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The association of forwarding speed and distance in mid-Sweden

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CERTIFIED
ISO 14001
Environmental
management systems



Introduction

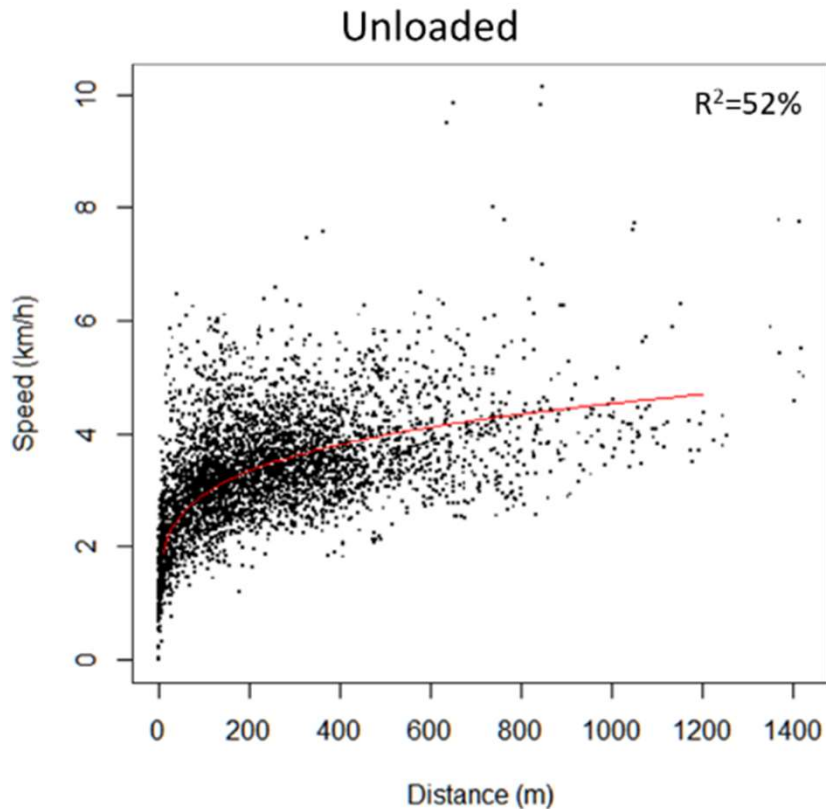
- Previous studies indicates association between forwarding distance and speed
 - Better strip roads
 - Stress
 - Relatively less time of acceleration and deaccelerations

- New possibilities with data collection

Methods

- Dataset from Manner et al. (2016) was used
- Filtering data
 - Unusual work
 - Measurement errors
 - "Lonely" Observations
- Correlation and regression analysis

Results

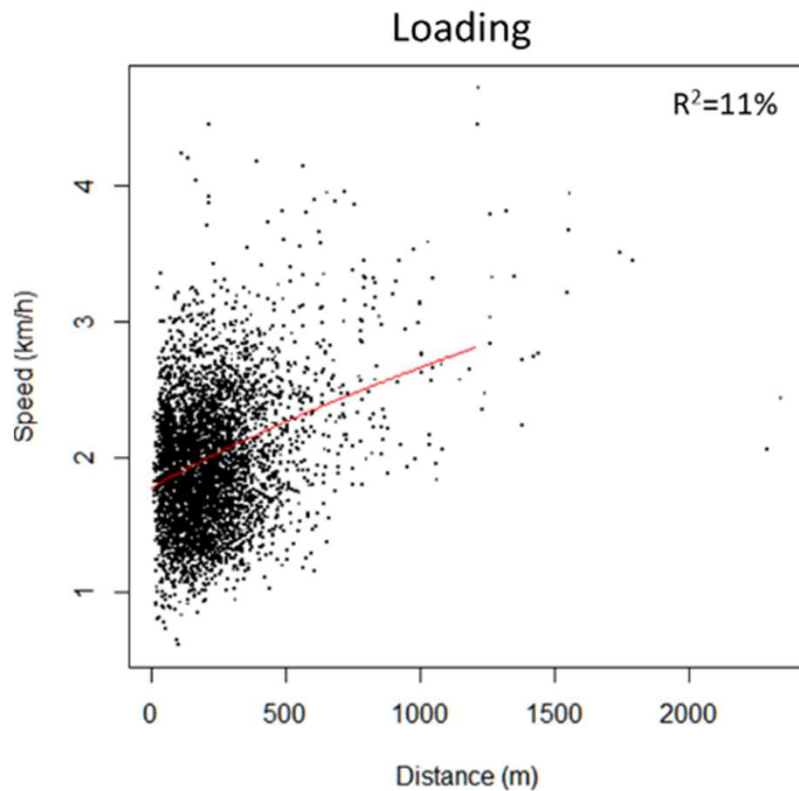


Correlation

Pearson's correlation
was moderately strong

Spearman's correlation
was moderately strong

Results

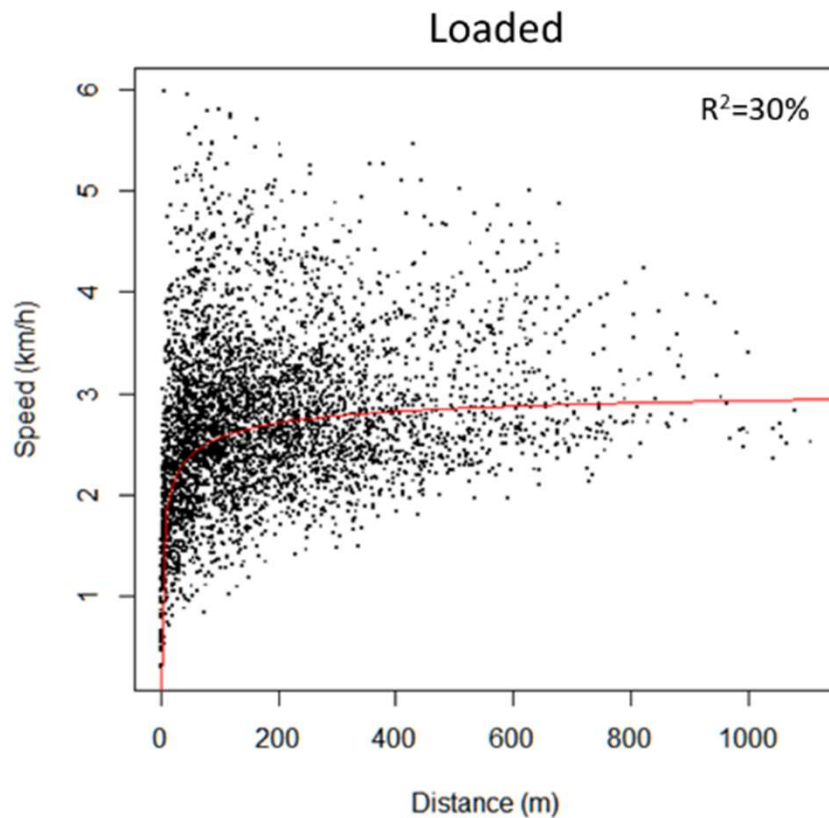


Correlation

Pearson's correlation
was weak

Spearman's correlation
was weak

Results



Correlation

Pearson's correlation was weak

Spearman's correlation was weak

Discussion

- Unloaded speed had the strongest association to distance
- Less dominant association for loading speed
- Weak association for loaded speed
- Not possible to conclude why the speed and distance is associated in our data
- Suggestion to include work element specific distances when possible

Reference

Gullberg, T. (1997). Time consumption model for off-road extraction of shortwood. Sveriges Lantbruksuniversitet, Uppsatser och Resultat 297. 29 p. (In Swedish, English summary).

Kumazawa Y., Fujita M., Yamasaki A., Koyama K., Ichihara K., Oka M. (2011). Consideration about safety and efficient log transportation by forwarders. J.Jpn.For.Eng.Soc. 26:181-186.

Manner J., Palmroth L., Nordfjell T., Lindroos O. (2016). Load level forwarding work element analysis based on automatic follow-up data. Silva Fennica 50(3) article id 1546. <https://doi.org/10.14214/sf.1546>

Nurminen, T., Korpunen, H. & Uusitalo, J. (2006). Time consumption analysis of the mechanized cut-to-length harvesting system. Silva Fennica 40(2): 335–363.