



Accident Benefits of Sealing Unsealed Roads

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Introduction

- Is sealing roads dangerous or beneficial?
- Project Evaluation Manual
- Pilot Study



Background

- No known research
- Reports found to contain opinion
Sealing roads leads to increased speeds, therefore increased crash rate
- Unsealed shoulders frequently cause rural accidents (ACRS 2004)
- 58% of rural crashes occur on straight roads (McLean 2000)

Aim

- Determine if there are benefits or dis-benefits associated with sealing unsealed roads
- Determine a procedure for calculating the accident savings (or costs)

(C) Collision Safety Institute 2004



Method

- Contact all NI DCs with unsealed roads
- Road Classification



Classification	Sites
North Island flat	80
South Island flat	98
Rolling	65
Hilly	91
Mountainous	59
Total	393



Method (Cont.)

- Accident rate calculated before and after sealing (10^6 *accidents/year/vehicle-km)
- Safety Benefit = After – Before
- T-test used to check for statistical significance
- Background trend



Results

Classification	Sites	Mean difference	95% confidence interval	Conclusion
Overall (all road lengths)	393	0.0849	-0.267, 0.436	No statistical change in the accident rate
North Island flat	80	-0.0253	-0.530, 0.479	No statistical change in the accident rate
South Island flat	98	1.006	0.401, 1.611	Statistical evidence of an increase in the accident rate
All flat	178	0.542	0.312, 0.773	Statistical evidence of an increase in the accident rate
Rolling	65	-0.0295	-0.362, 0.303	No statistical change in the accident rate
Hilly	91	-0.718	-1.951, 0.515	No statistical change in the accident rate
Mountainous	59	0.0686	-0.316, 0.453	No statistical change in the accident rate

Results (Cont.)

Classification	Sites	Mean difference	95% confidence interval	Sensitivity conclusion
Overall (all road lengths)	393	-0.154	-0.588, 0.280	No change in conclusion
North Island flat	80	-0.214	-0.872, 0.444	No change in conclusion
South Island flat	98	0.679	0.0518, 1.306	No change in conclusion
All flat	178	0.278	-0.178, 0.733	Sensitivity analysis indicates no statistical evidence of a change in the accident rate
Rolling	65	-0.109	-0.475, 0.256	No change in conclusion
Hilly	91	-1.118	-2.731, 0.495	No change in conclusion
Mountainous	59	-0.0189	-0.449, 0.411	No change in conclusion

Discussion

- No statistically significant change in accident rate
- Low traffic volumes
- Few crashes
- South Island Flat sites inconsistent
- Outlier sites should be investigated
- Terrain classification issues (No account for surrounding, dead-end roads, road hierarchy)



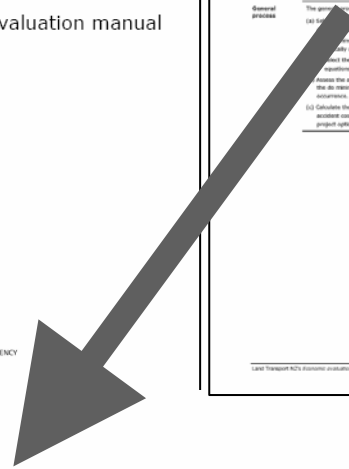
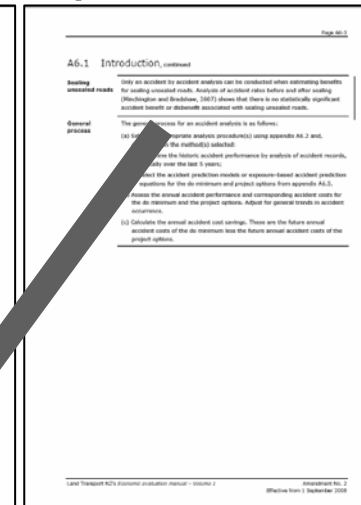
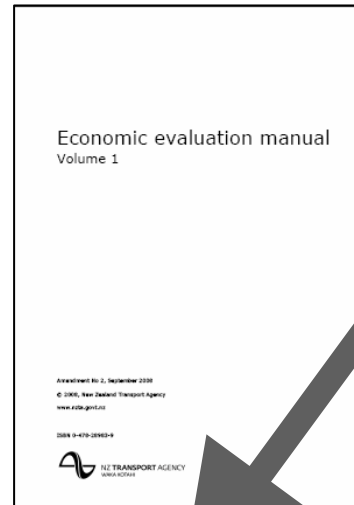
Conclusions and Recommendations

- No statistical benefit or dis-benefit associated with sealing unsealed roads
- Site specific before and after studies should be conducted on outlier sites and a portion of the South Island Flat sites



Report and EEM

- <http://www.landtransport.govt.nz/research/reports/>



A6.1 Introduction, continued

Sealing unsealed roads

Only an accident by accident analysis can be conducted when estimating benefits for sealing unsealed roads. Analysis of accident rates before and after sealing (Minchington and Bradshaw, 2007) shows that there is no statistically significant accident benefit or disbenefit associated with sealing unsealed roads.

General process

The general process for an accident analysis is as follows:

- (a) Select the appropriate analysis procedure(s) using appendix A6.2 and, depending on the method(s) selected:

Questions?

