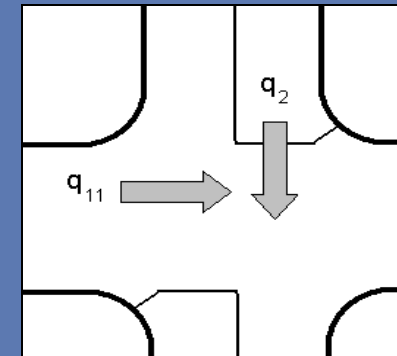
$$A = 5.29 \times 10^{-6} \times q_1^{1.33} \times q_5^{0.15} \times (V_{RD} + V_{LD})^{0.33}$$

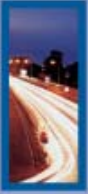
■ Rural Priority X-Roads



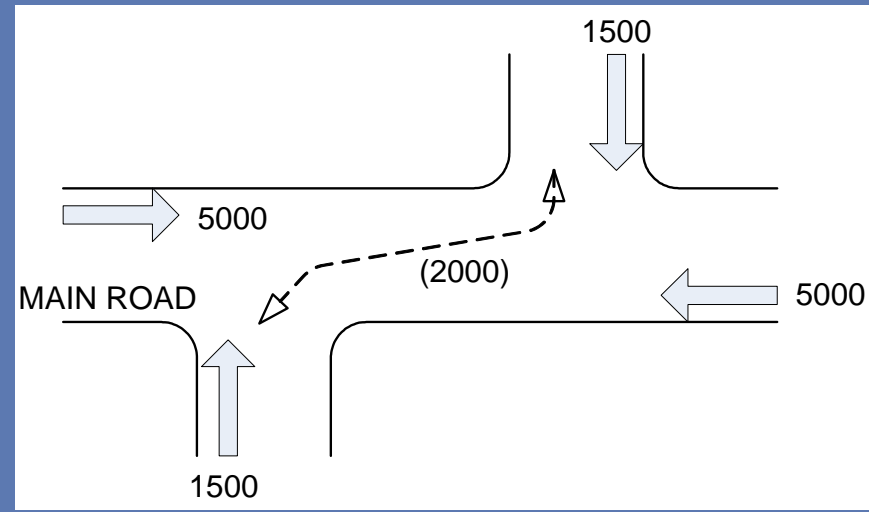
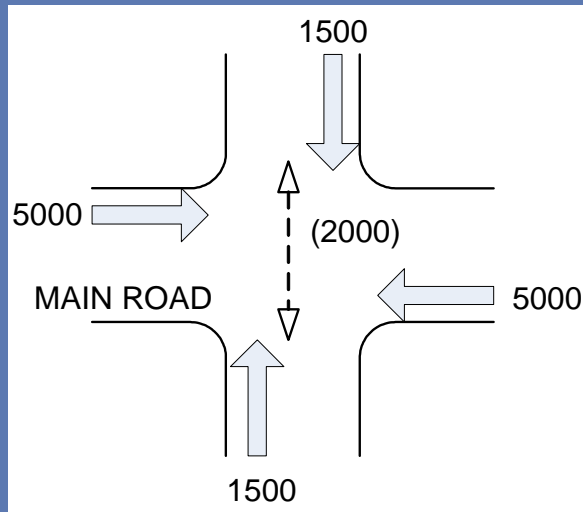
$$A = 1.20 \times 10^{-4} \times q_2^{0.60} \times q_5^{0.40}$$

$$A = 2.05 \times 10^{-4} \times q_2^{0.40} \times q_{11}^{0.44}$$





Crossroads Versus 2x T-Junctions



Option	Accident Prediction	
X-Road - No through traffic	0.48	
X-Road - Through traffic	1.19	
T-junctions - No through traffic	0.73	Higher (+0.25)
T-junctions - Through traffic	0.88	Lower (-0.31)



Summary

- Models available for specific accident types and total accidents. Ideally need to consider what types of accidents will occur.
- New models include key variables such as visibility and speed.
- Preferred models presented. Other models forms available in Main Report
- 2xT-junctions not always safer than a single cross-road. Need to consider amount of crossing traffic