

Studded tyres and air quality in Norway



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Regulations studded tyres

Norway

- 2011: Public hearing new regulations:
 - Maximum of 50 studs per meter rolling circumference.
 - Main object: Harmonized regulations.
- September 2012: We were informed about the Swedish/Finnish exception rule.
- October 2013: Dispensation for tyres approved through the Swedish/Finnish exception rule.
 - valid for tyres produced until end of September 2017.

Sweden and Finland

- 2009: Exception rule (over-run).
- 2013: Maximum of 50 studs per meter rolling circumference.

Aim of studded tyre testing

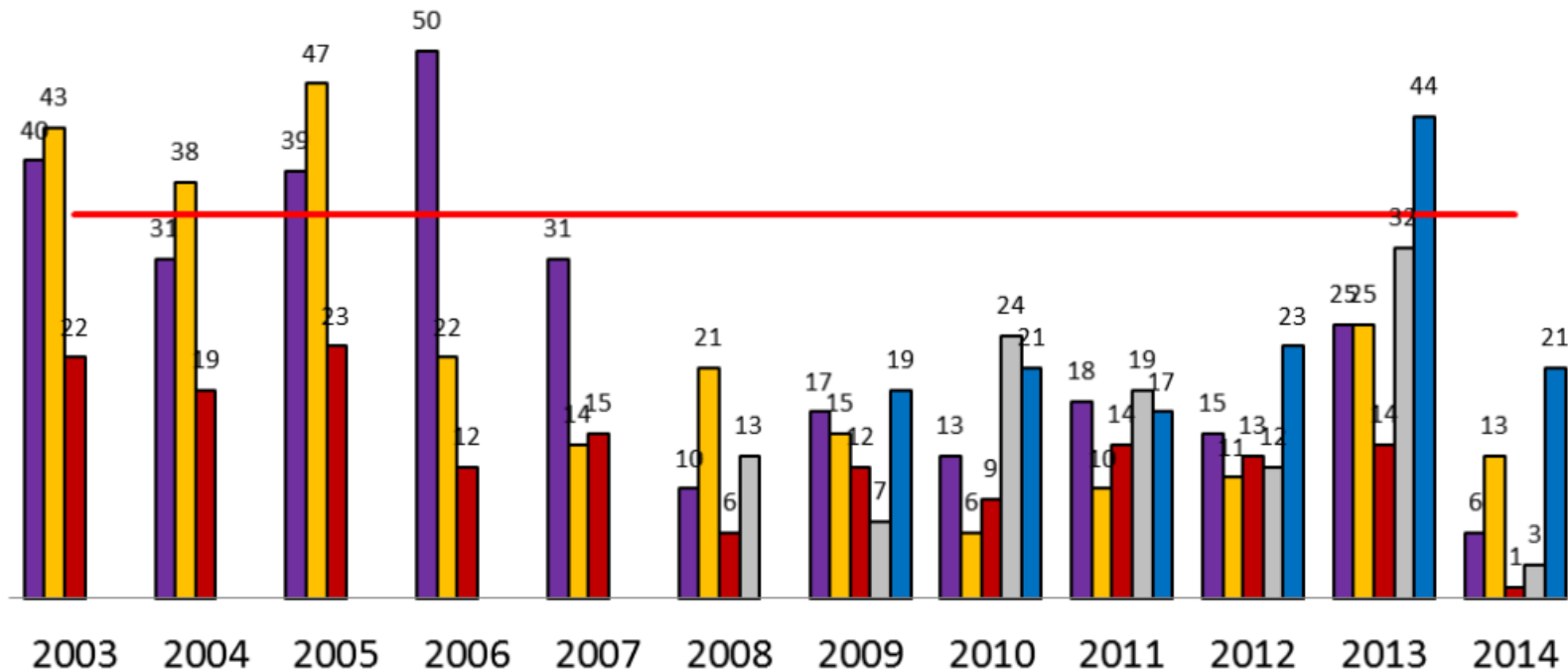
Harmonized regulations for studded tires in Norway, Sweden and Finland

- Get a better understanding of what a **changed regulations** for studded tires will have on **local air quality** in Norway
- Especially the **exception rule with testing method** (over-run) gave cause for concern



Historical trend in Oslo

- Number of daily mean concentration PM10 > 50 µg/m³
- Red line is the EU-limit value
- 5 monitoring station in Oslo



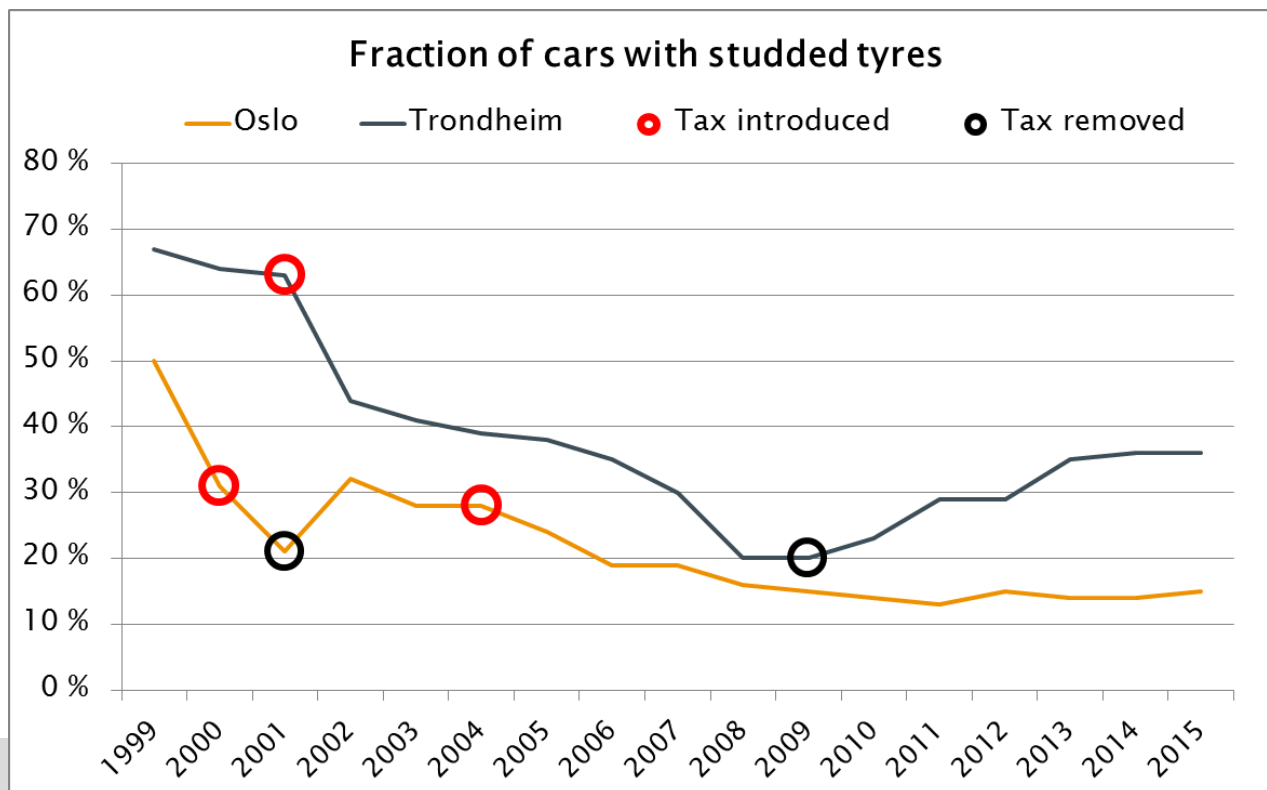
Successful abatements was executed

- Less use of studded tyres
 - Tax on using studded tyres
 - Funding for switching from studded to non-studded tyres
- Road maintenance
 - Removal of dust
 - Dust binding by $MgCl_2$
- Lower speed limits
- Also other abatements in non-road sectors



Use of studded tyres in Norway in 2015

- Oslo 14 %
- Bergen 14 %
- Trondheim 35 %
- Stavanger 28 %
- Tromsø 87 %
- Medium towns in south \approx 50 %



Policy for studded tyres

- There is tax for using studded tyre in Oslo and Bergen
- Tax is about € 150 per year
- In future:
 - Most likely still tax in 2–4 cities for the next decades
 - Most likely never tax in smaller towns
 - Studded tyre will never be banned in Norway



Why is this important?

- PM2,5 gives negative health effects:
 - Ca. 450.00 causes of early death in Europe, ca. 1.500 in Norway
 - Even more become ill or troubled
- In Sweden the social cost is estimated to 35 billion SEK
- Norway risk being fined by the ESA if the limits are broken
 - Stockholm is already fined due to high concentrations of PM



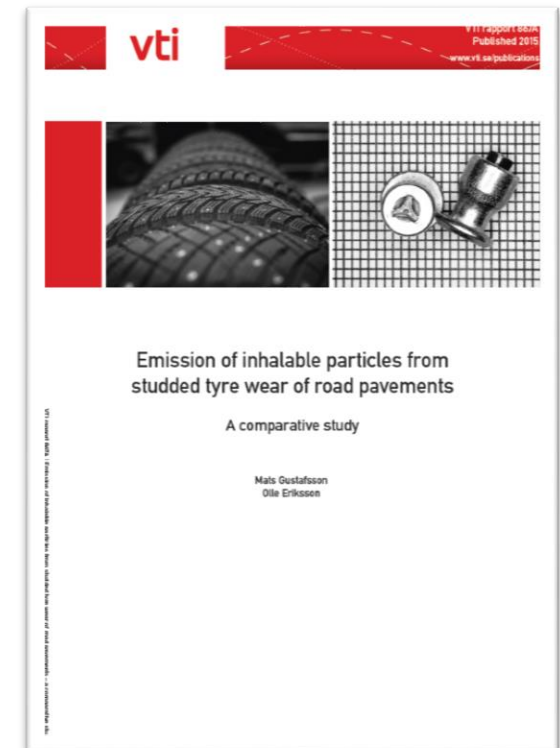


Air quality – stricter requirements in Norway from 2016?

Component	Averaging period	Current limit	2016
PM10	Daily average value Max days with excess	50 $\mu\text{g}/\text{m}^3$ 35 days	50 $\mu\text{g}/\text{m}^3$ 30 days
PM10	Annual mean	40 $\mu\text{g}/\text{m}^3$	25 $\mu\text{g}/\text{m}^3$
PM2,5	Annual mean	25 $\mu\text{g}/\text{m}^3$	15 $\mu\text{g}/\text{m}^3$

Status

- Tests conducted at VTI, collaboration between Trafikverket and Statens vegvesen
 - **VTI rapport 867A** published
- Dispersion calculation done by the Norwegian Institute for Air Research (NILU)
- News item on www.vegvesen.no:
 - Flere pigger gir mer svevestøv (More studs gives more particulate matter)
- ETRMA has initiated a follow-up project



Studded tyres tested (205/55 R16)

1. Regulation in Sweden/Finland (96 studs/tyre)

- Michelin X-Ice North
- Gislaved Nord Frost 100

2. Regulation in Norway (130 studs/tyre)

- Pirelli Ice Zero
- Goodyear Ultra grip Ice Arctic
- Continental Ice Contact

3. Previous generation (130 studs/tyre)

- Nokian Hakkapeliitta 5

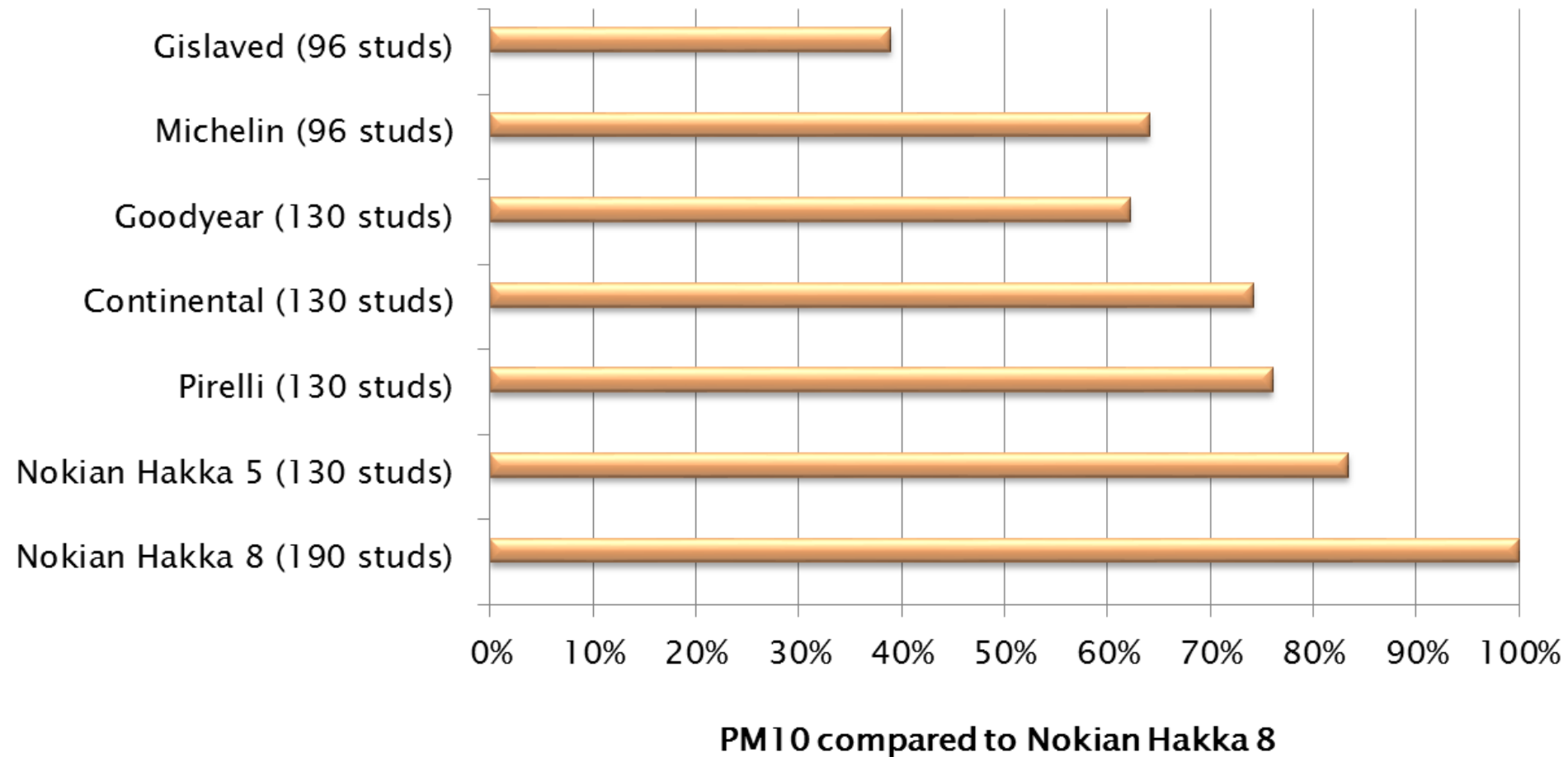
4. Exception rule in Sweden/Finland (190 studs/tyre)

- Nokian Hakkapeliitta 8



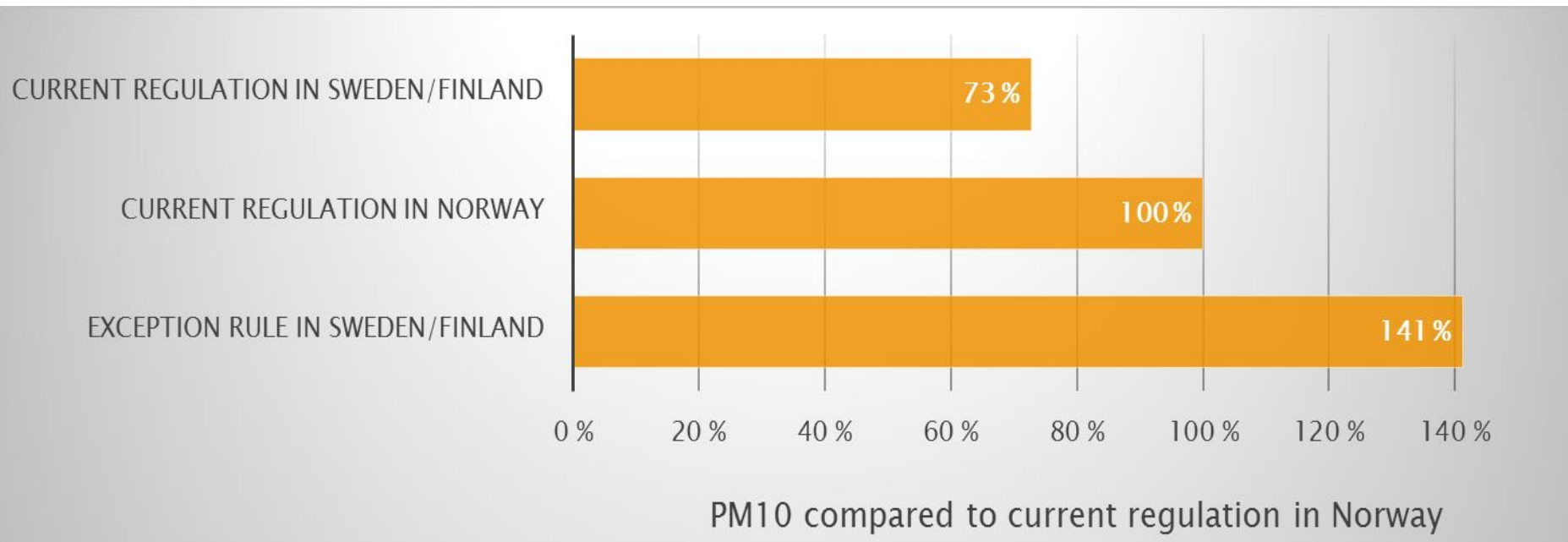


Results

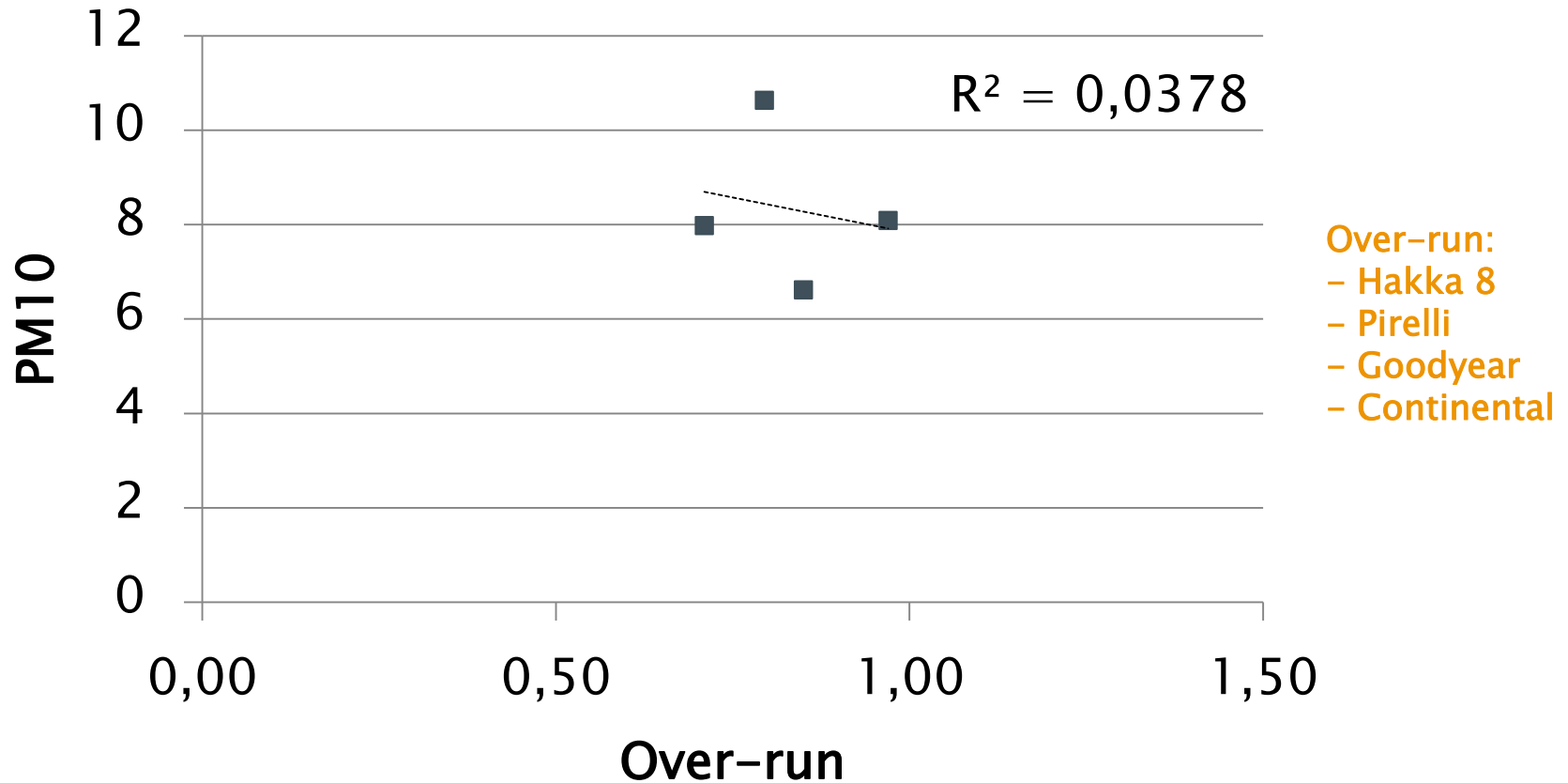




Emission of PM10 for different regulations



Over-run compared to PM10



Wear estimated with exception rule

Regulations and future directions

- **Temporary exemption** for studded tyres according to regulations in Sweden/Finland (including the exception rule) for tyres produced through September 2017
- Results from study conducted by **ETRMA**
- What considerations do the Swedish and Finnish road authorities?
- Tyre manufacturers need for **predictability**
- Any change in regulation must be open for comments before it can be introduced
- It is desirable to have a **harmonized Nordic legislation** on studded tyres ensuring good air quality and road safety while it promotes technological development in the industry
- Focus on **test method for the exception rule**
 - Further development of the over-run method or find a new method?

Thank you for the attention!



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