

Traffic Accidents on Slippery Roads

J K Fønnesbech

M.Eng.Sc.

AIBAN Winterservice

jkf@aiban.dk



Lars Bolet

Associate Professor

Aalborg University

bolet@plan.aau.dk



0. CONTENT

1. **Introduction:**
 - **Traffic accidents, police reported**
2. **Accidents with slippery roads:**
 - **Rotating plate(combi) or brine with nozzles**
3. **Consumption of salt and snow plough**
4. **The lack of precision from rotating plate!**
 - **Rotating plates are sometimes catastrophic imprecise!**
5. **3% NaCl is enough**
6. **Conclusion**

Introduction

1. Police reported accidents

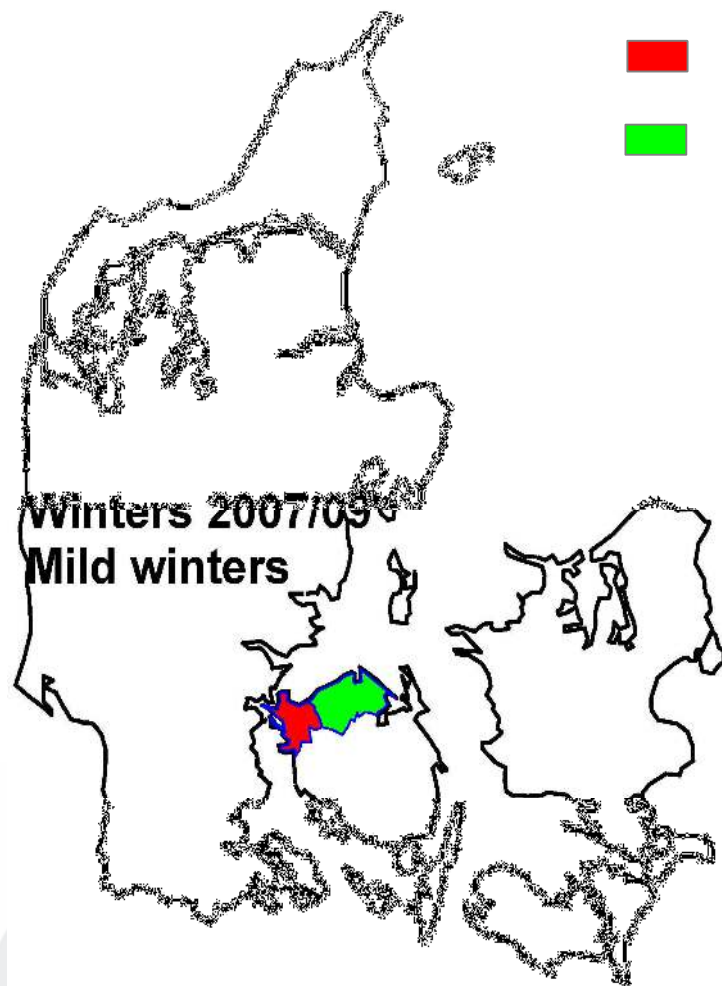
- Slippery road may be chosen as road condition
- 5-10% of all accidents in Denmark are with slippery roads.
- Normal winter in Denmark is mild, often without snow.

2. Preventive salt spreading in normal danish winters

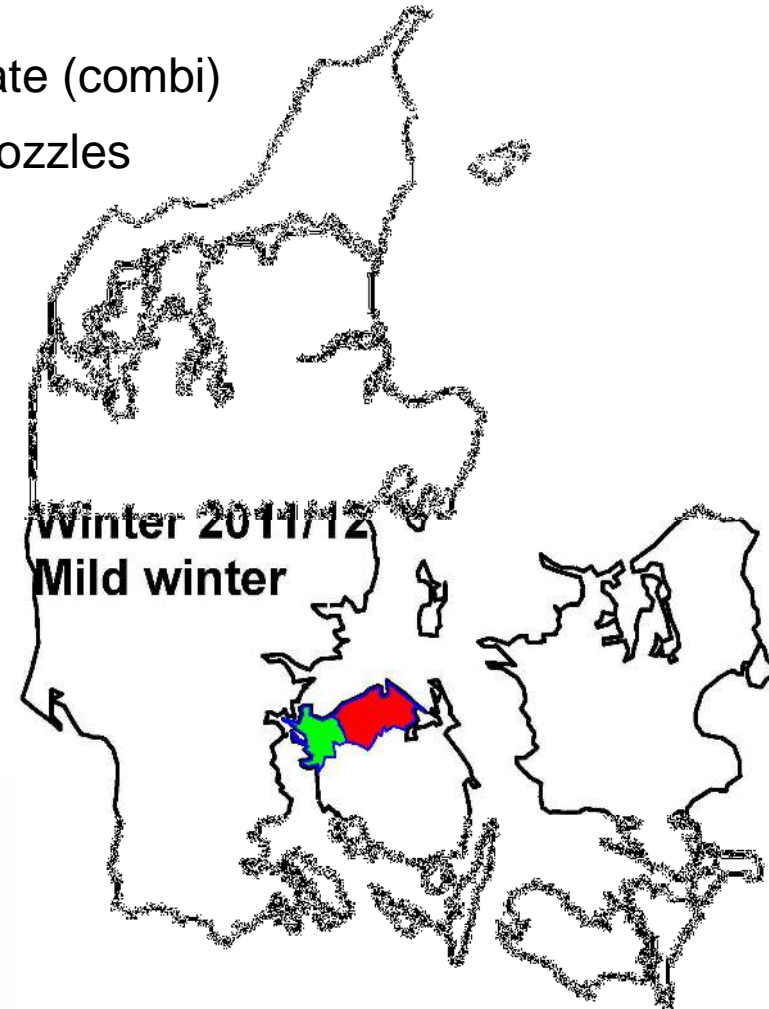
- Brine with nozzles **1 accident/100km road** **2,5 tons salt/km**
- Rotating plate(combi) **3 accidents/100km road** **5,5 tons salt/km**
-

3. Consumption of snowplough

- Brine with nozzles **20 hours/50 km road**
- Rotating plate(combi) **40 hours/50 km road**



- Rotating plate (combi)
- Brine with nozzles



■	8 police reported accidents with slippery road	263 km roads
■	5 police reported accidents with slippery road	505 km roads

Mild winters 2007/2009 and 2011/2012 Accident study in Southdenmark

Brine with nozzles **1 accident every 100 km**
(5 accidents, 505 km)

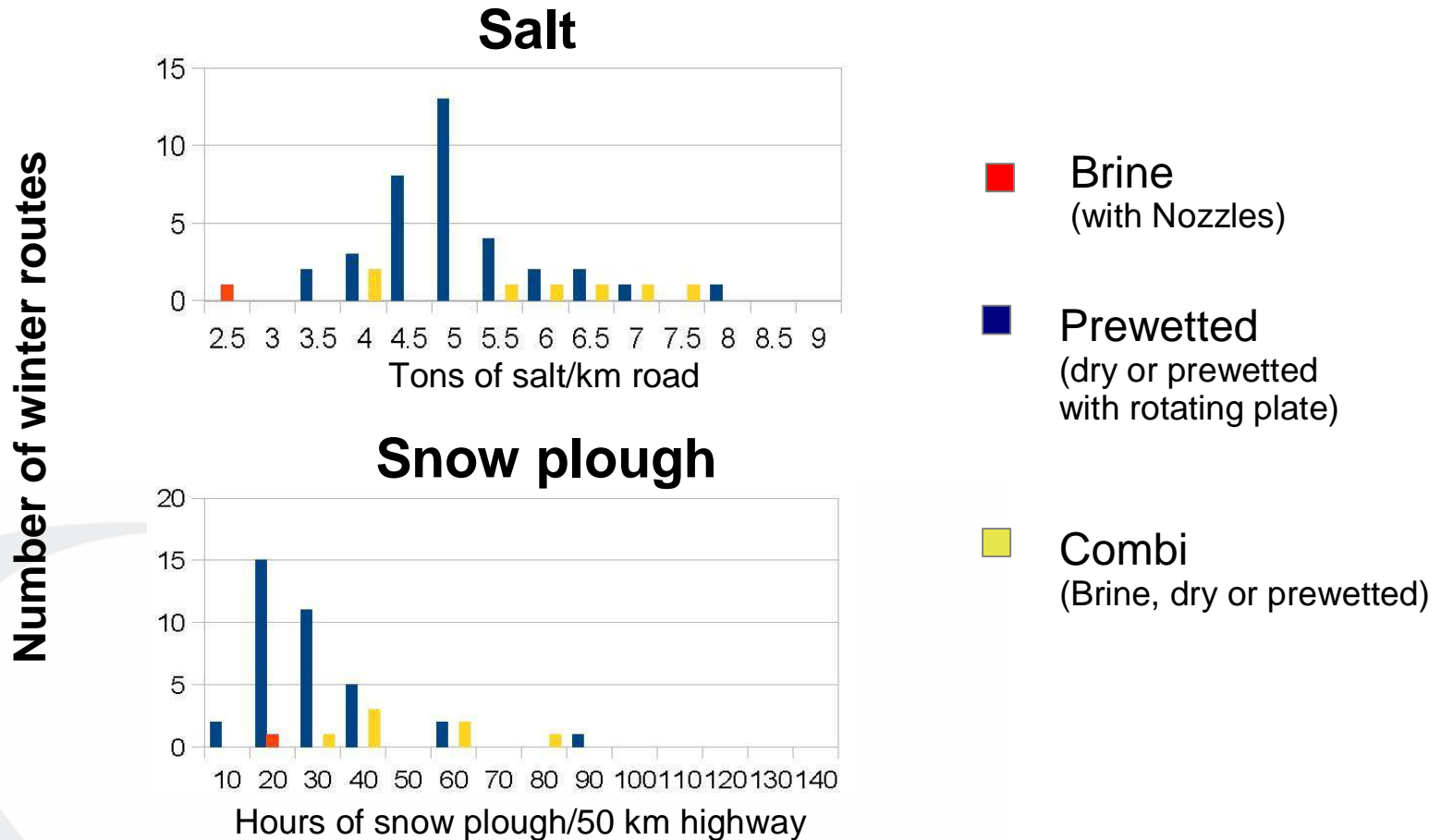
Pre wetted salt **2 accidents every 100 km**
(42 accidents, 2100 km)

Combi spreader **3 accidents every 100 km**
(18 accidents, 551 km)

Consumption of salt and snow plough

44 preventive winter routes

a comparison 2011/2012



The lack of precision

Spreading of salt with rotating plates are sometimes catastrophic imprecise

As a driver, you can not observe, if there is a lack of salt on black roads.

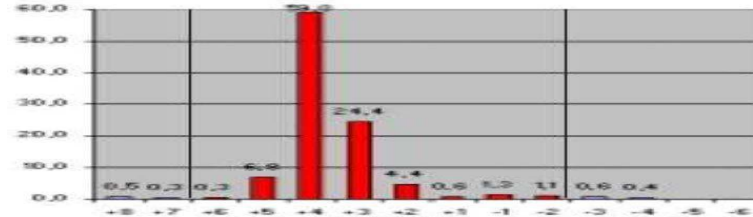


But of course when there are snow you can!



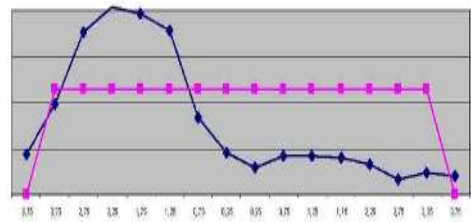
Chosen bad measurements “Rotating plate”

Year 2000



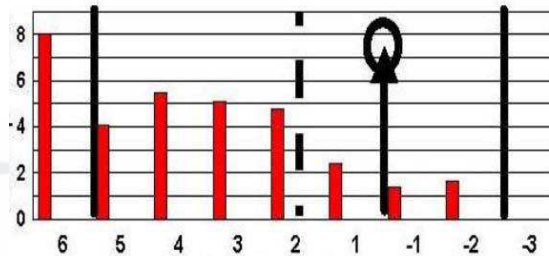
Outside
No traffic!

Year 2004



On wet highway
3 hours traffic

Year 2008



Inside!
No traffic!

All three measurements can explain the snow picture!





**”Six drivers crashed on the slippery roads
in the morning hours”**

Sunday, 19/02/2012

**Most likely wet road in the lanes with salt
and thin ice in the lanes without salt.**

Remember:

Minus 0,5°C pure water/ice is extremely slippery!

Minus 20°C water/ice with 3% NaCl is not slippery!

Conclusion

Use brine spread with nozzles!

Liquid only.

Precision spreading!

Less accidents with slippery roads!

Less salt consumption!

Less snow plough!



Thank you

jkf@aiban.dk

www.aiban.dk