**Introduction**

Mining roads degrade rapidly requiring maintenance multiple times per week. Large road networks require an automated system to rank road sections most in need of repair. Vehicle response modeling is a preferred method due to both low monetary and time costs.

**Model Development**

**Geographic Model**

The model can be applied to a location grid and overlayed on a mine map. Areas in red indicate locations most in need of maintenance. This improves dispatching of maintenance crews to the critical road sections.

**Significance**

- Health and Safety of operators is improved by reducing whole body vibration
- Green house gas emissions are reduced with increased fuel efficiency
- Total profit is increased with decreased cycle time and reduction in truck maintenance

**Conclusions**

- Existing models are not sufficient to rank road sections.
- Additional factors (like tire path) can be calculated from existing data.
- Better detection of road defects saves money, reduces injury, and protects environment

**Future Work**

- Partnership with mine to collect road condition data
- Integrate algorithms for AI deployment using IOT
- Deploy solution for economic testing in operation

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