



Assessing the impacts of a reindeer warning service

NTSA Seminar 2015

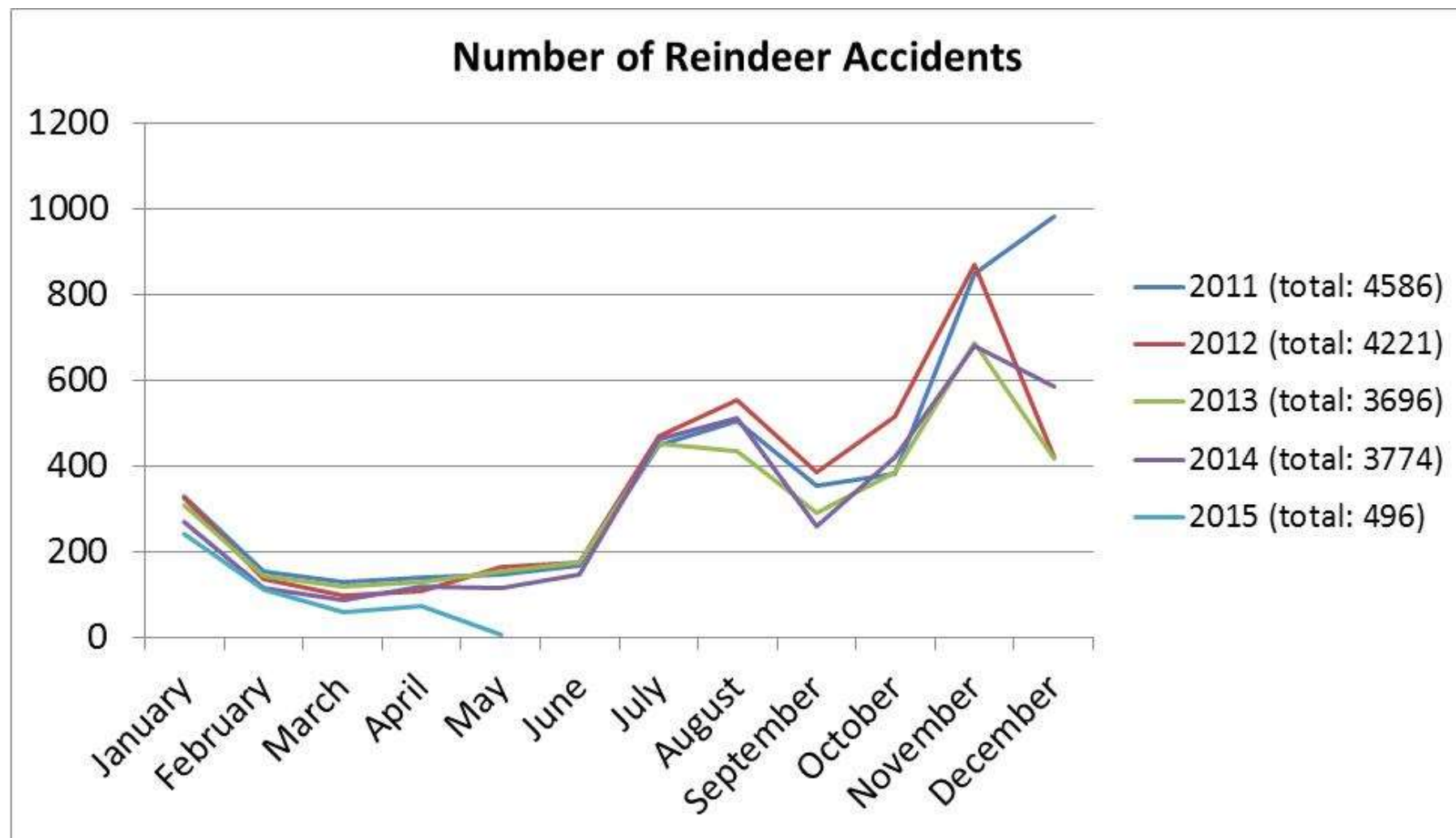
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Background



- Although traffic safety in Finland has improved significantly in the recent years and decades, the number of reindeer accidents has stayed high
- There are about 4000 reindeer accidents every year on Finnish roads
- Costs of about 12 million euro in vehicle repairs and 2 million euro in recompenses for reindeer as well as a loss of 100 tons of reindeer meat
- ITS as a new measure to reduce accidents

Yearly cycle of accidents



Research project

- Objective: To assess the acceptance of a real time reindeer warning service and its potential impacts on driver behaviour and traffic safety
- Duration 2 years, Summer 2013 until Autumn 2015

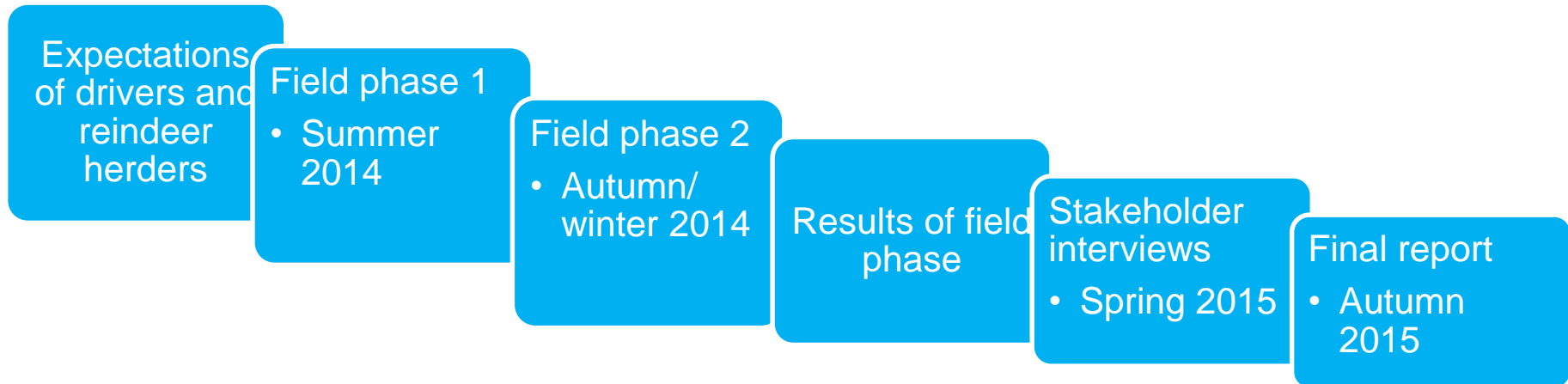
- Partners:
 - The reindeer warning service was created by a small Finnish enterprise called Paikkatieto Online Oy
 - Funding: Finnish Transport Safety Agency, Finnish Transport Agency, the Centres for Economic Development, Transport and the Environment of North Ostrobothnia and Lapland, Reindeer Herders' Association
 - Impact assessment is carried out by VTT Technical Research Centre of Finland

Field tests



- Test sites
 - Main road 20 Oulu-Kuusamo
 - Main road 4 Rovaniemi-Ivalo

- Participants
 - ~10 local transport companies
 - ~ 25 professional drivers
 - ~ 20 local reindeer herders



Real time and history warnings

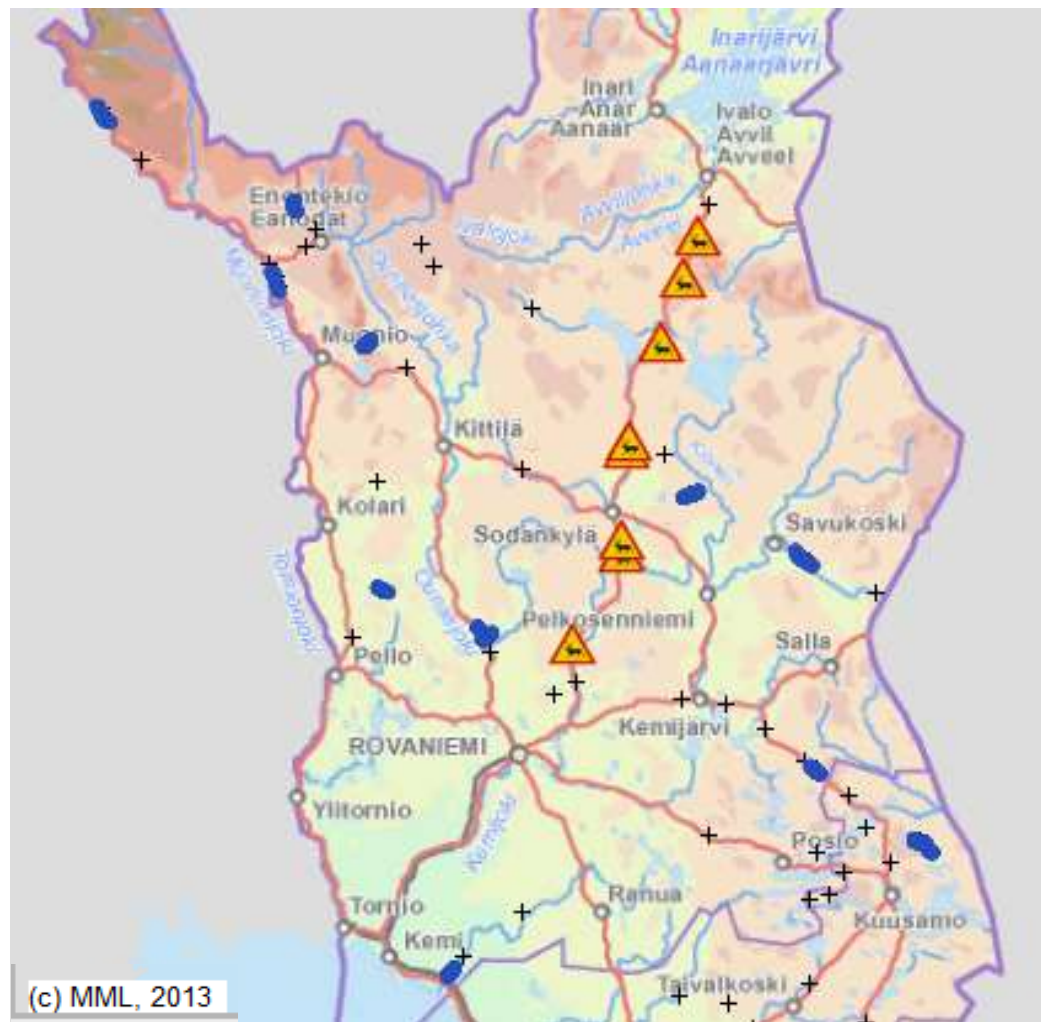


- Real time warnings
 - Participating professional HGV drivers send and receive messages about reindeer sightings with a simple smart phone application
 - Smart phone located permanently in vehicles
 - In addition, local reindeer herders also send warnings on location of reindeer
- Website
 - Possibility to check recent reindeer accident locations via a website
 - Also current real time warnings are shown on map
 - Open to public: www.varoporoa.fi (Finnish only)

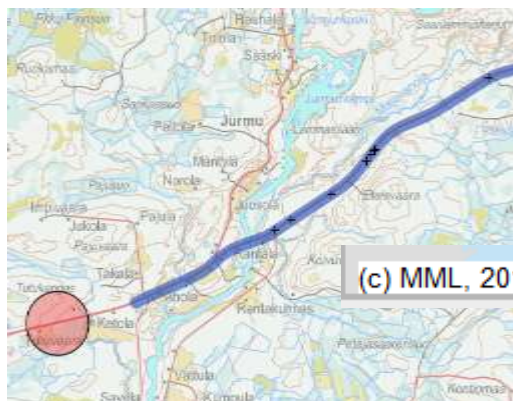
Warnings shown on the in-vehicle device and website



Paikkatieto Online Oy



(c) MML, 2013



(c) MML, 2013

Expectations towards the service

- Transport companies and drivers
 - Anticipation, preparing to encounter reindeer
 - Less dangerous situations
 - Increase in safety
 - Less damaged vehicles
- Reindeer herders
 - Less accidents
 - Co-operation

Evaluation approach

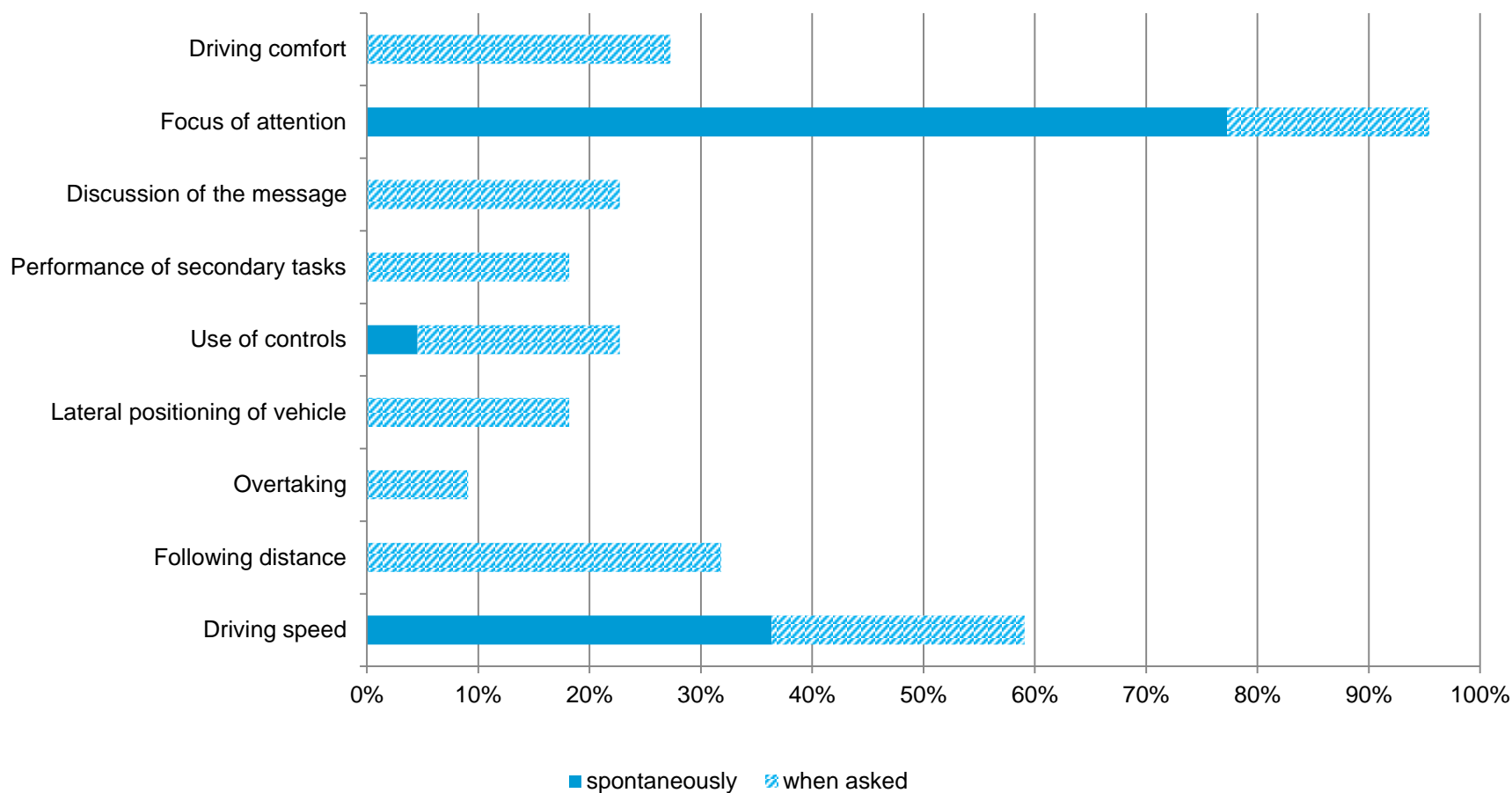
- Assessment is based on interviews of the users
 - Identical approach and questions were used as in the VMS slippery road sign study (1)
 - Spontaneous answers, check list of possible effects
- In VMS study, comparison of subjective assessment with results of driver behaviour measurement
- Same approach enables comparison with VMS study

(1) Luoma, J., Rämä, P., Penttinen, M. and Anttila, V. 2000. Effects of variable message signs for slippery road conditions on reported driver behaviour. Transportation Research Part F, Vol. 3, pp. 75-84.

Results from driver interviews

”What effect did the warning have on your behaviour, if any?”

Reported effects of warning



Driver interviews, results

- Drivers were interviewed twice: after about 6 months and 12 months of use
- In general, the service was assessed good and useful (88 % of drivers satisfied with service)
- Drivers especially appreciated being warned in advance of a potential danger
- 95 % of drivers reported focusing their attention on the road and road environment after receiving a warning
- 59 % reported decrease in driving speed after receiving a warning
- “Didn’t see any harm” – The simplicity of the system was appreciated

Expectations were met – Drivers' comments

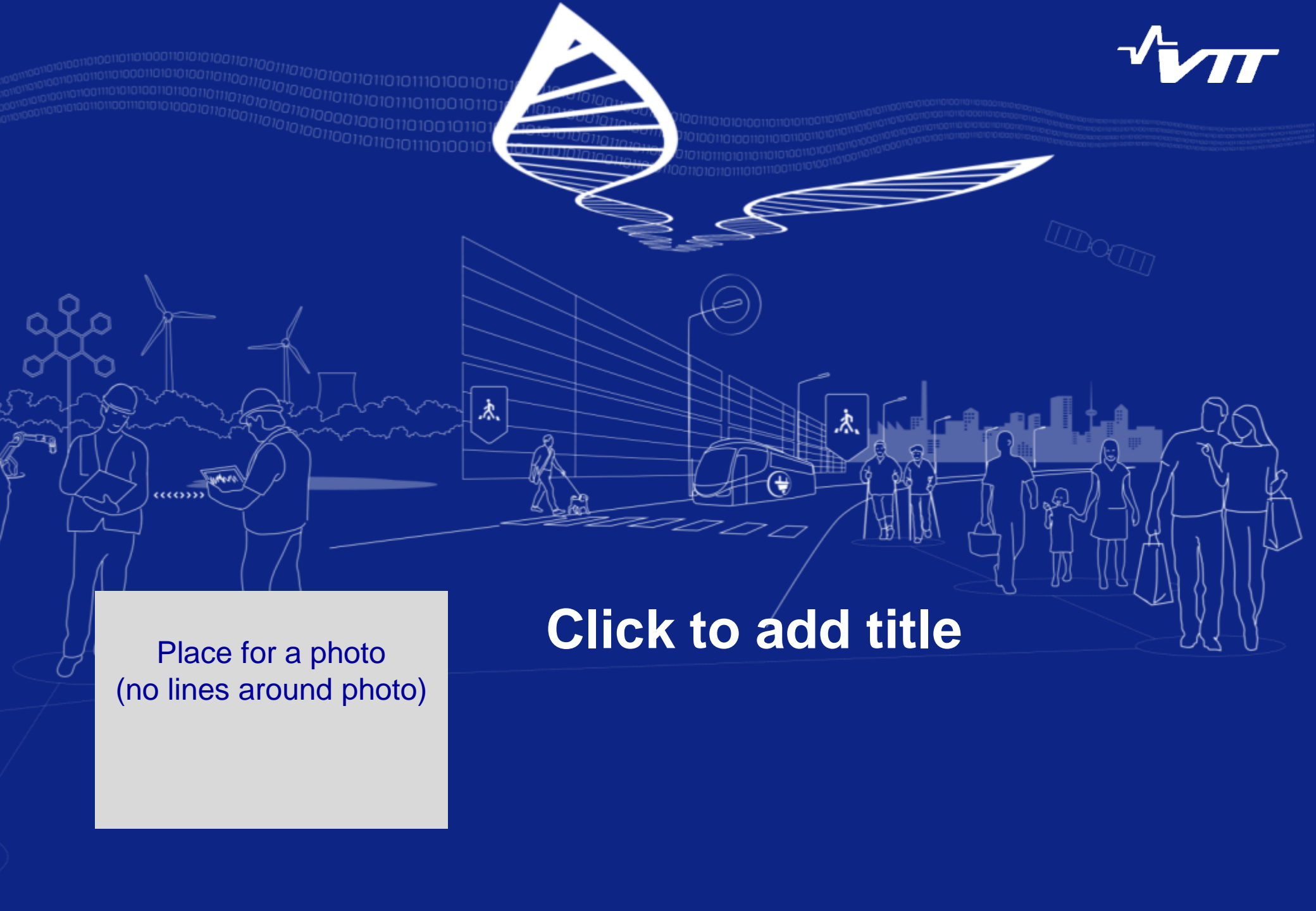
- Increases alertness in traffic
 - Enables anticipation
 - Useful device
 - Easy to use
 - Wakes you up
 - Increases safety
 - Especially important in winter
 - No drawbacks
-
- Timing not always right
 - False alarms – reindeer already gone
 - Poor battery life



Next steps

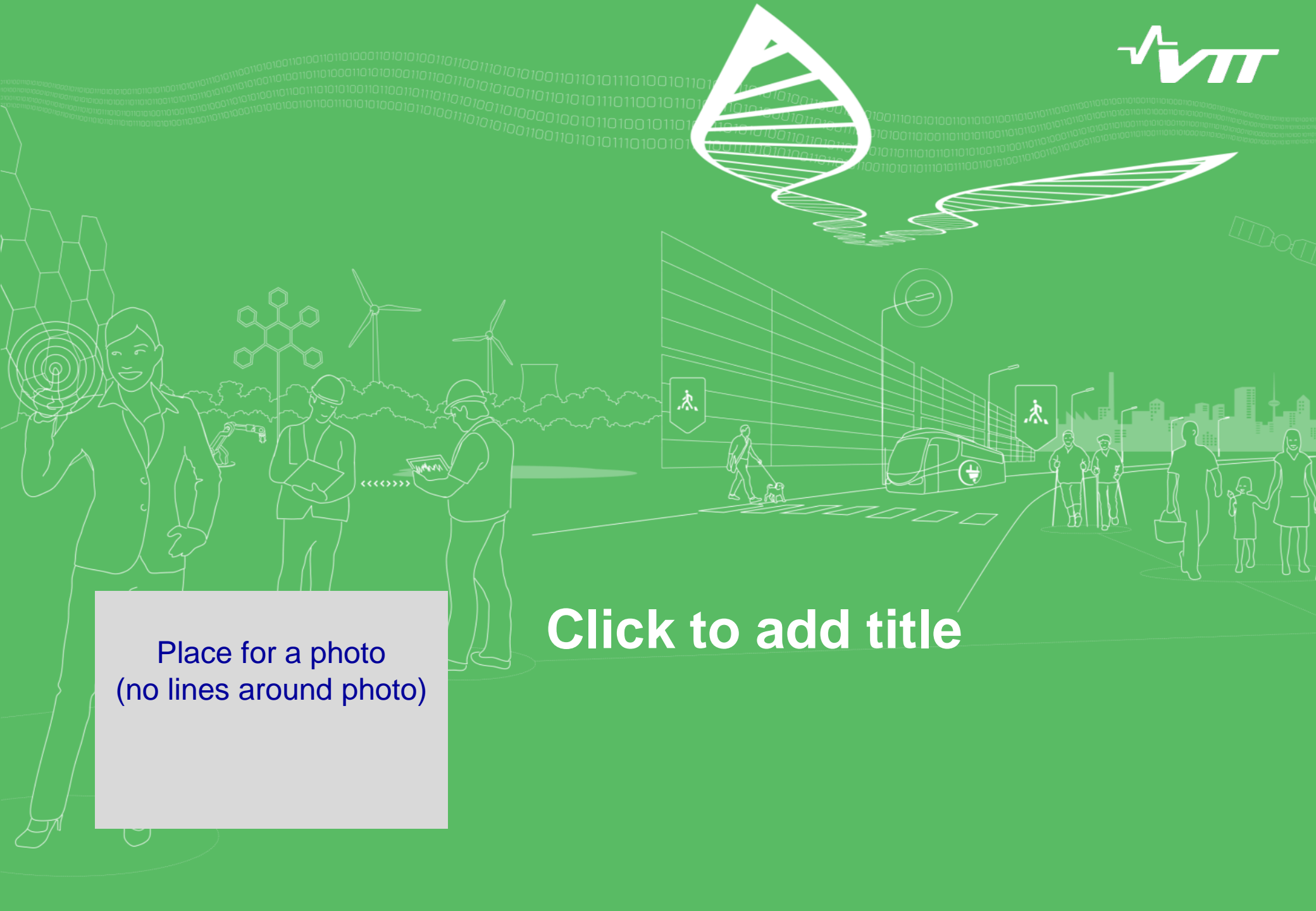
- Stakeholder and expert interviews
- Field tests continue until summer
- Evaluation of information collected
- Final report in autumn 2015





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Examples VMS study

J. Luoma et al. / Transportation Research Part F 3 (2000) 75–84

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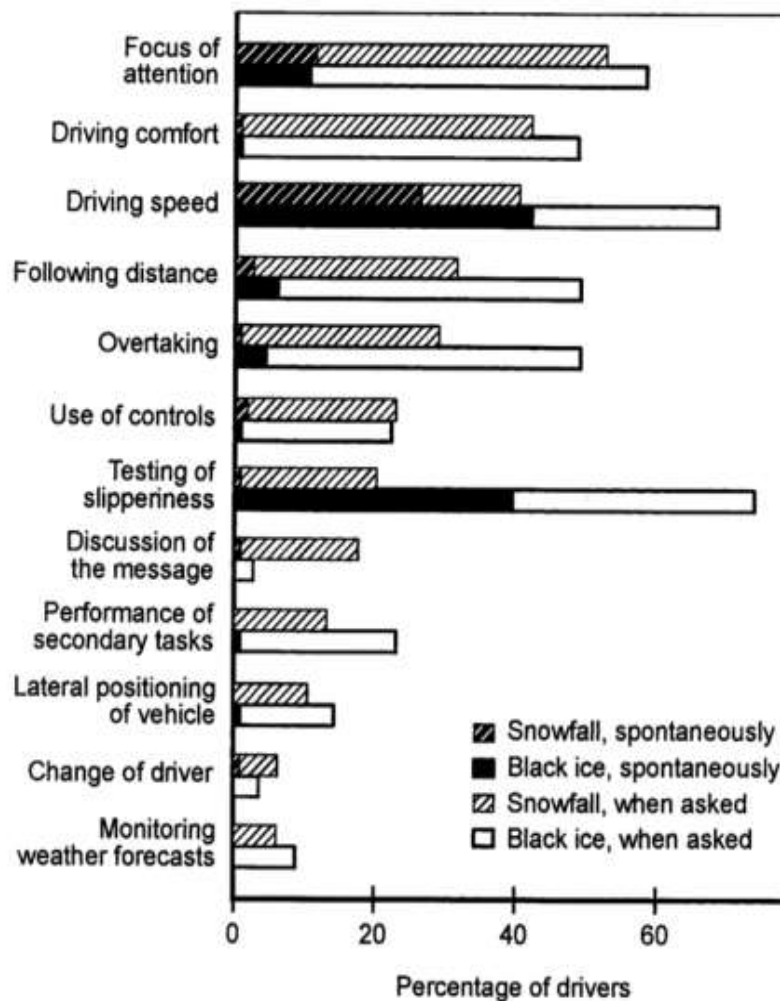


Fig. 2. Reported effects of the slippery road condition sign according to weather and road conditions.

J. Luoma et al. / Transportation Research Part F 3 (2000) 75–84

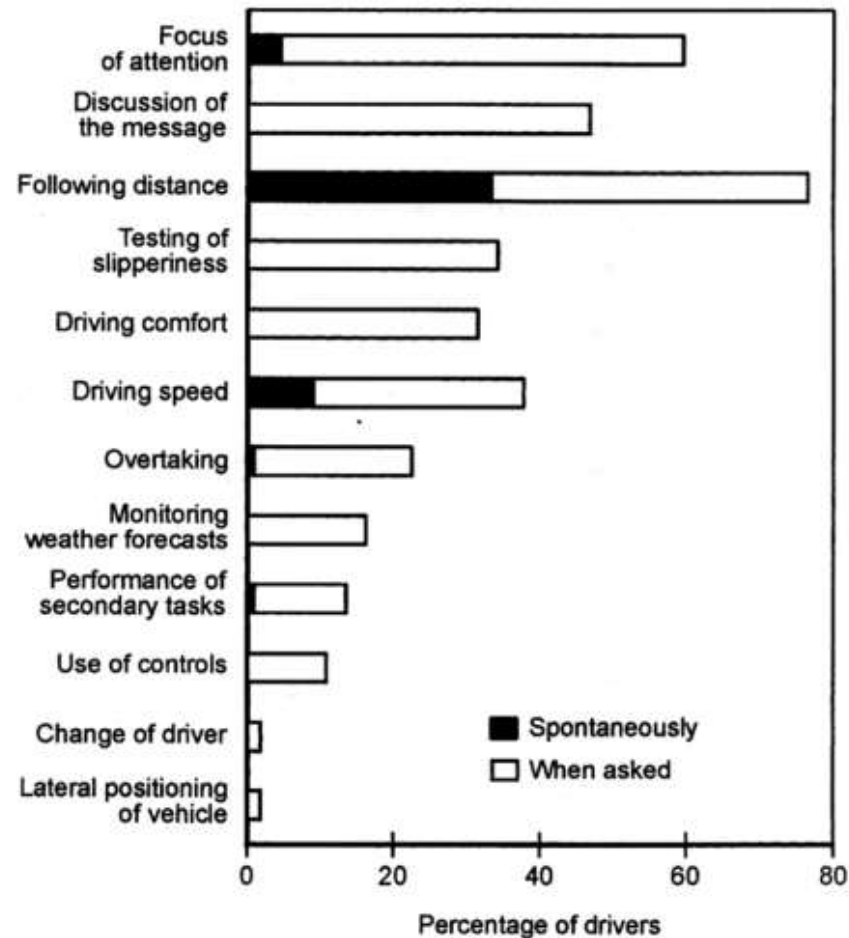


Fig. 3. Reported effects of the minimum headway sign in black ice conditions.