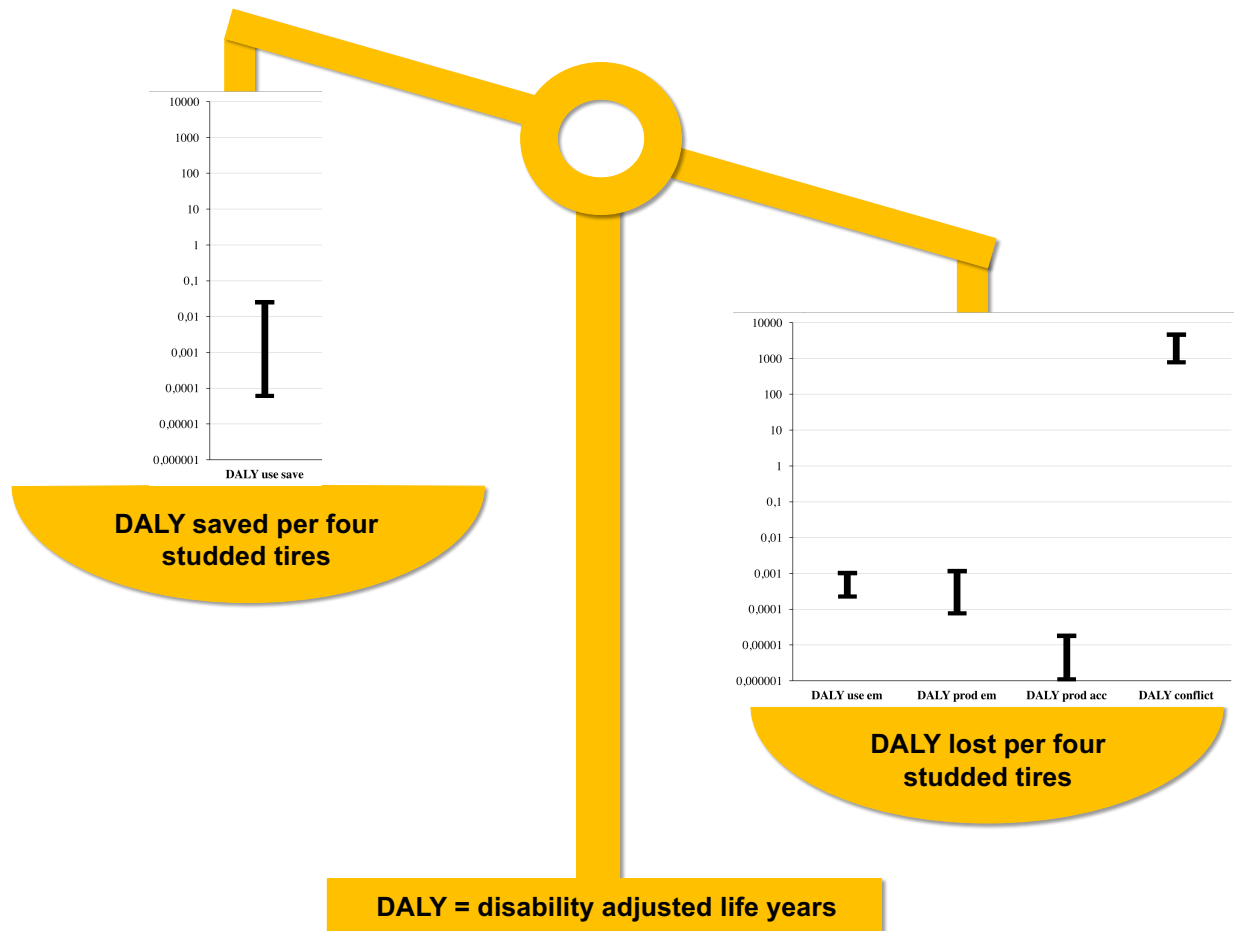




Do tire studs in cars save or take lives?

A life cycle assessment on human health impacts



OUR RESEARCH

- Studded tires are used during winter in a number of countries worldwide in order to save lives ($DALY_{use\ save}$).
- At the same time tire studs, mainly made out of tungsten carbide (WC), cause negative human health impacts due to emissions of worn particles ($DALY_{use\ em}$), emissions of toxic substances during production ($DALY_{prod\ em}$) and occupational accidents ($DALY_{prod\ acc}$). Furthermore, the use of tungsten, being a conflict mineral, contributes to civil warfare in e.g. the Democratic Republic of the Congo ($DALY_{conflict}$).
- The aim of this study is to assess whether the use of tire studs results in net health improvements or not, using life cycle assessment (LCA) and the disability adjusted life years (DALY) indicator to operationalize the impact category of human health:

$$DALY_{tire\ stud} = DALY_{use\ save} + DALY_{use\ em} + DALY_{prod\ em} + DALY_{prod\ acc} + DALY_{conflict}$$

- Positive health impacts from using studded tires are estimated using Norwegian statistics on accident reductions. Negative impacts related to emissions of worn particles and production emissions are assessed using the ReCiPe method, while negative impacts related to production accidents and tungsten being a conflict mineral are based on occupational statistics and casualty counts, respectively [1,2,3].

RESULTS SO FAR

- The use of studded tires does *not* result in net health improvements if all the factors in the equation are included.
- Negative health impacts from conflicts are dominating the result. Accidents during production contribute negligibly. The other contributions have overlapping ranges of impact.
- If $DALY_{conflict}$ is excluded, then the low estimate still shows no net health improvements from using tire studs while the high estimate does show net health improvements.

REFERENCES

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