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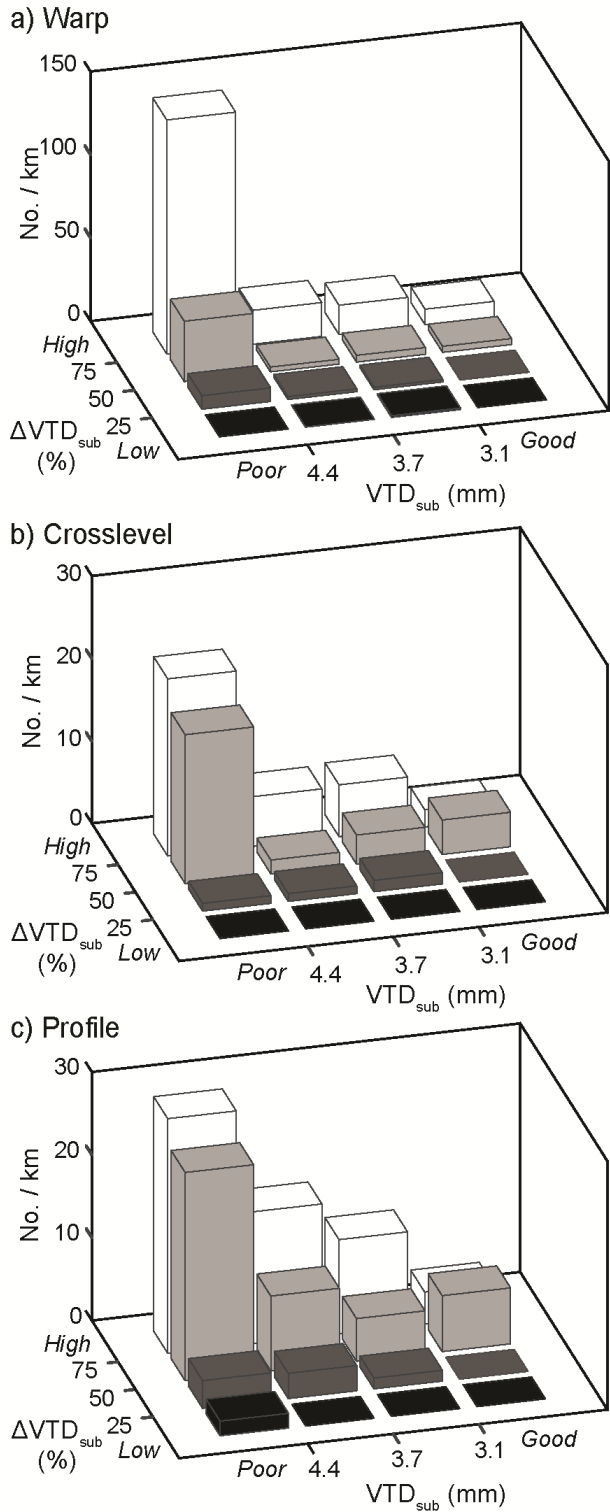
**Quantifying the Impact of Subgrade Stiffness on Track Quality and the  
Development of Geometry Defects**

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**Supplemental Data**

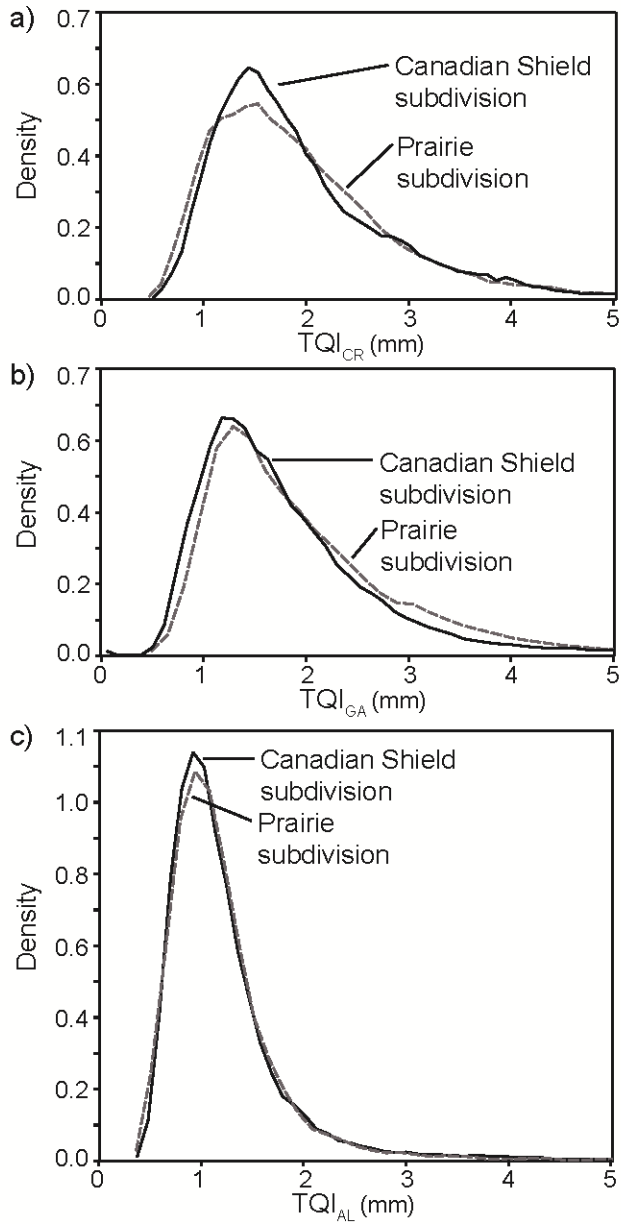
**SUPPLEMENTAL DATA**



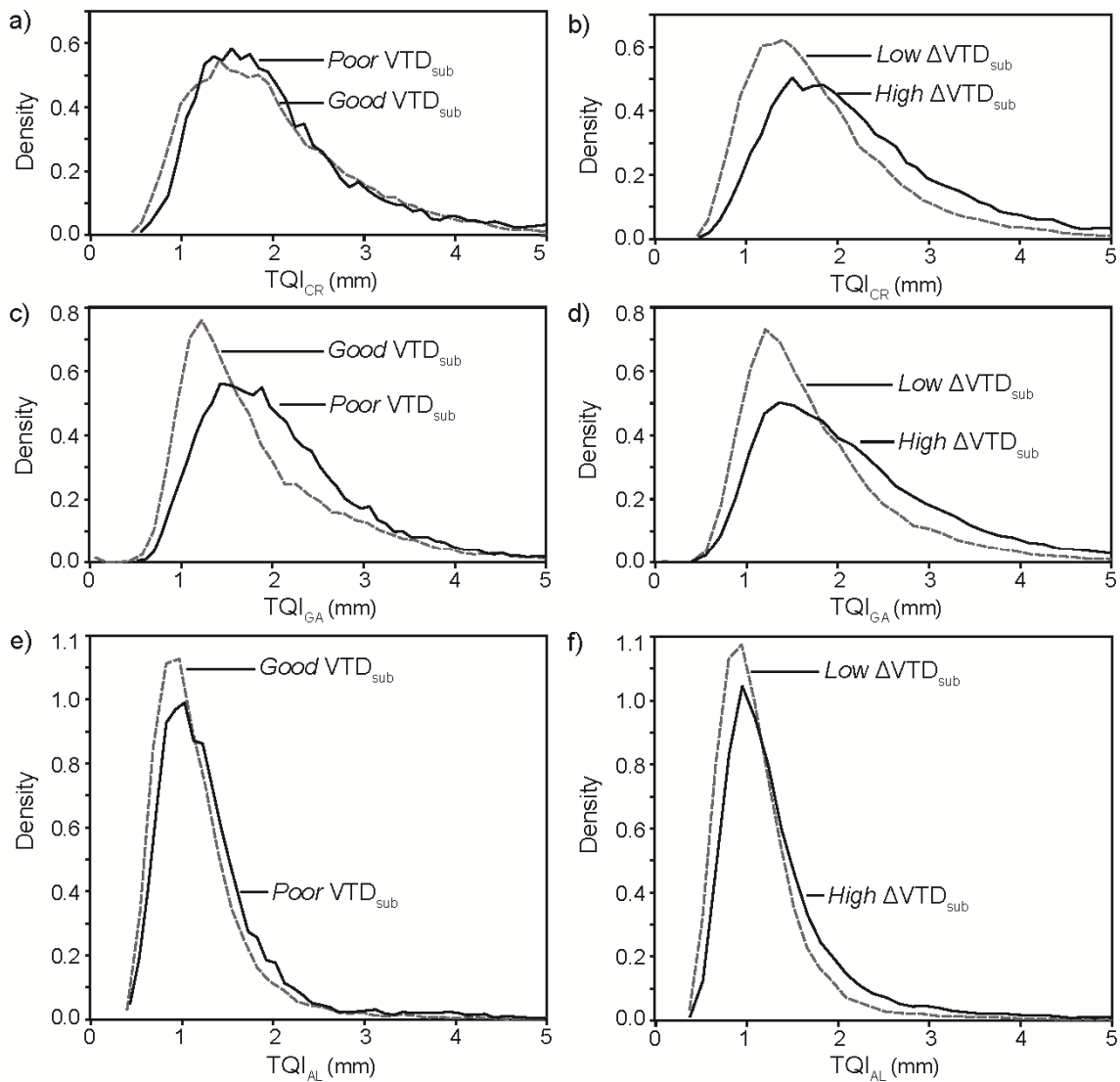
**Figure S1.** Plot of the distribution of the combined number of Class 3 surface defects per km divided into (a) warp, (b) crosslevel, and (c) profile defects within the divisions of VTD<sub>sub</sub> and

## SUPPLEMENTAL DATA

$\Delta\text{VTD}_{\text{sub}}$ . These *defects* include both urgent and priority defects for both the subdivision in the Prairies and in the Canadian Shield.



**Figure S2.** Plots of the distribution of (a)  $TQI_{CR}$ , (b)  $TQI_{GA}$ , and (c)  $TQI_{AL}$  for both the Prairie and Canadian Shield subdivisions.



**Figure S3.** Plots of the distribution of:  $TQI_{CR}$  divided in into subsets of (a) *good* and *poor*  $VTD_{sub}$  and (b) *high* and *low*  $\Delta VTD_{sub}$ ;  $TQI_{GA}$  divided in into subsets of (c) *good* and *poor*  $VTD_{sub}$  and (d) *high* and *low*  $\Delta VTD_{sub}$ ; and,  $TQI_{AL}$  divided in into subsets of (e) *good* and *poor*  $VTD_{sub}$  and (f) *high* and *low*  $\Delta VTD_{sub}$ . Where, *good*  $VTD_{sub}$  is  $< 3.1$  mm, *poor*  $VTD_{sub}$  is  $> 4.4$  mm, *low*  $\Delta VTD_{sub}$  is  $< 0.003$  mm/m, and *high*  $\Delta VTD_{sub}$  is  $> 0.013$  mm/m.