

TIME TRENDS OF METALS IN NORTHERN SWEDEN

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Biomarkers of Fish Consumption and Risk of Stroke or Myocardial Infarction

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Occupational and Environmental Medicine
Medical dissertation 2010

METHYLMERCURY AND MYOCARDIAL INFARCTION IN FINLAND



Finland

Virtanen et al. 2005; **Higher risk** of myocardial infarction for those in the highest quartile of mercury exposure



CONTRADICTIVE ASSOCIATIONS IN FINLAND AND SWEDEN BETWEEN METHYL MERCURY AND MYOCARDIAL INFARCTION



Finland

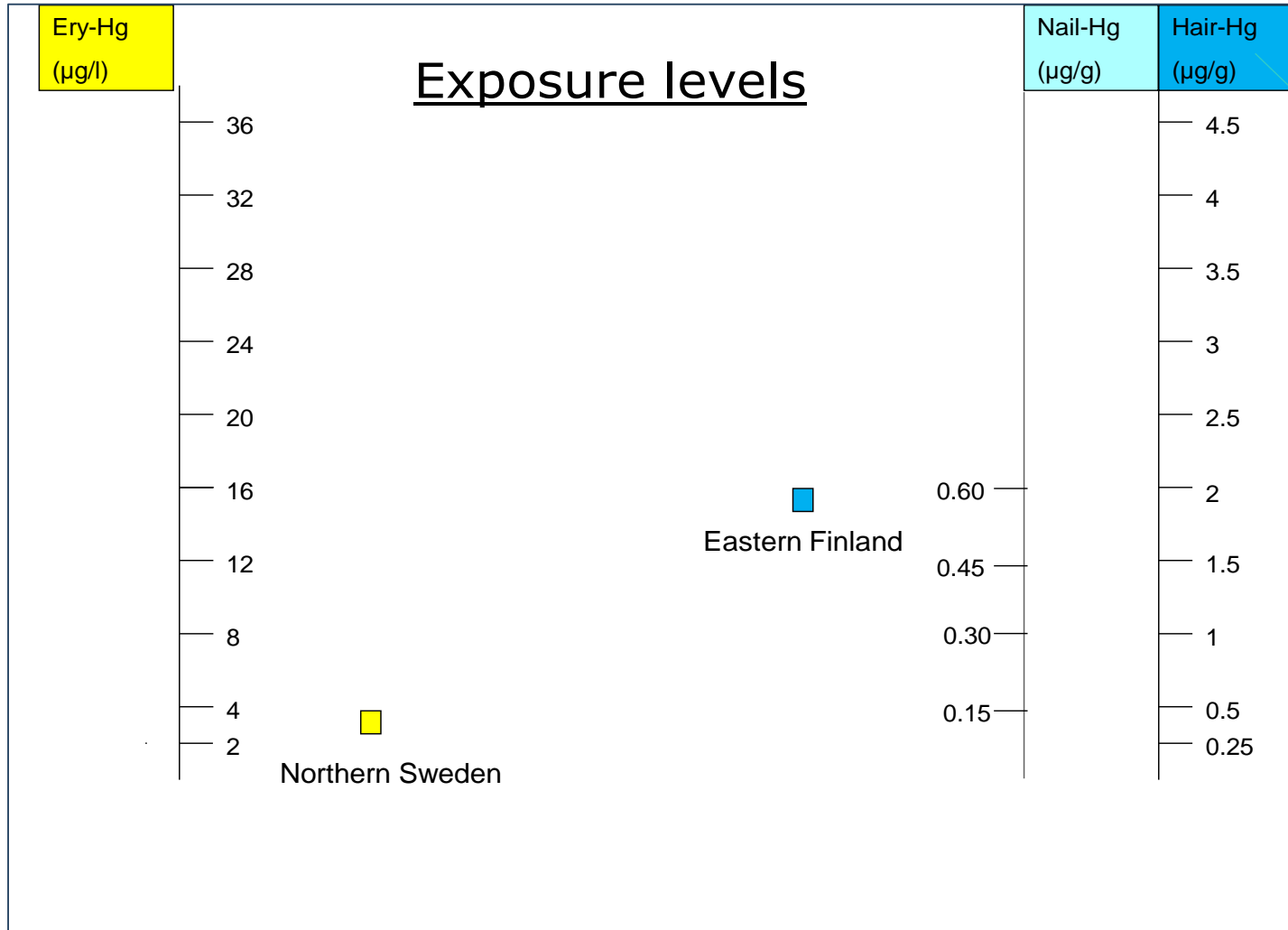
Virtanen et al. 2005; **Higher risk** of myocardial infarction for those in the highest quartile of mercury exposure



Sweden

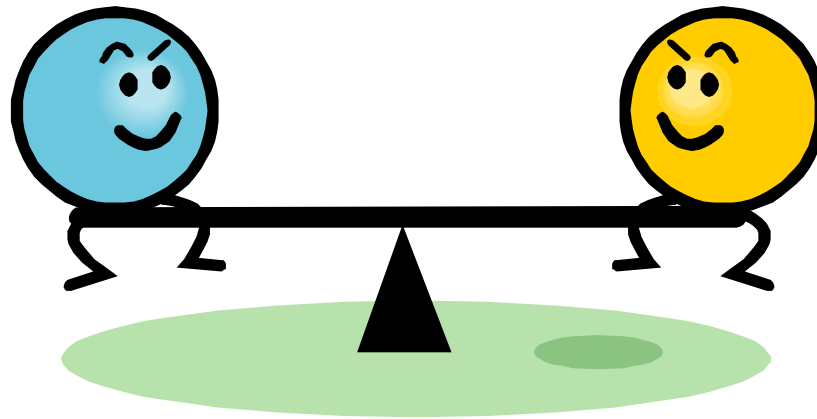
Wennberg et al. 2011; **Lower risk** of myocardial infarction for those in the highest third of mercury exposure



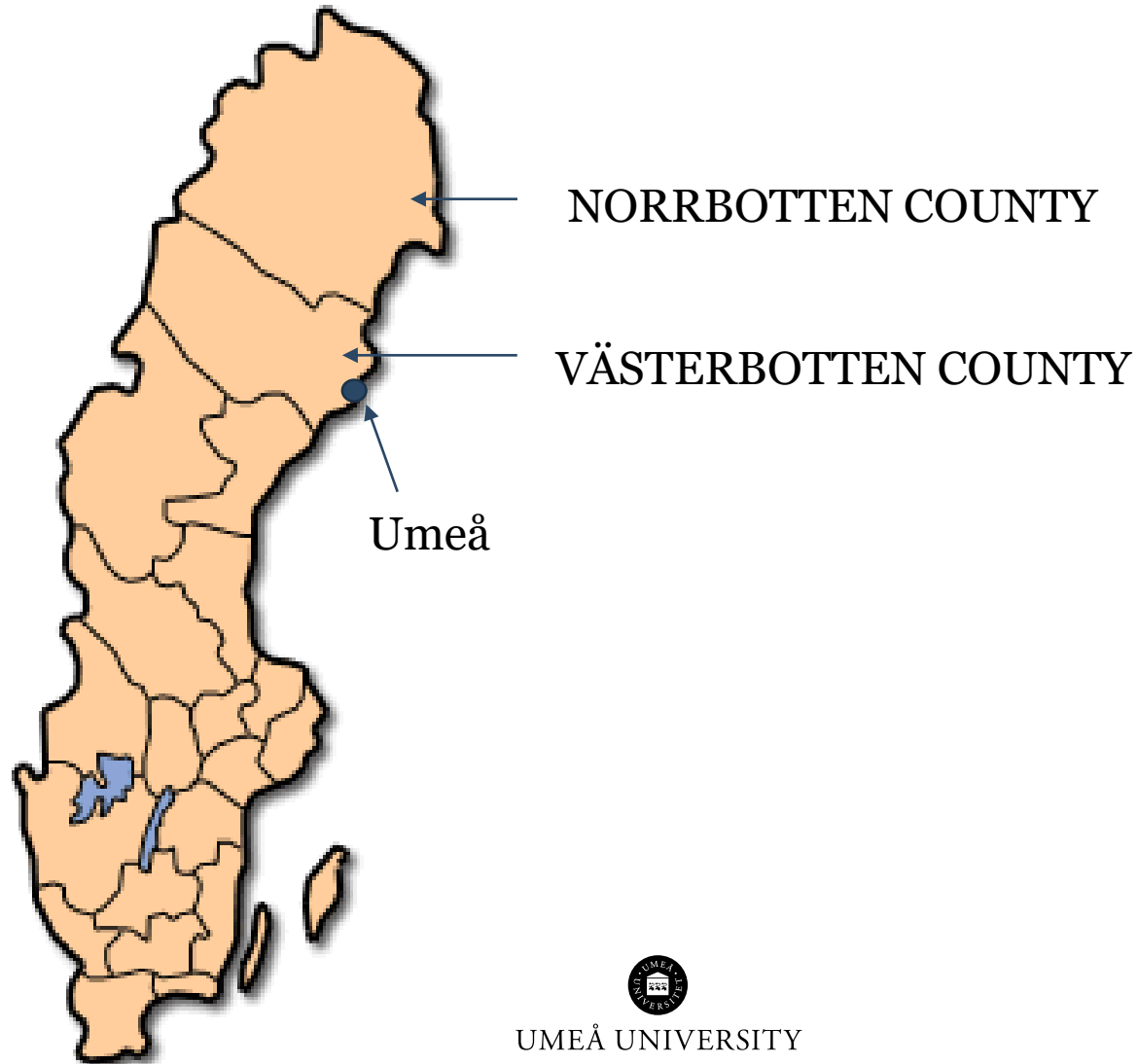


RISK – BENEFIT?

Methylmercury Fatty acids (EPA & DHA)



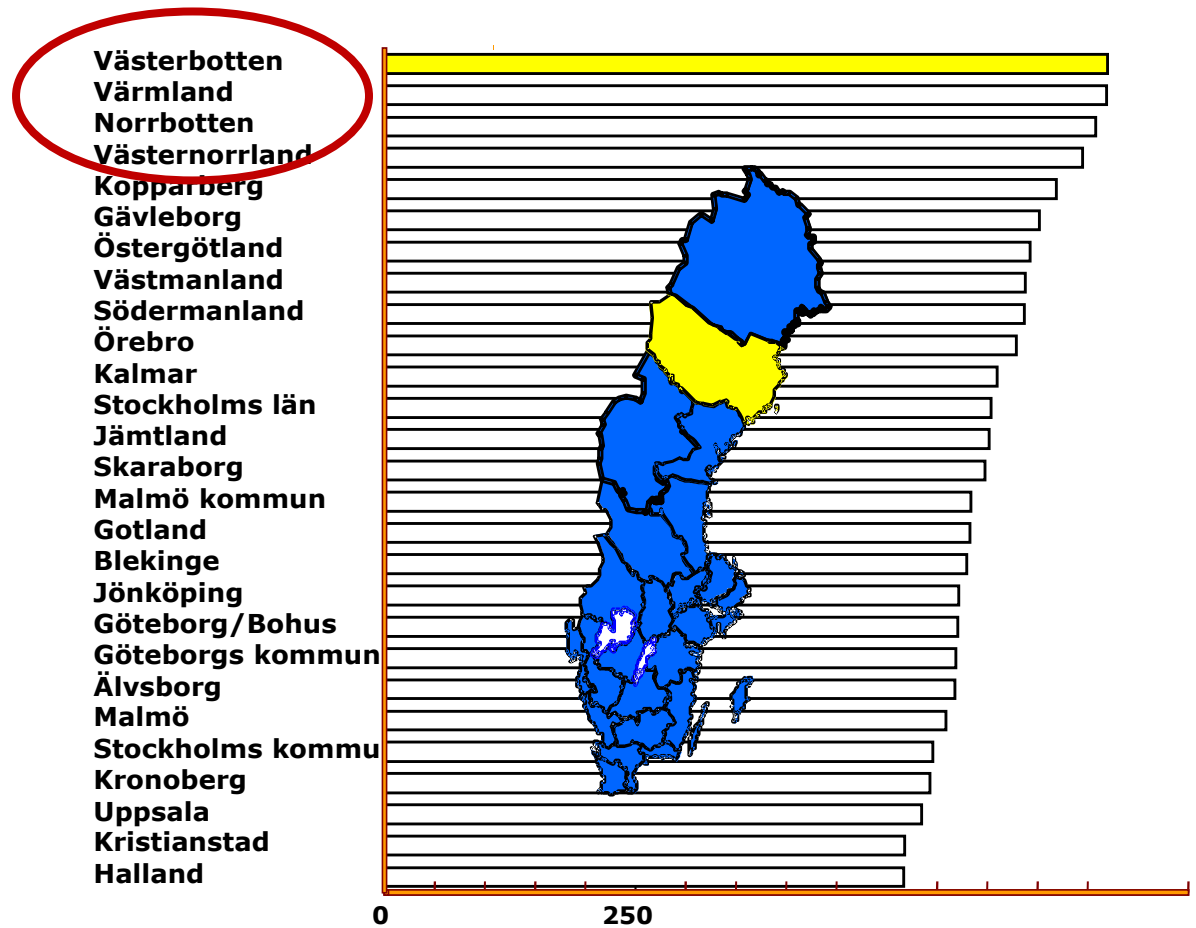
Northern Sweden Health and Disease Study (NSHDS)



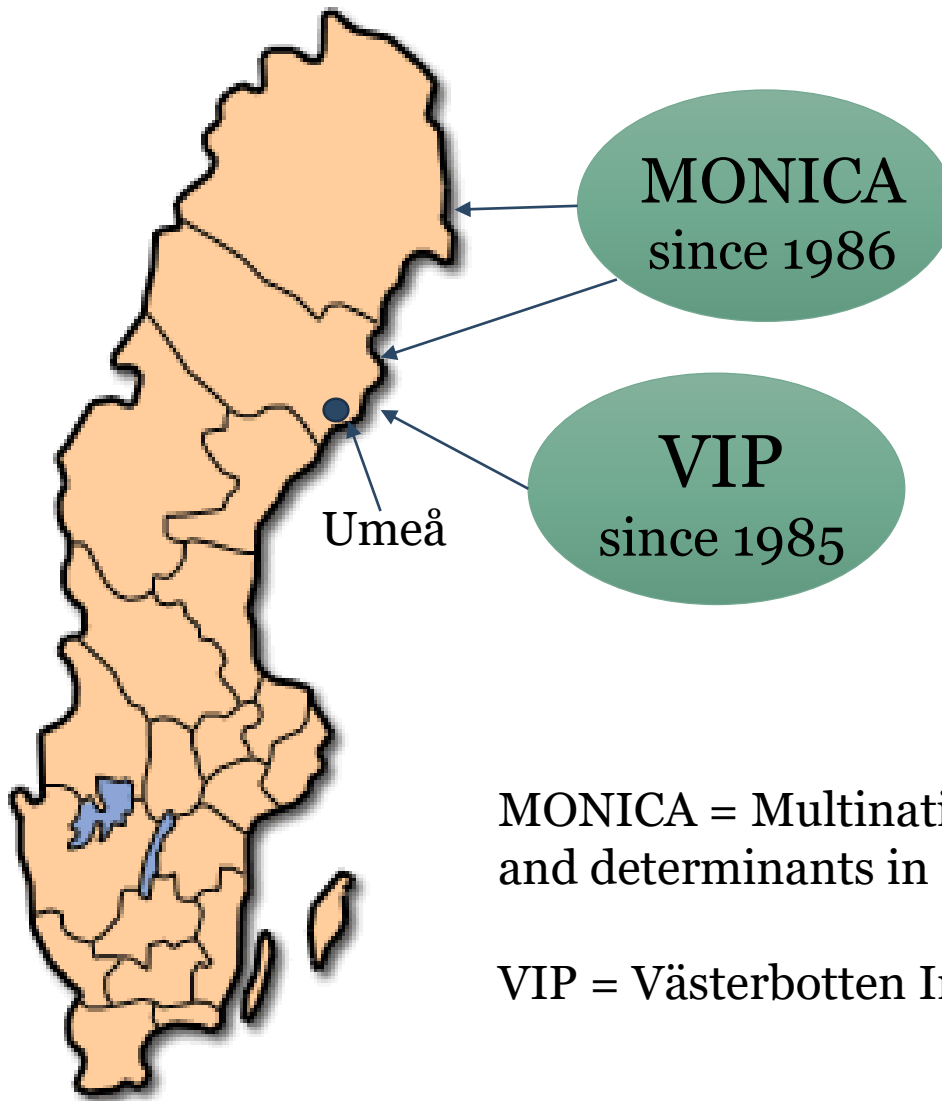
Number of deaths in myocardial infarction 1969-1978 (15-74 years)

(per year and 100 000 inhabitants)

”The highest premature mortality in cardiovascular diseases”



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MONICA
since 1986

VIP
since 1985

Umeå

MONICA = Multinational MONItoring of trends and determinants in Cardiovascular disease

VIP = Västerbotten Intervention Program



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THE NORTHERN SWEDEN HEALTH AND DISEASE STUDY

>140 000 individuals

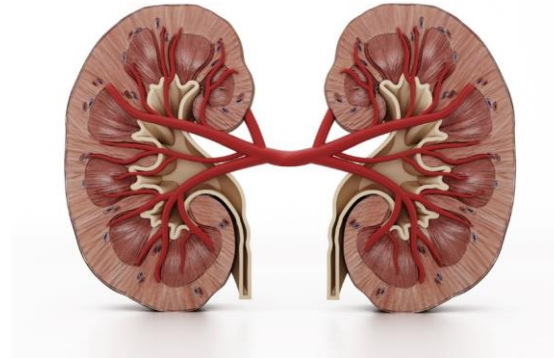
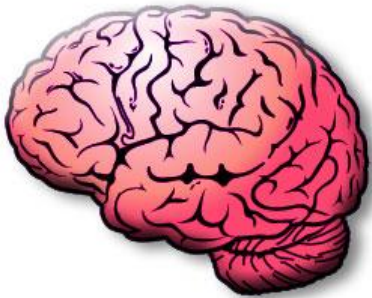
- Questionnaires on lifestyle
- Medical data from health examination
- Biobanked blood samples



THE ENVIRONMENTAL POLLUTANT COHORT WITHIN NSHDS

	Numbers with chemical analysis (cases not included)
Lead	~ 2300
Cadmium	~ 2800
Mercury	~ 3200
PCBs	~ 800
PFAS	~ 400
Bisphenol A	~ 470
Phtalates, Pesticides, Triclosan, 1-HP	~ 230

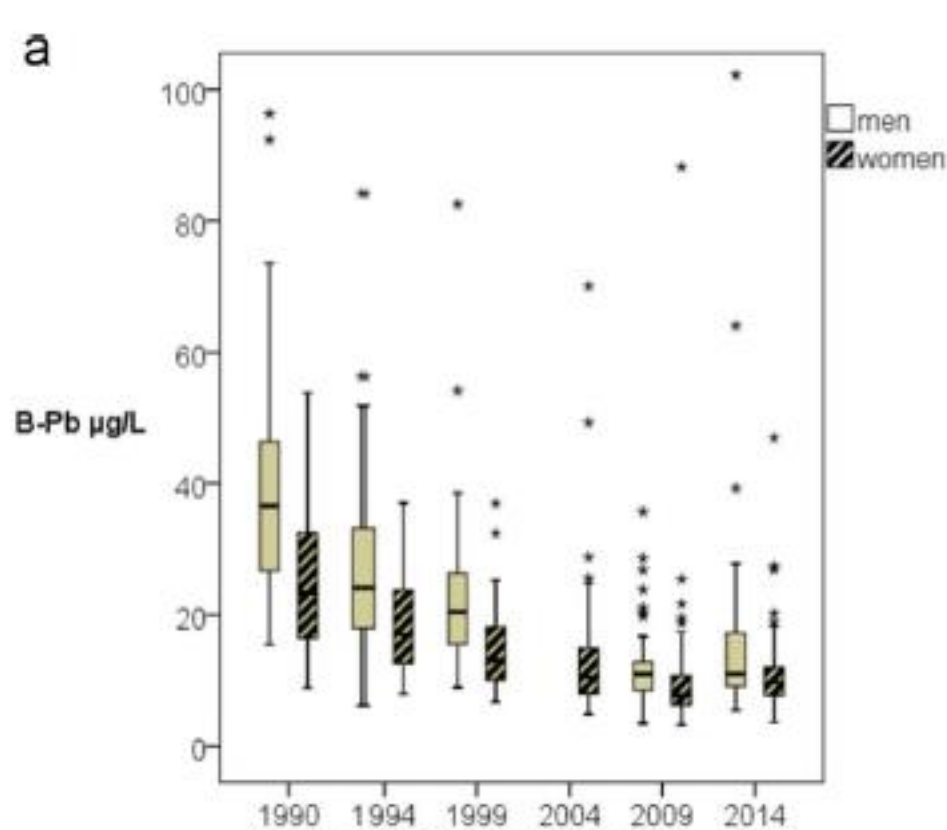
LEAD – HEALTH EFFECTS



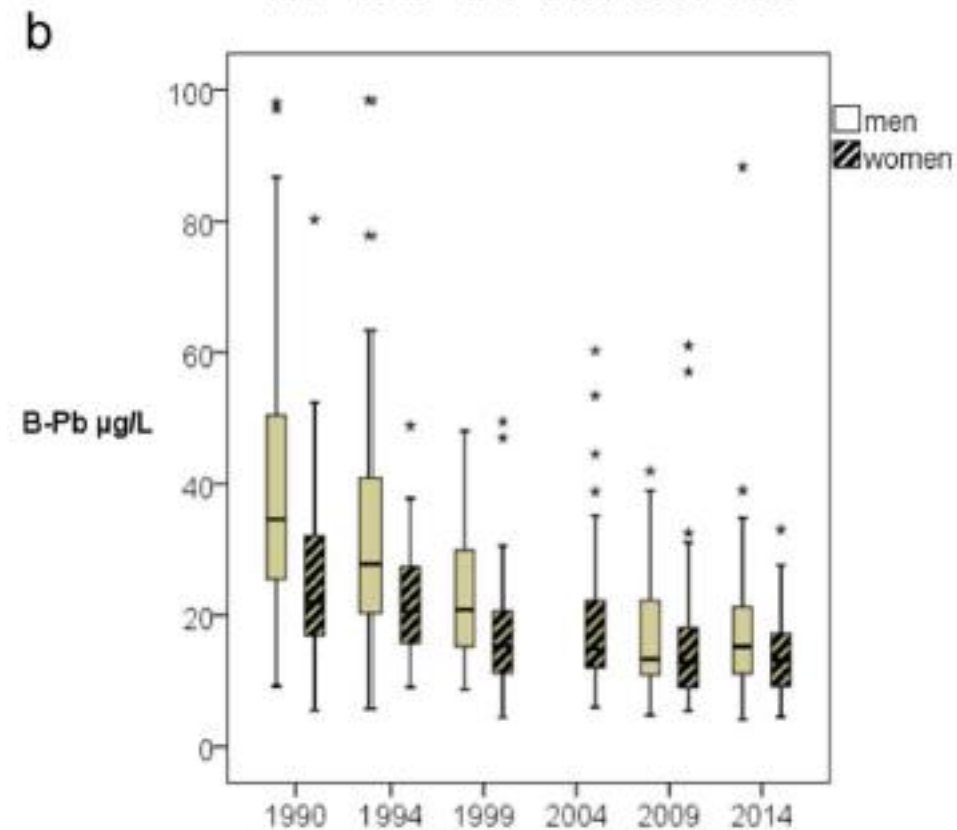
Lead concentration in blood associate with lower IQ



Time trends for lead in blood (median values) in Norrbotten and Västerbotten 1990-2014



25-44 year olds



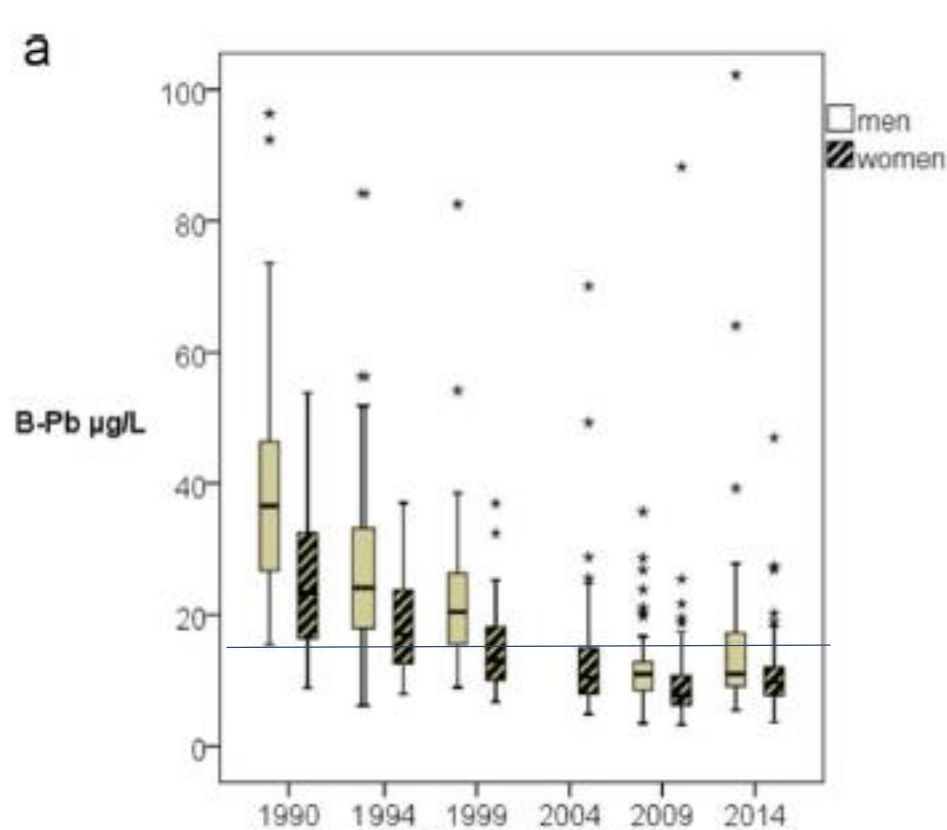
45-60 year olds

Wennberg et al. 2017 Environmental Research

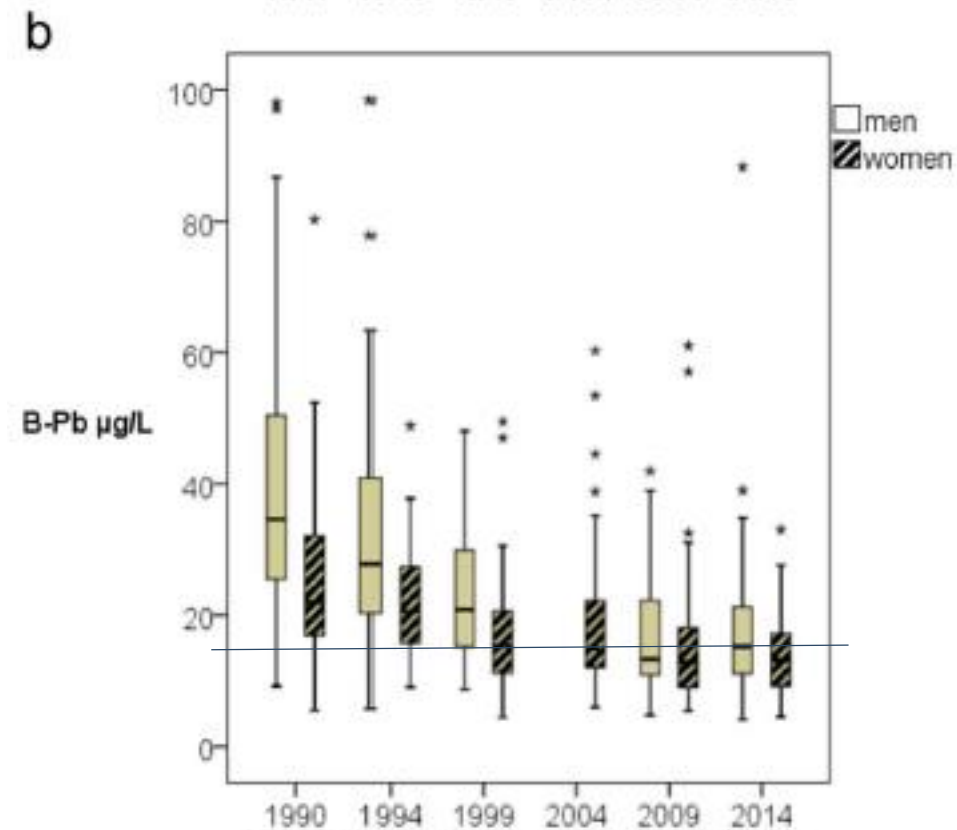


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Time trends for lead in blood (median values) in Norrbotten and Västerbotten 1990-2014



25-44 year olds



45-60 year olds

Wennberg et al. 2017 Environmental Research



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LEAD - EXPOSURE



LEAD CONCENTRATIONS ASSOCIATE WITH CONSUMPTION OF MINCED MEAT FROM MOOSE

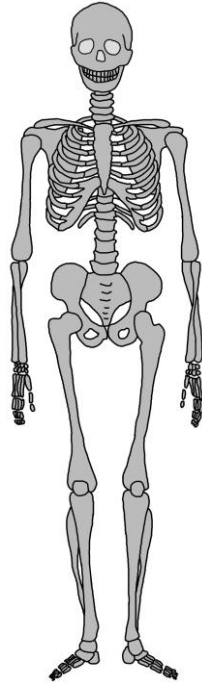
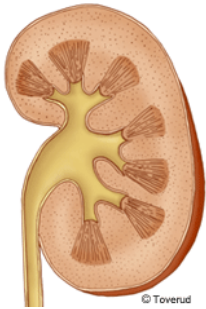


Important to cut away damaged meat if lead bullets are used during hunting!

Exposure from shooting?



CADMIUM – HEALTH EFFECTS



Kidney and bone effects.
Associated with risk of cancer;
breast, uterus, urine bladder, lungs
Cardiovascular disease?



Smoking; well
known exposure
source



CADMIUM – SENSITIVE GROUPS

Low iron
status



Cadmium uptake in the gut



Women have
higher cadmium
concentrations!

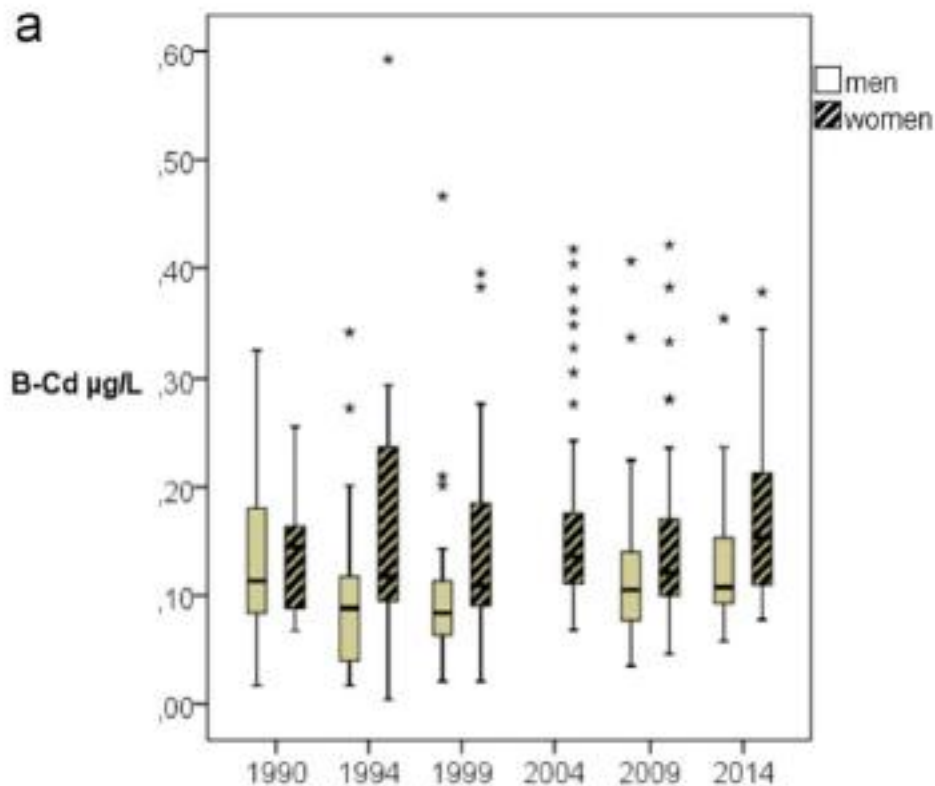


CADMIUM – EXPOSURE

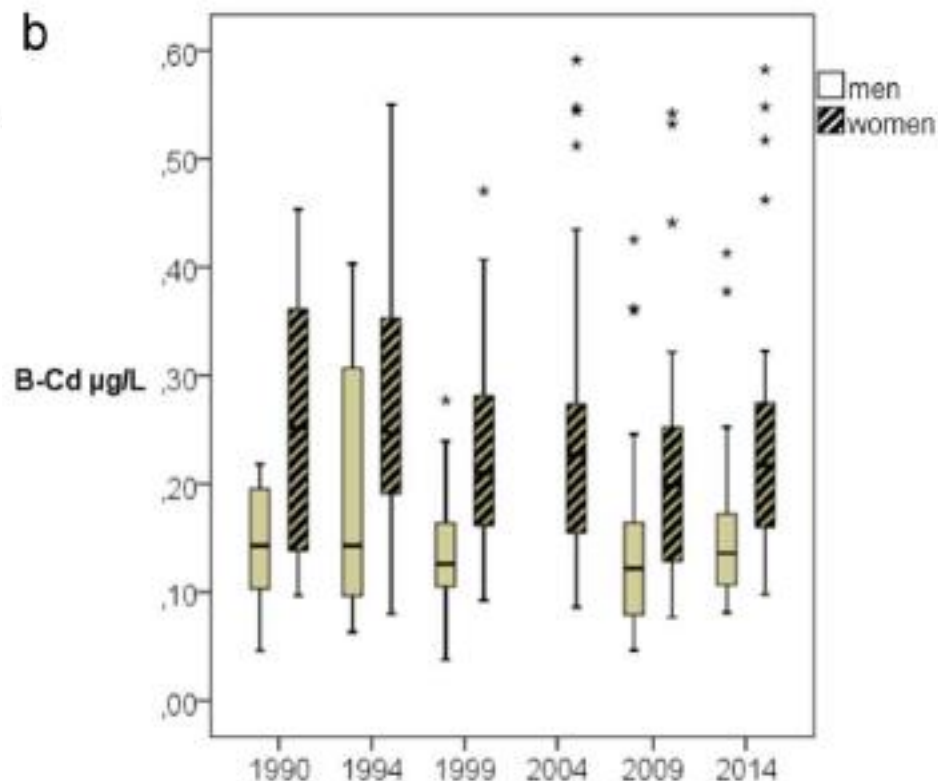
Vegetable food contribute the most!



Time trends for cadmium in blood (median values) in Norrbotten and Västerbotten 1990-2014 (never-smokers)



25-44 year olds



45-60 year olds

Wennberg et al. 2017 Environmental Research



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HOW TO KEEP CADMIUM DOWN ?



Varied diet, avoid low iron stores, avoid smoking!



Thank you!



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