



# **Norway's BVD Program: A Success Story and Lessons Learned**

*Paul Steinar Valle*

Department of Production Animal Clinical Sciences  
Norwegian School of Veterinary Science



# The Norwegian Story

- The establishment of the program
- The Control-scheme
- The Test-scheme
- Observed effects of BVDV within herds
- Observed trends in the population
- Cost-benefit of Norwegian BVD control
- The success factors



## 'How it all started.'

- Focus within the academics – e.g. UK and Sweden (mid 80'ies)
- Formulation of a test-scheme – Alenius & Niskanen (late 80'ies)
- Focus within national academics (late 80'ies)
- Focus (and eventually demands) among private practitioners, farmers and their cooperatives (early 90'ies)



# A Cooperative approach

National  
Animal  
Health  
Authorities  
And  
Veterinary  
Institute

'Dugnad' =

voluntary communal work  
or

Farmers  
The industry  
(TINE, GENO  
and Norwegian  
Meat)  
their Health  
Services and  
local vets  
pushing

'Join the neighbours in giving a hand with a house'



# The Control-Scheme

- Isolation of infected herds by official movement restrictions
- BVD was already a notifiable disease in Norway
  - The program in three phases:
    - Cooperative (93-97)
    - Official (98-2000) and
    - Cooperative again (2001-)

A  
Compulsory  
and National  
approach

Versus  
Individual Farm  
approaches



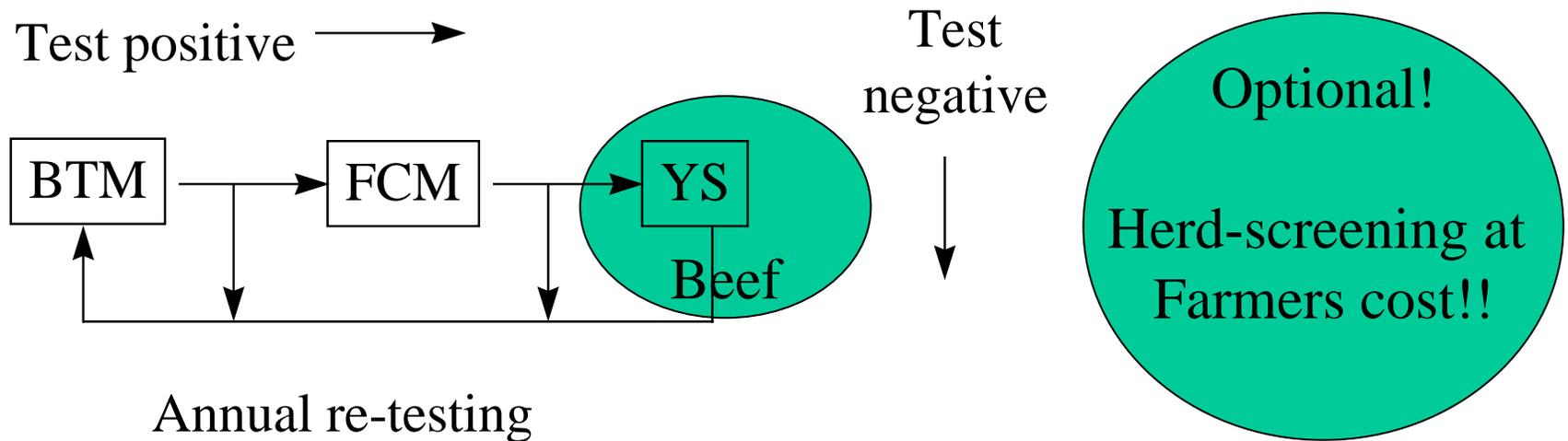
# The Risk factors addressed

i.e. the Educational focus for Biosecurity

- Young stock on common pasture
- Over-the-fence pasture contact
- Purchase of live animal
- Not asking for health certificates
- Other animal(cattle) traffic
- Not using advisory services



# Test-scheme



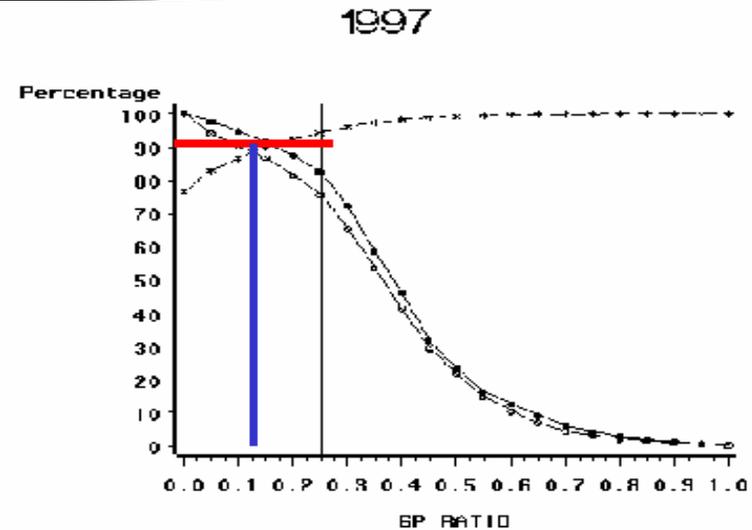
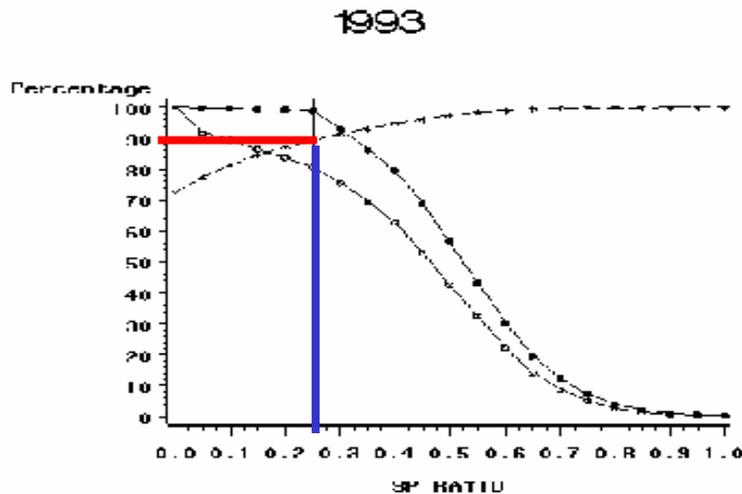
- *YS positive* => *Official Movement Restrictions*



# Cut-off and time

## Lab-sensitivity versus epidemiological sensitivity

The ability of the BTM to pick up YS positive herds.





# Observed Herd Health effects

- Abortion + > twice the risk (OR=2,2)
- Time to first calving: + 14 days (1-27) by sero-conversion(SC)  
+ 18 (1-37) in YS positive herds
- Milk production: - 96 kg/lactation (28 to -220)
- Culling + 2,5/100 cow years (CY) by SC  
+ 2,3 in year after SC
- Animals lost/died\* + 0,2/100 CY by SC  
+ 0,25/100 CY in year after SC  
+ 0,32/100 CY in YS herds
- Disease Treatments\* + 9.8 (0 – 21)/100 CY in year after SC  
+ 21 (0 – 48)/100 CY in YS herds

\* e.g. mastitis showing a 7% increase

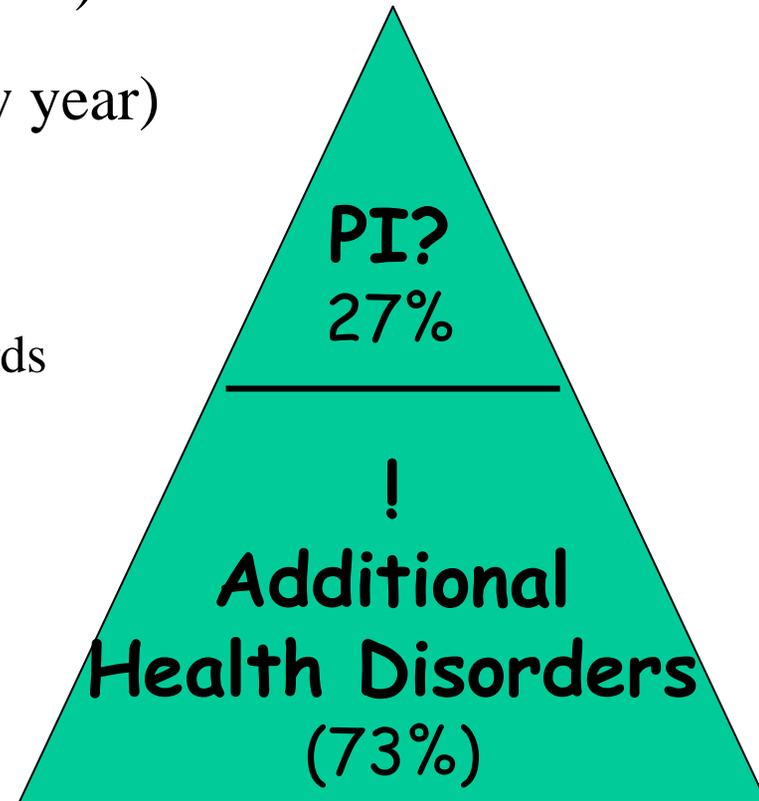


# Herd level losses

(30 dairy cattle herd)

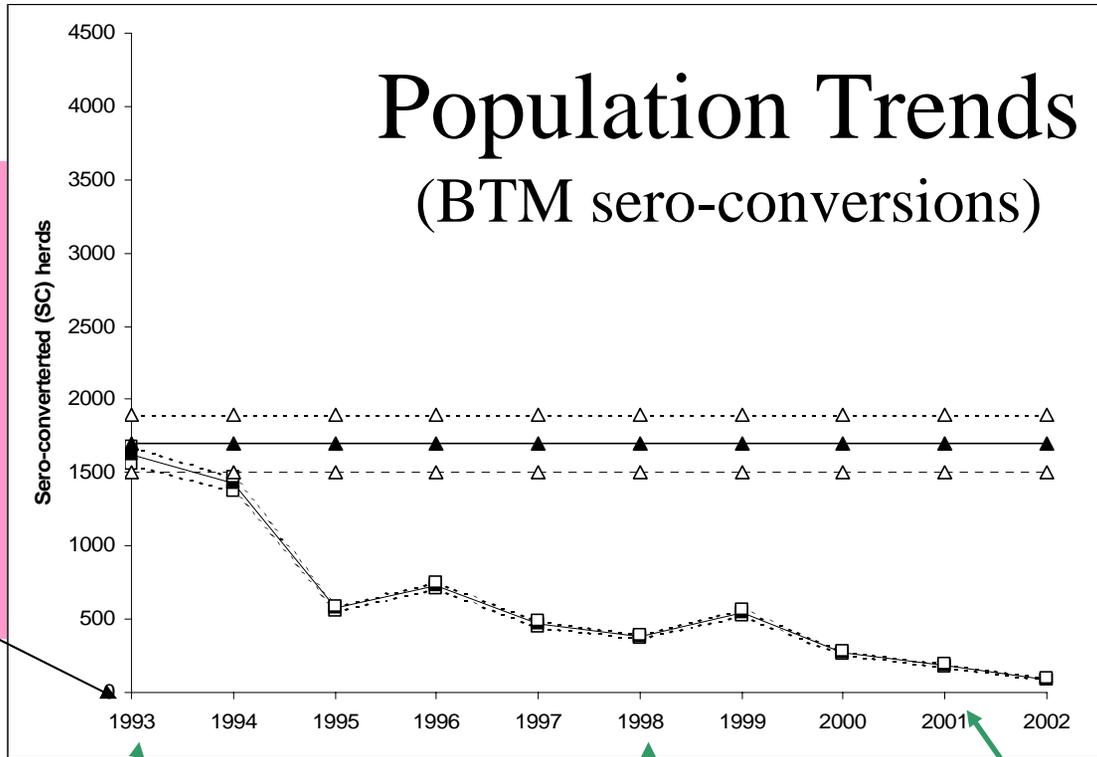
- Estimates for expected losses (cow year)
  - 1 188 (40) € at SC
  - 1 875 (63) € in year after SC
  - 1 125 (38) € in addition in YS+ herds
- Relative impact

– Animals lost (PI?)	27%
– Reproduction	26%
– More treatments	19%
– Redused milk production	10%
– Additional culling	17%





# Population Trends (BTM sero-conversions)

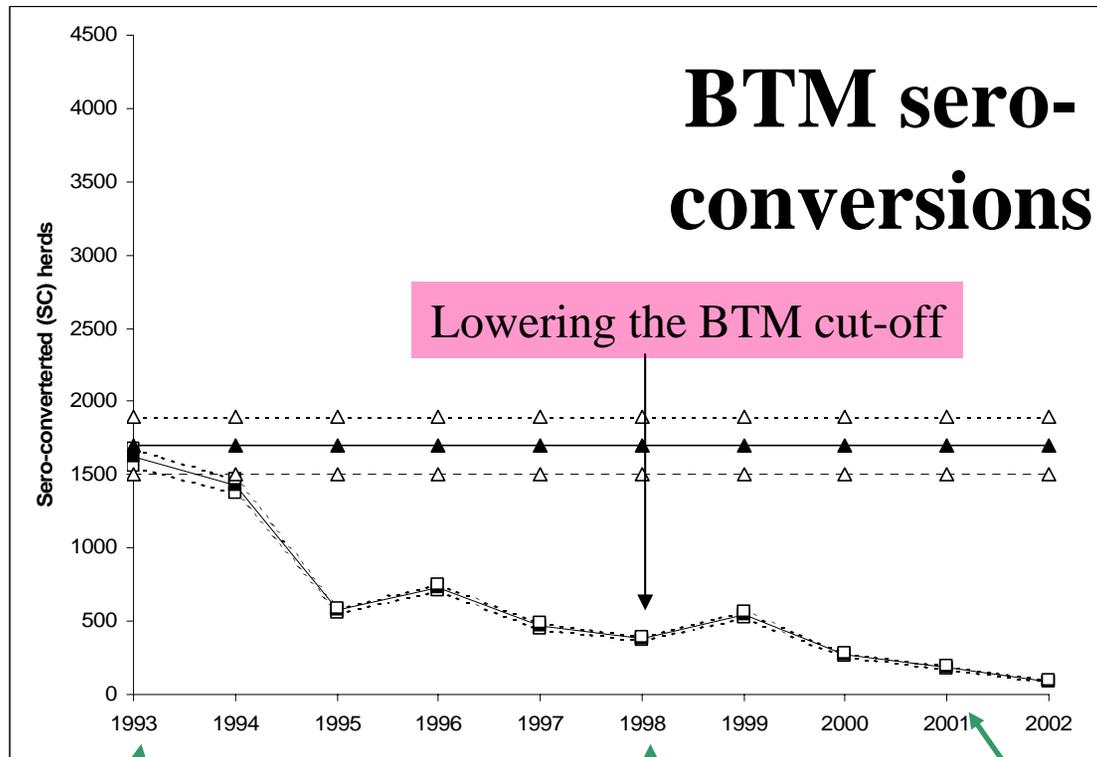


In 1993:  
From 200  
to almost  
3000 BVD  
restricted  
herds

The cooperation program:

Official  
Surveillance  
Program

A cooperation  
Program again  
'Mopping Up'



Cost implications due to follow-up sampling

The cooperative program:

Official Surveillance Program

A cooperative Program again 'Mopping Up'

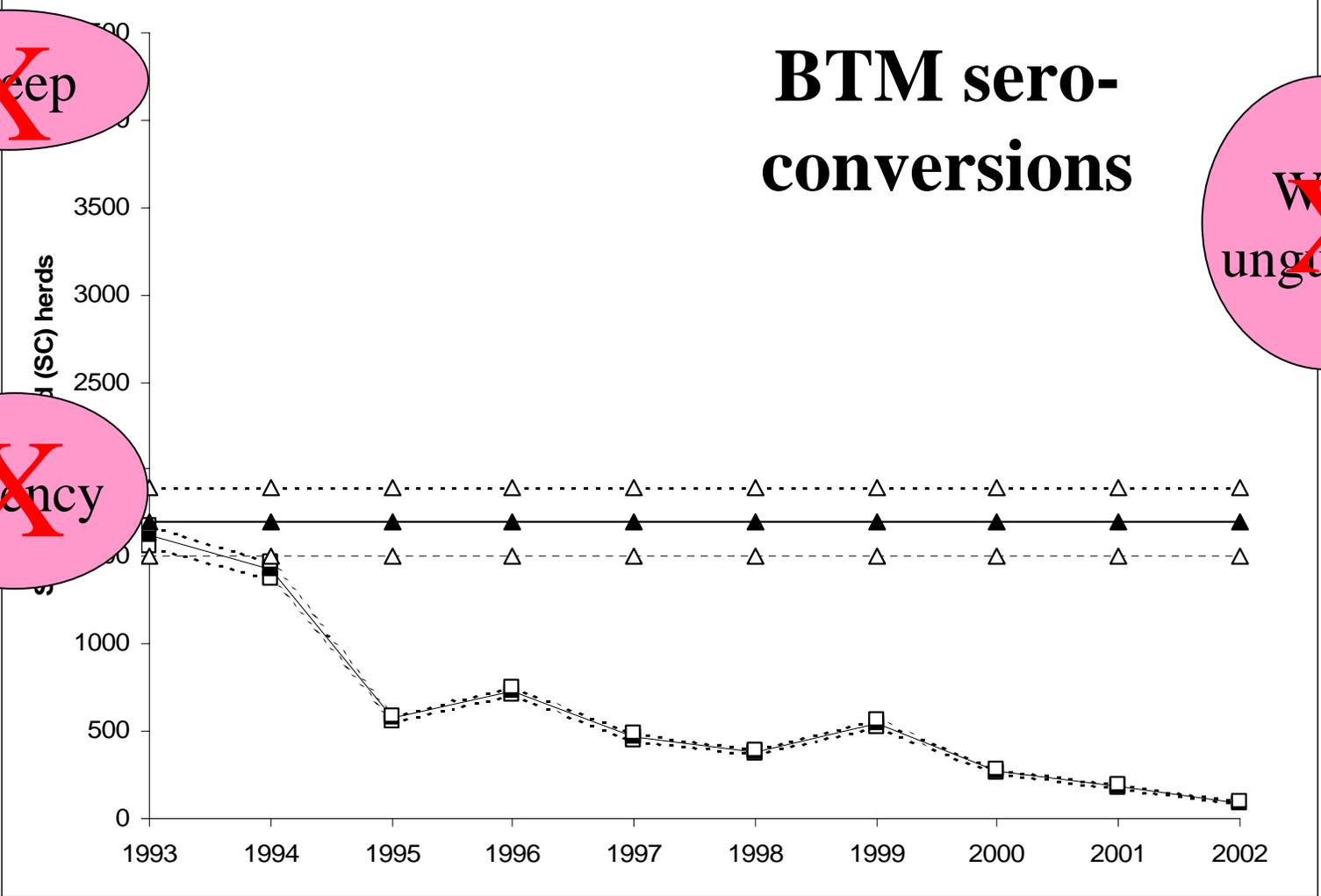


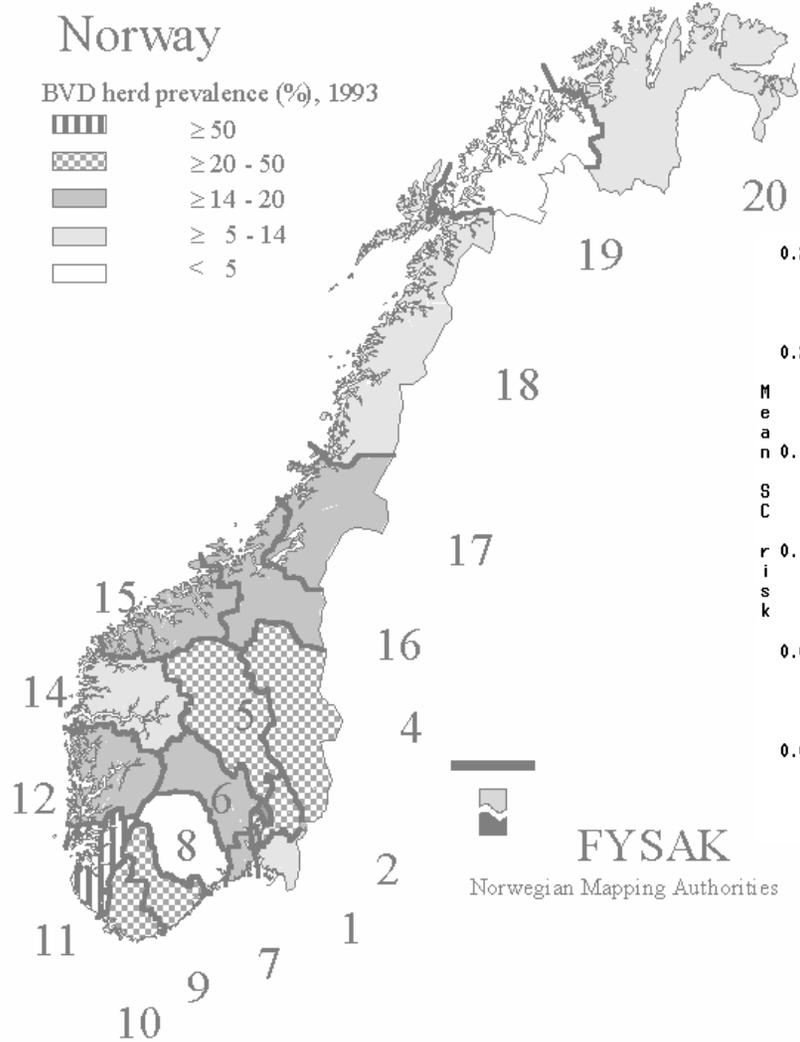
# BTM sero-conversions

~~Sheep~~

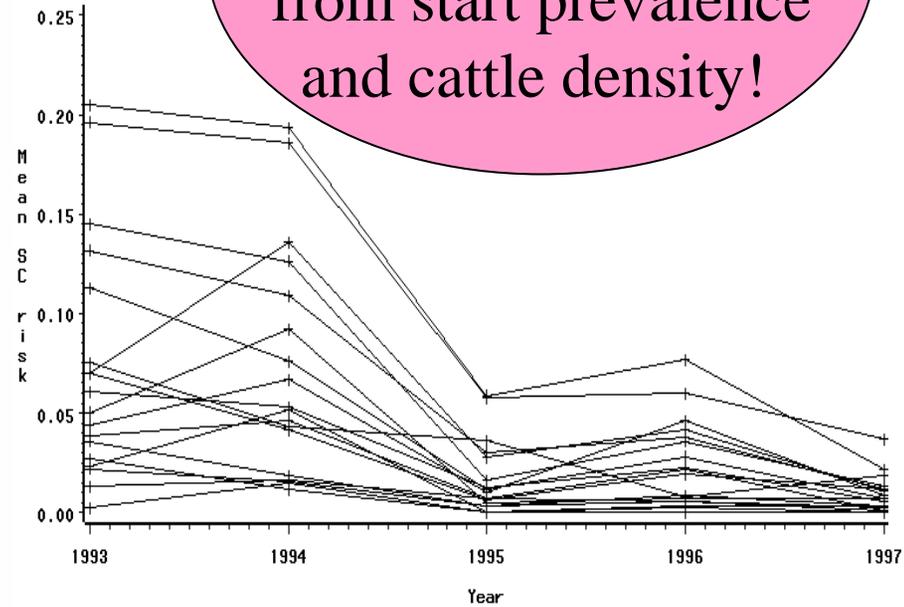
~~Wild ungulates~~

~~Latency~~



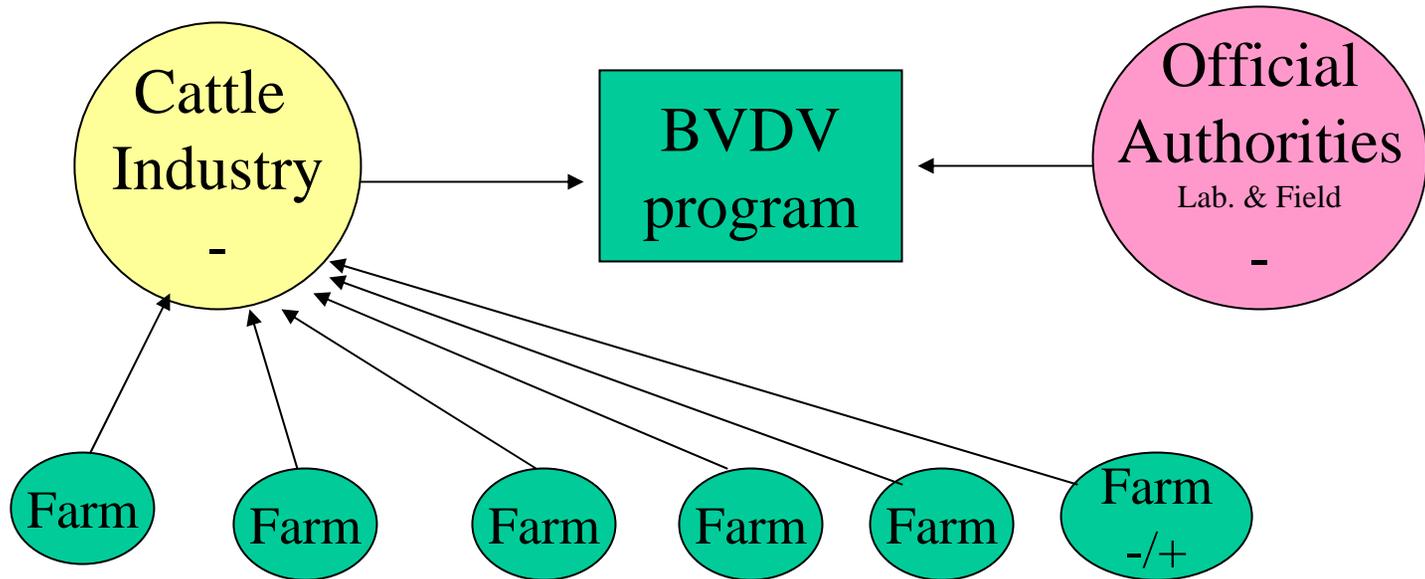


Sero-conversion trend independent from start prevalence and cattle density!





# Benefit-Cost evaluation



- Summing Economic Impact of Infection (health, reproduction and production) in year of SC, year after SC and in YS positive herds.
- Benefits = Expected losses without control – Observed losses under control
  - Net Benefits = Benefits – Program cost



# Programme cost inputs

## **Cattle industry**

- Salary program manager
- Office equipments
- Meeting & travel expenses
- Information expenses
- Expenses data handling
- Test-kits
- Lab. materials
- Mailing expenses etc.

## **NAHA**

- Equipment (tubes, needles, etc.)
- Travel to the farms
- DVO labor at farm
- Mailing expenses (samples)
- (No overhead costs accounted for)

## **Laboratory Services**

- Labor analysis BTM/FCM/YS
- BTM sample transport
- (No overhead costs accounted for)



# 'Consequential farmer cost in affected herds'

## **Movement restriction effects:**

- Lost option - no live animal trade
- Extra costs - no common pasture
- Extra costs - double fencing

## **Herd screening costs (optional!)**

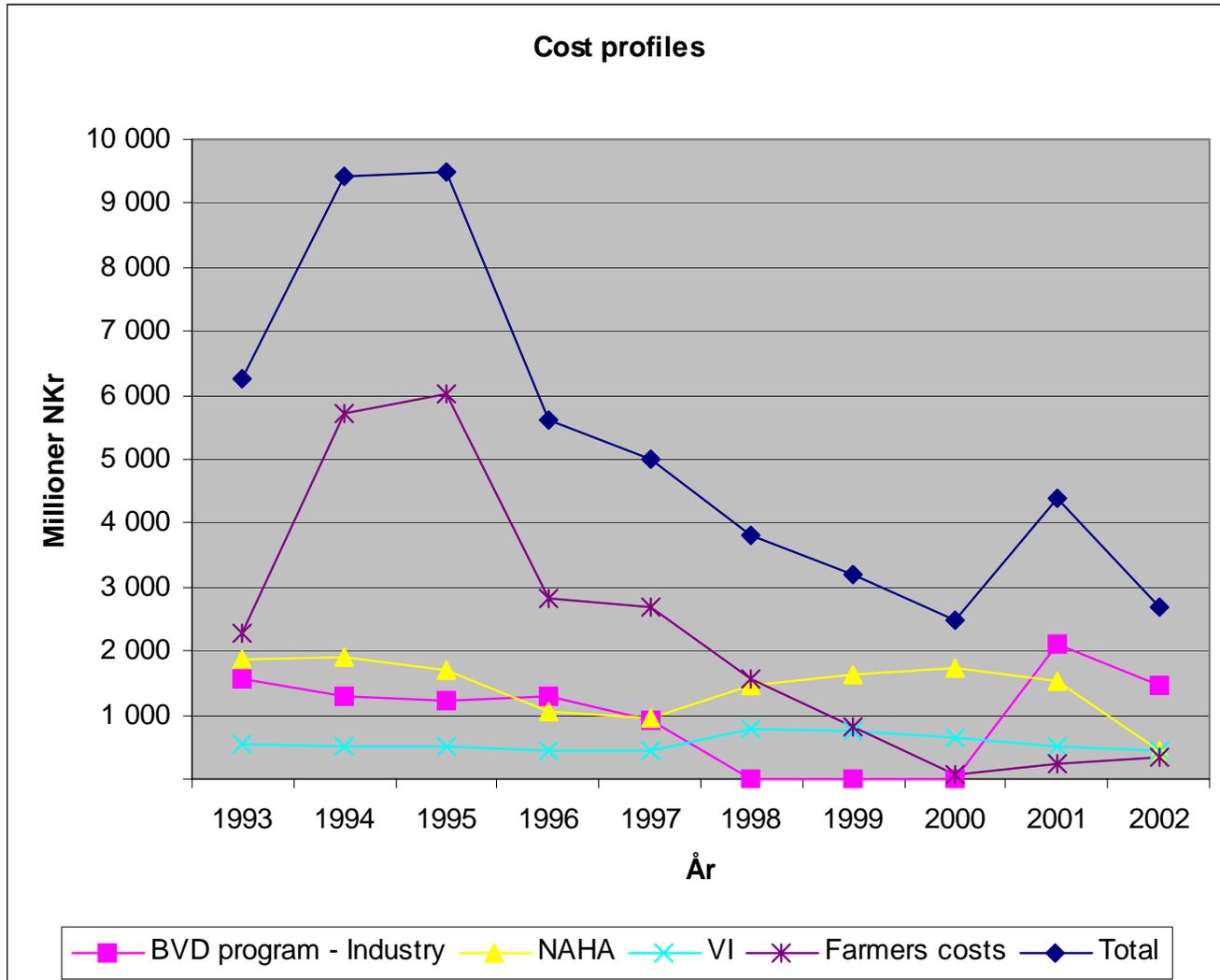
- Testing
- Sampling



# Program costs, 1993-2003

- **Control program costs** €
  - Cattle Industry 1 263'
  - NAHA 1 750'
  - VI 550'
  - Farmers (the BVDV restricted ones!) 2 763'
  - Total control costs 6 326'

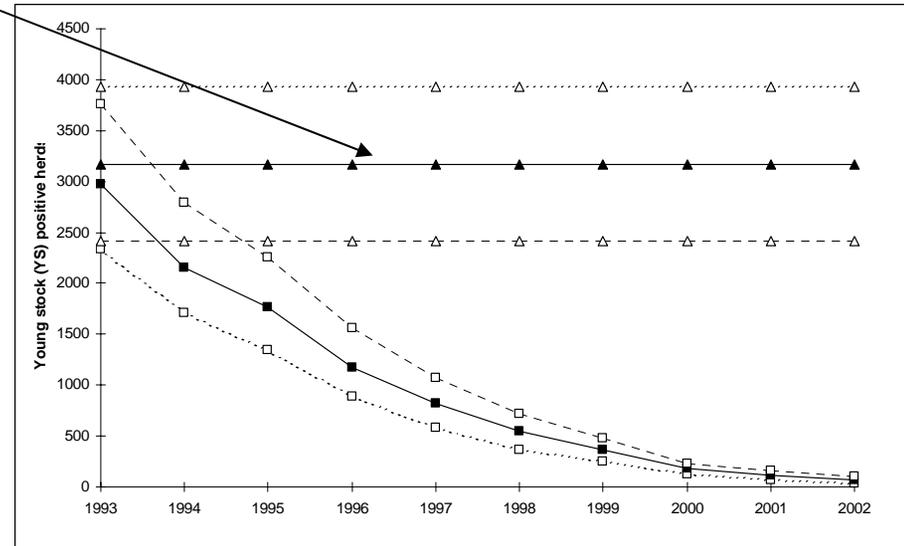
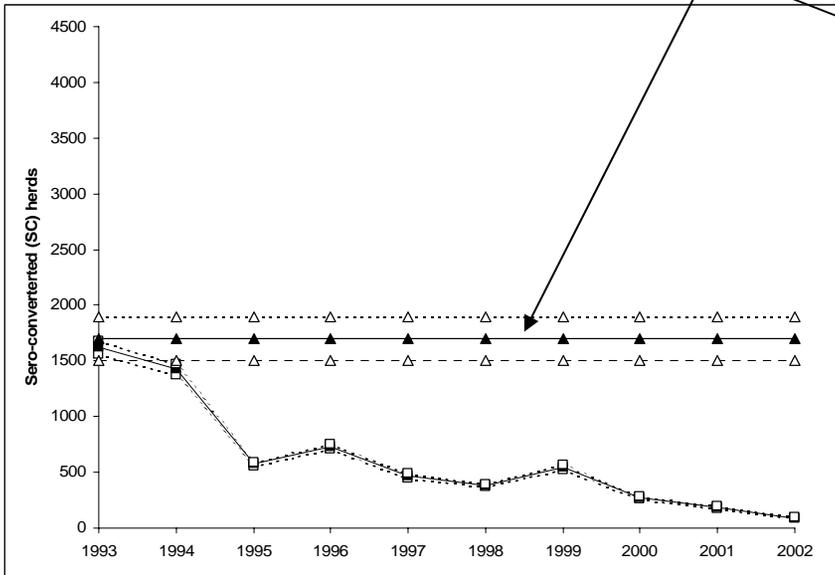
- Industry - farmers incl. - taking 64% of the total costs





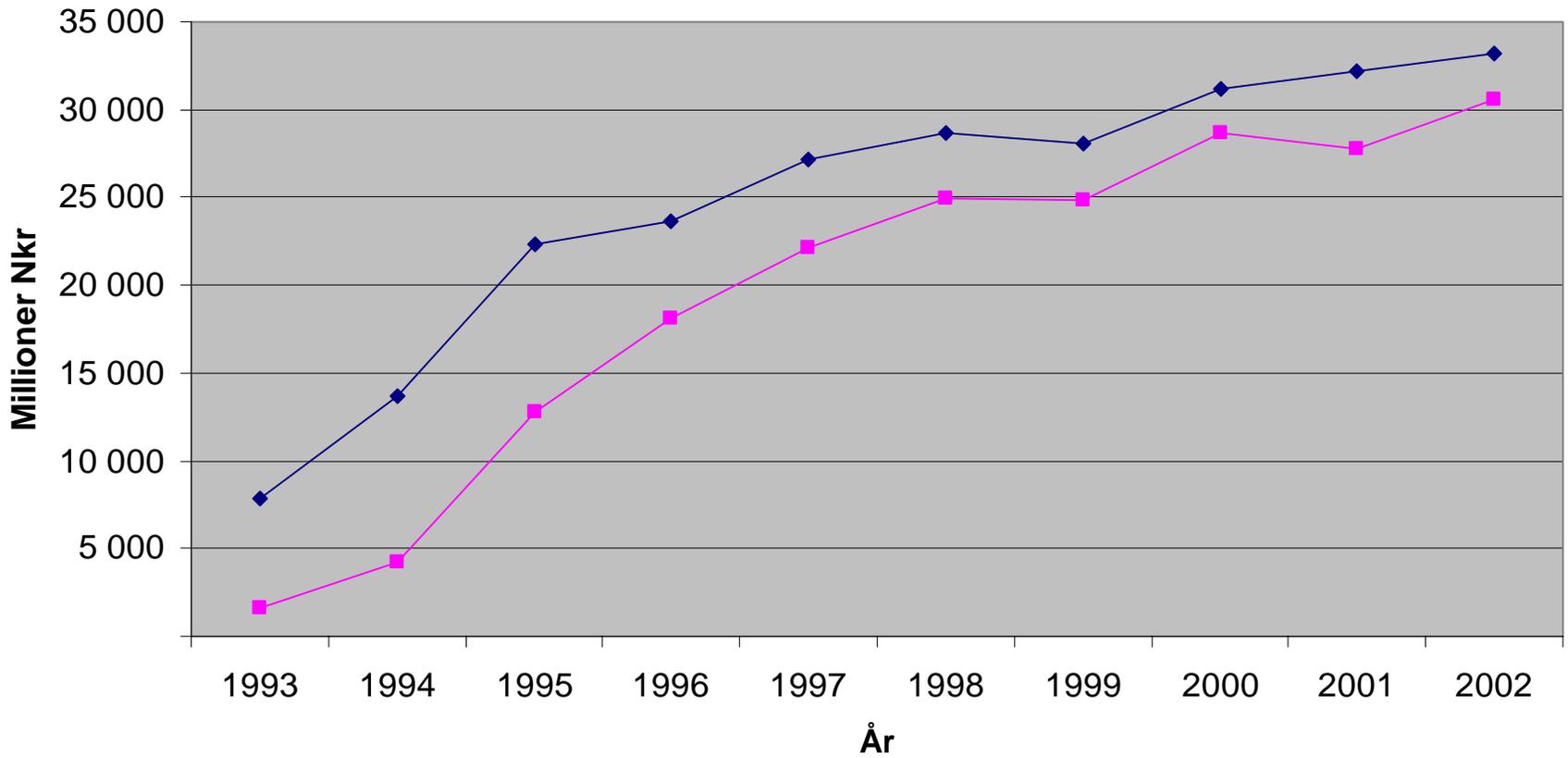
# Observed versus Expected(?) Trends

Reference level i.e. expected level without control





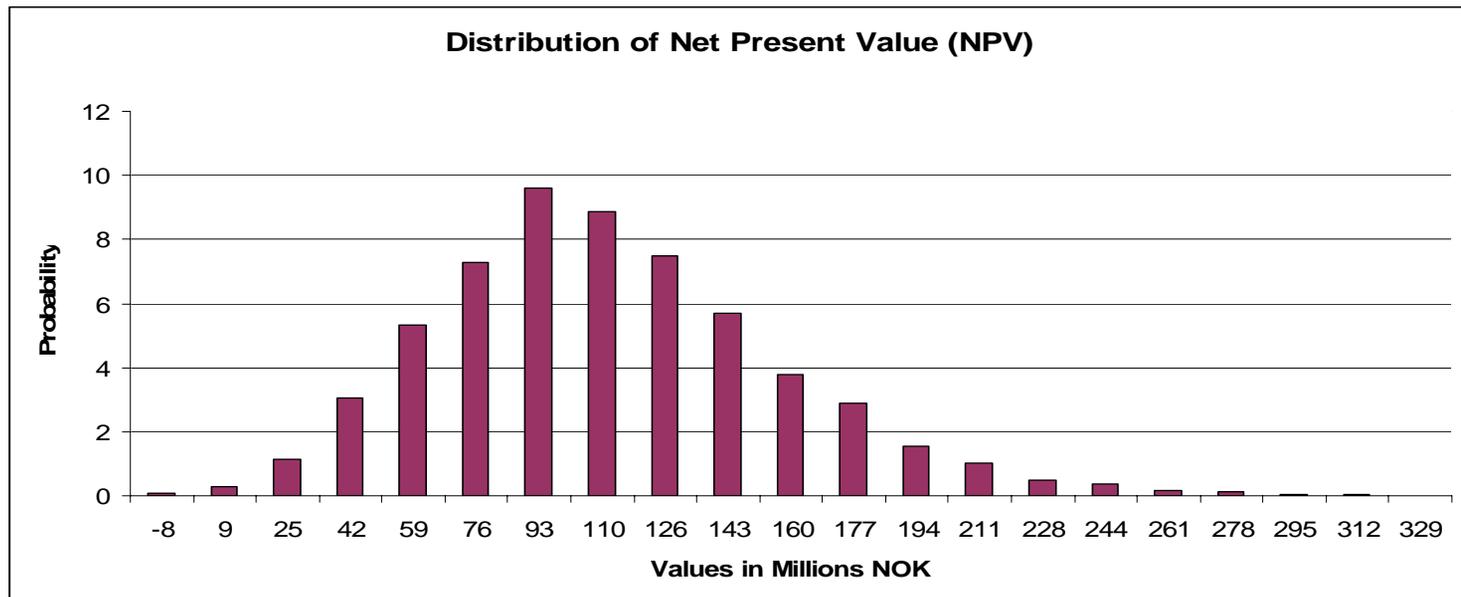
### Benefit and net benefit



◆ Benefits (reduced losses) ■ Net result



Total cost 6.3 mill €  
Total benefits 32 mill €  
Total net benefits 25.7 mill €  
Net present value (1993) 18 mill €  
NPV distribution 90% in 3 - 34 mill €





# The Success Factors

- Efficient and cheap screening (herd level screening)
- Support of legislations – official movement restrictions
- Compulsory and National approach
- Well defined regions with controlled animal movements between
- Organized education of private and official vets, farmers and dairy advisors regarding biosecurity measures
- High appliance among farmers!
- The joint efforts!! of government, industry and applying farmers
  
- **HOWEVER:**
- Norwegian cattle population is susceptible to re-introduction of virus
- **BUT:**
- low risk due to low prevalence & low live animal and semen import



# Thank You!

- And many thanks to:
  - The Norwegian Cattle Industry
  - The Norwegian Research Council
  - Norwegian School of Veterinary Science
    - AND
  - The European Commission for funding the European BVDV control Thematic Network ([www.bvdv-control.org](http://www.bvdv-control.org))