Cardiovascular diseases in Eastern Europe

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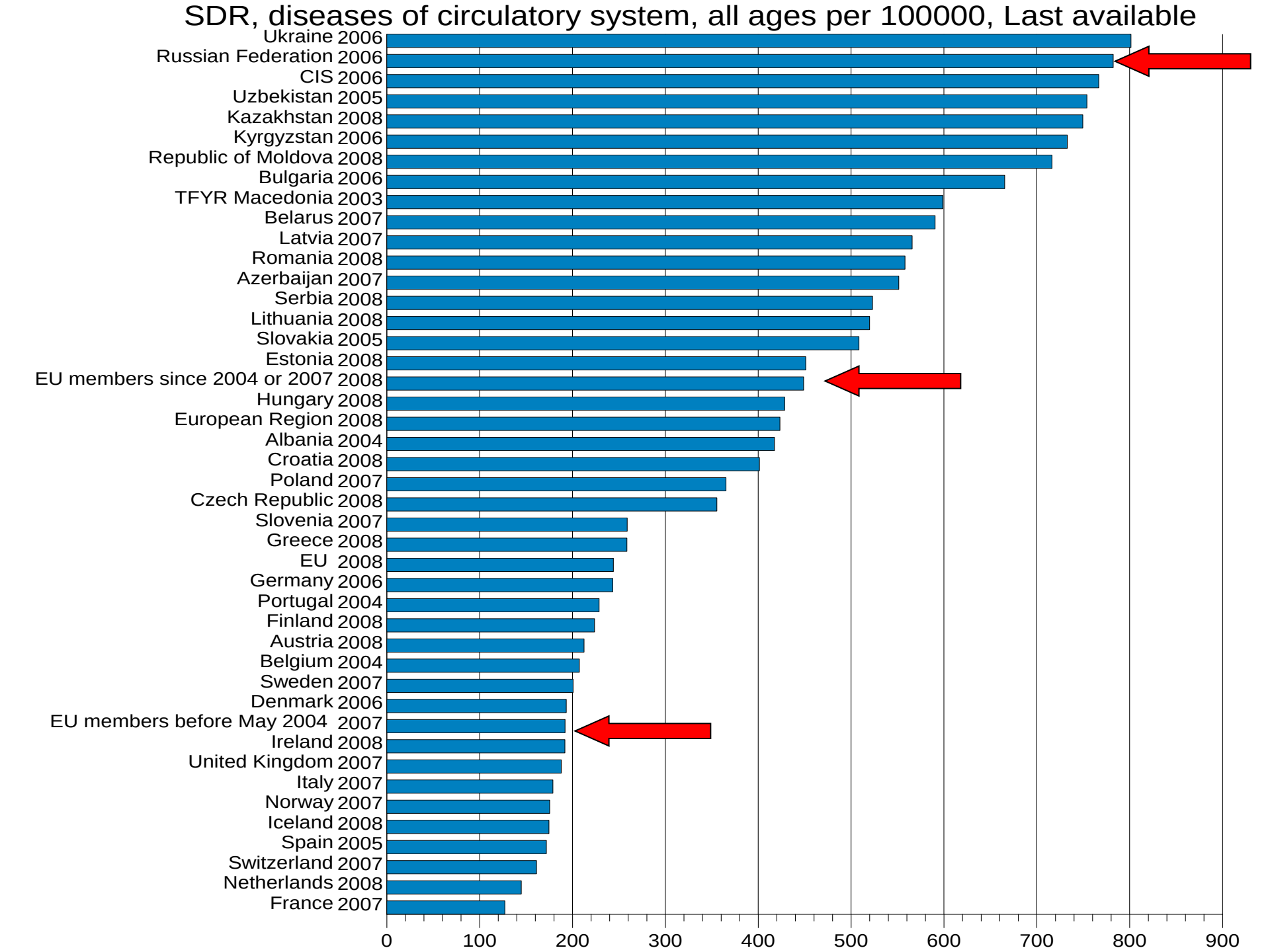
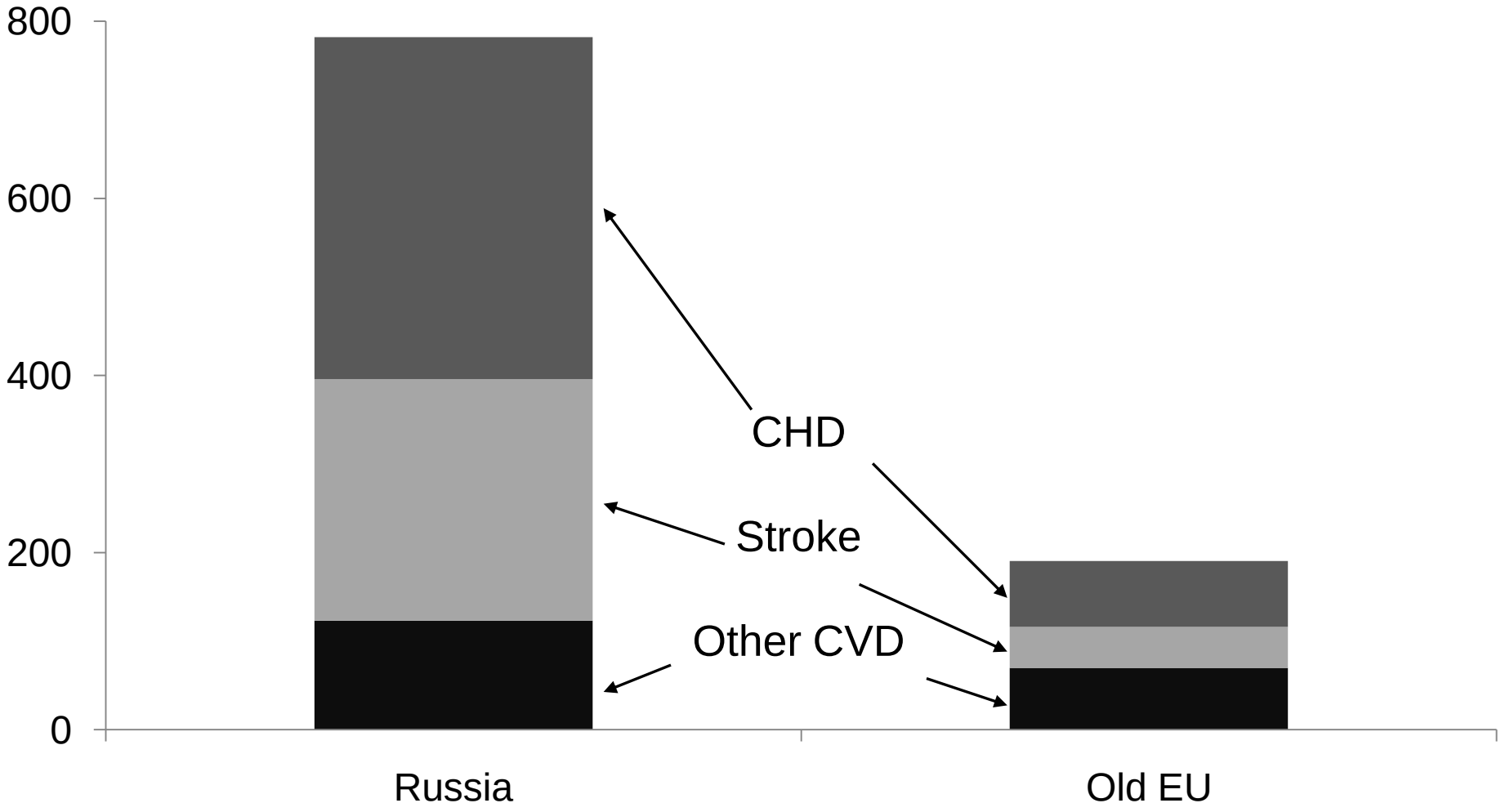
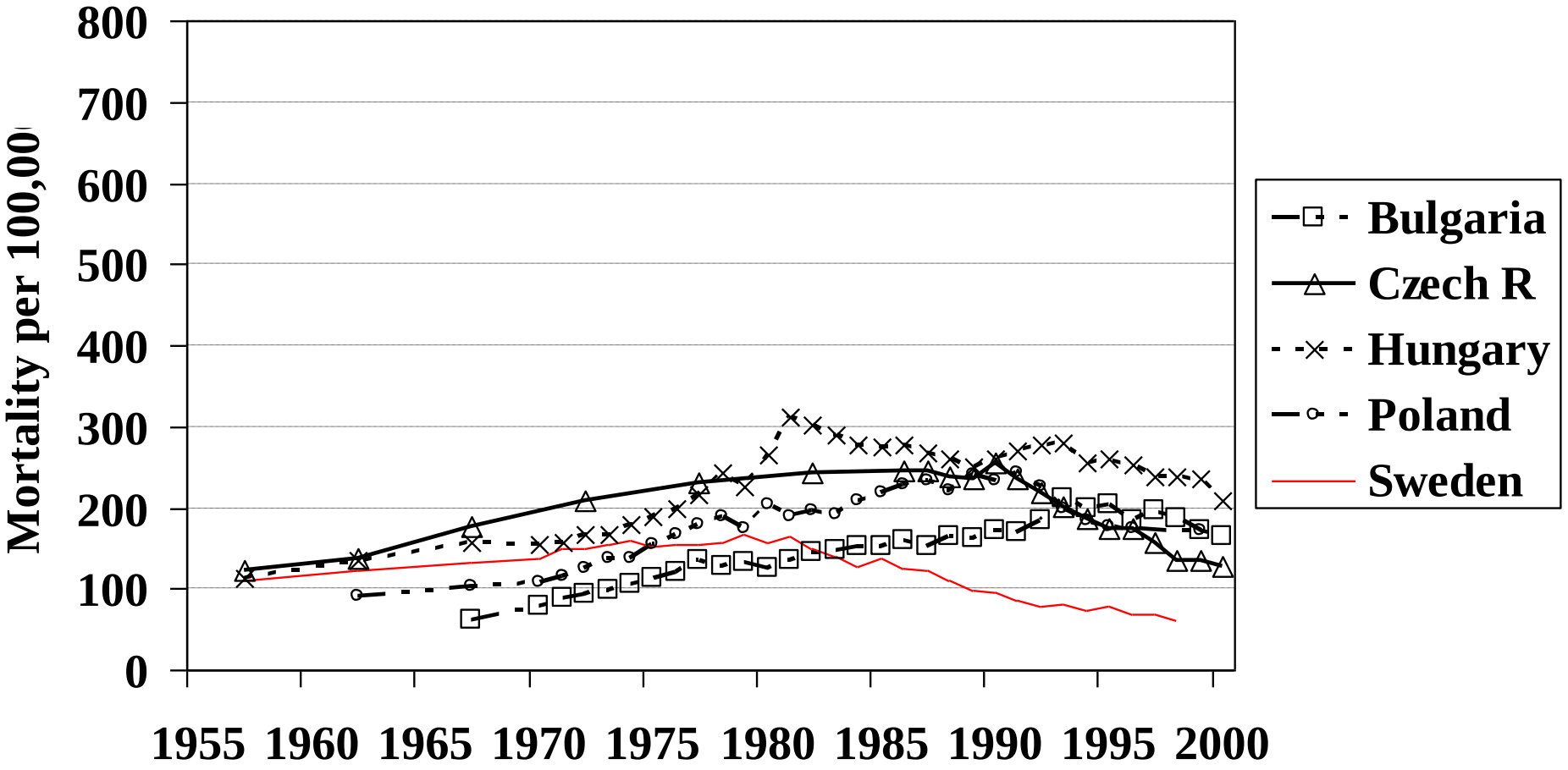
SDR, diseases of circulatory system, all ages per 100000, Last available



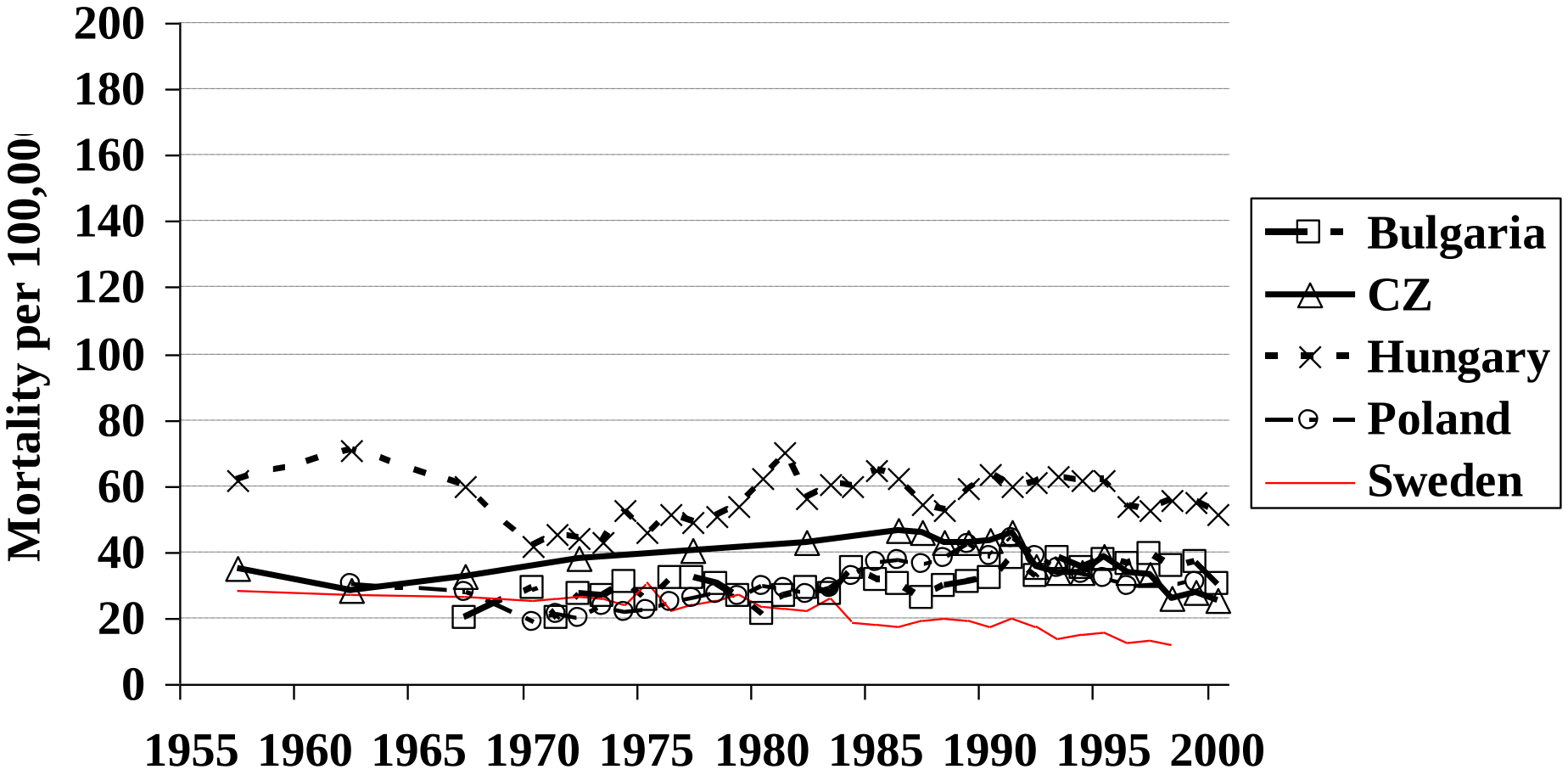
Mortality from CVD in Russia and the “old” EU in 2006 (both genders, age standardised, per 100,000).



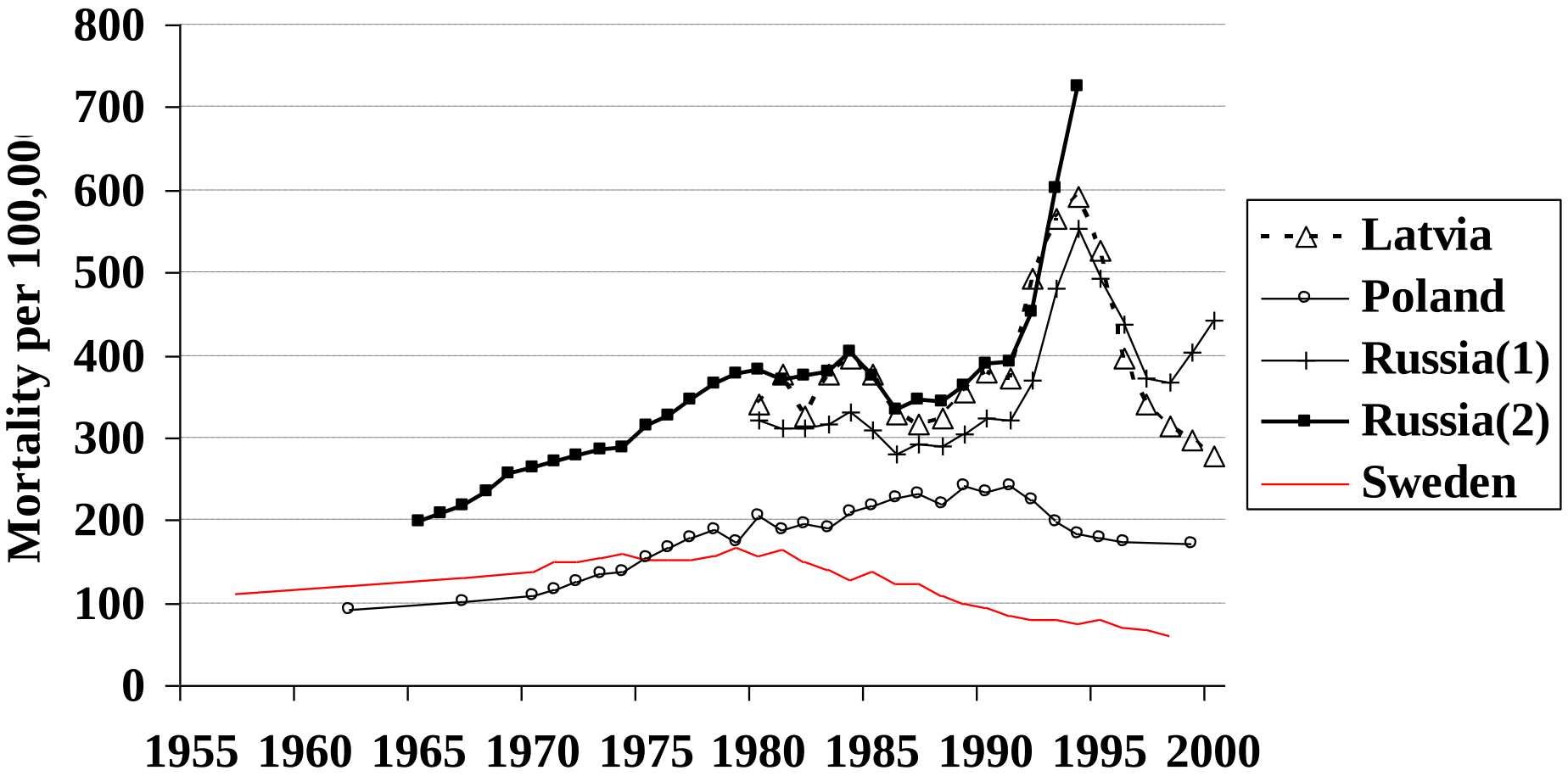
Trends in **male** mortality from CHD in Central and Eastern Europe between the mid 1950s and 2000, age group 45-54 years (data from the WHO Health for All database).



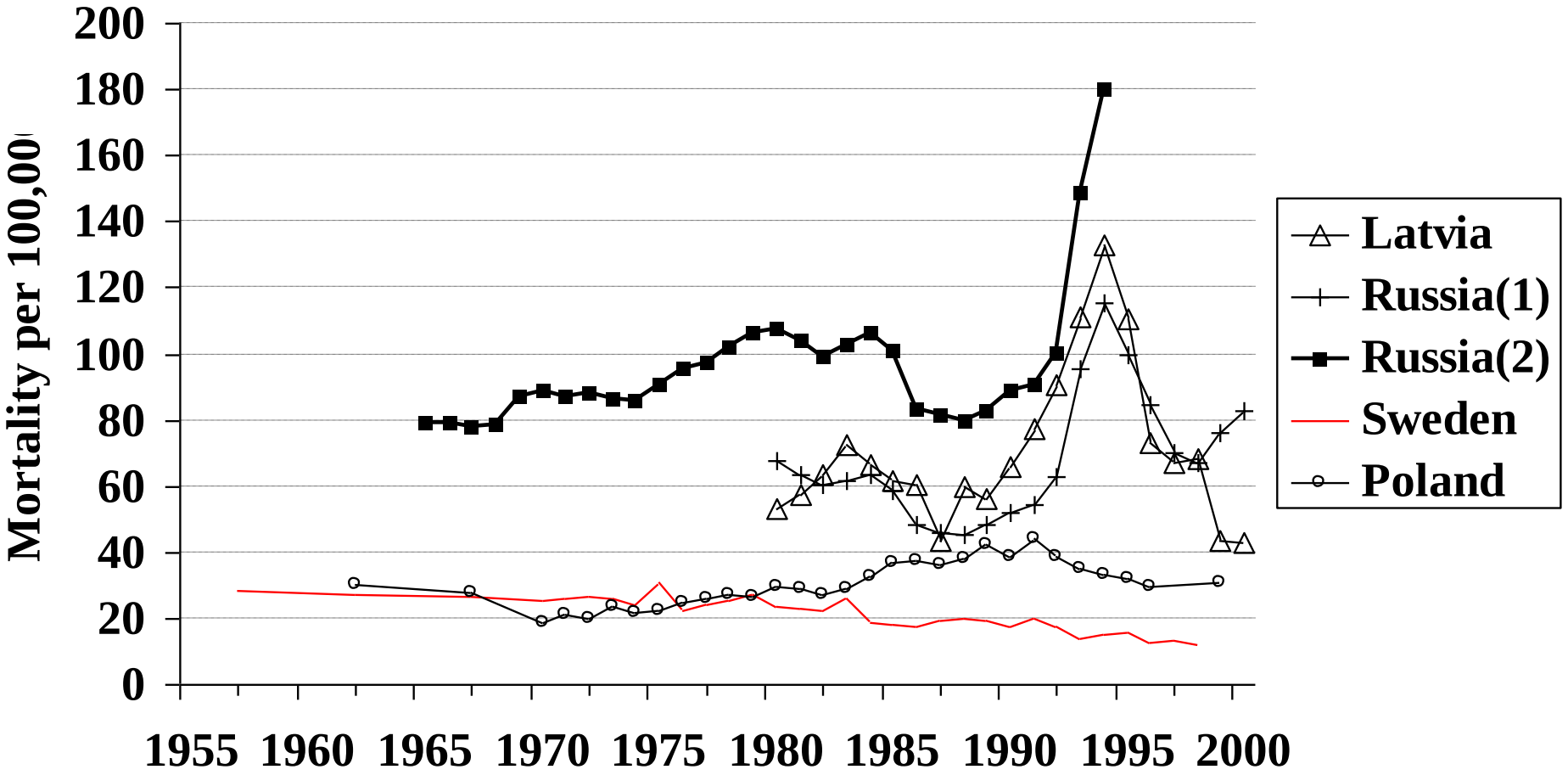
Trends in **female** mortality from CHD in Central and Eastern Europe between the mid 1950s and 2000, age group 45-54 years (data from the WHO Health for All database).



Trends in **male** mortality from CHD in the former Soviet Union between the mid 1950s and 2000, age group 45-54 years (data from the WHO Health for All database).

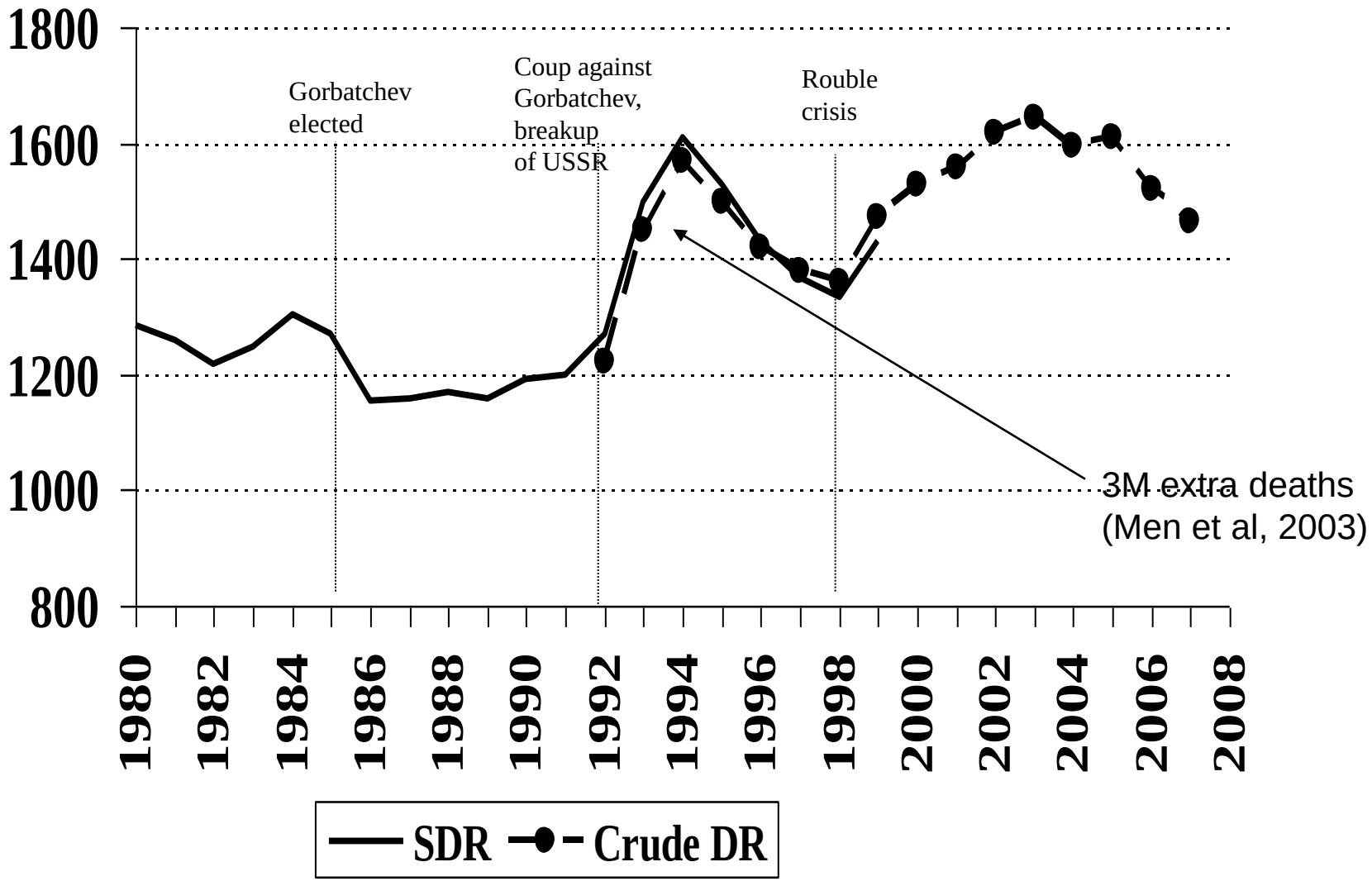


Trends in **female** mortality from CHD in the former Soviet Union between the mid 1950s and 2000, age group 45-54 years (data from the WHO Health for All database).



Death rates in Russia 1980-2007

both genders, per 100,000



Proposed explanations

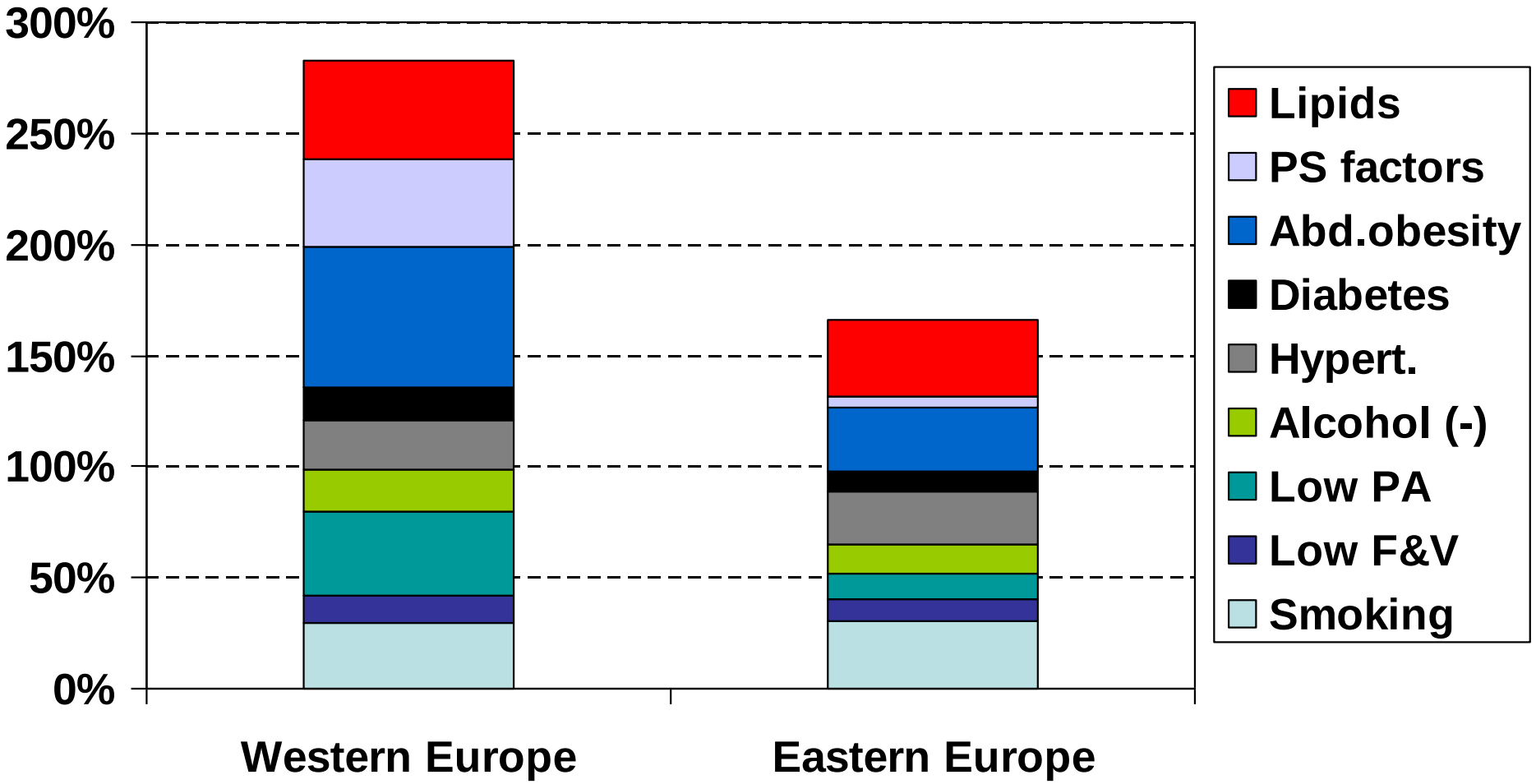
- Medical care
- Risk factors
- Societal factors

Mortality rates in MONICA centres in CEE/FSU and western countries, East/West mortality rate ratios after controlling for medical care score, age band 35-64

	CEE/FSU	**western countries**	**East/West rate ratio**
Men			
(No. of centres)	(10)	(26)	
Age-adjusted rates	274	162	1.81
Adj. for care	257	167	1.54
Women			
(No. of centres)	(10)	(24)	
Age-adjusted	75	44	1.70
Adj. for care	67	46	1.46

Data from the MONICA Project (www.ktl.fi/monica).

PARF associated with 9 risk factors for MI in Western and Eastern Europe (INTERHEART Study, Yusuf et al 2004)



Adjusted total: 94% 73%

Proportion of variance in mortality explained by risk factors* in the MONICA study

	Men	*Women*
All causes	40%	34%
All CVD	21%	35%
IHD	**23%**	**14%**
Stroke	39%	35%

* smoking, BP, cholesterol

Int J Epidemiol 1994

The HAPIEE study

(Health, Alcohol and Psychosocial factors In Eastern Europe)

- Multi-centre study of determinants of CVD in Eastern Europe.
- Baseline survey in 2002-05
- Random population samples in
  - *Novosibirsk (Russia)*
  - *Krakow (Poland)*
  - *7 towns of the Czech Republic (Havirov, Hradec Kralove, Jihlava, Karvina, Kromeriz, Liberec, Usti n.L.)*
  - *Kaunas (Lithuania), joined in 2006*
- Random samples of men and women aged 45-69 years old at baseline, stratified by gender and 5 year age groups
- Almost 36,000 subjects (response rate 59%).

The HAPIEE study

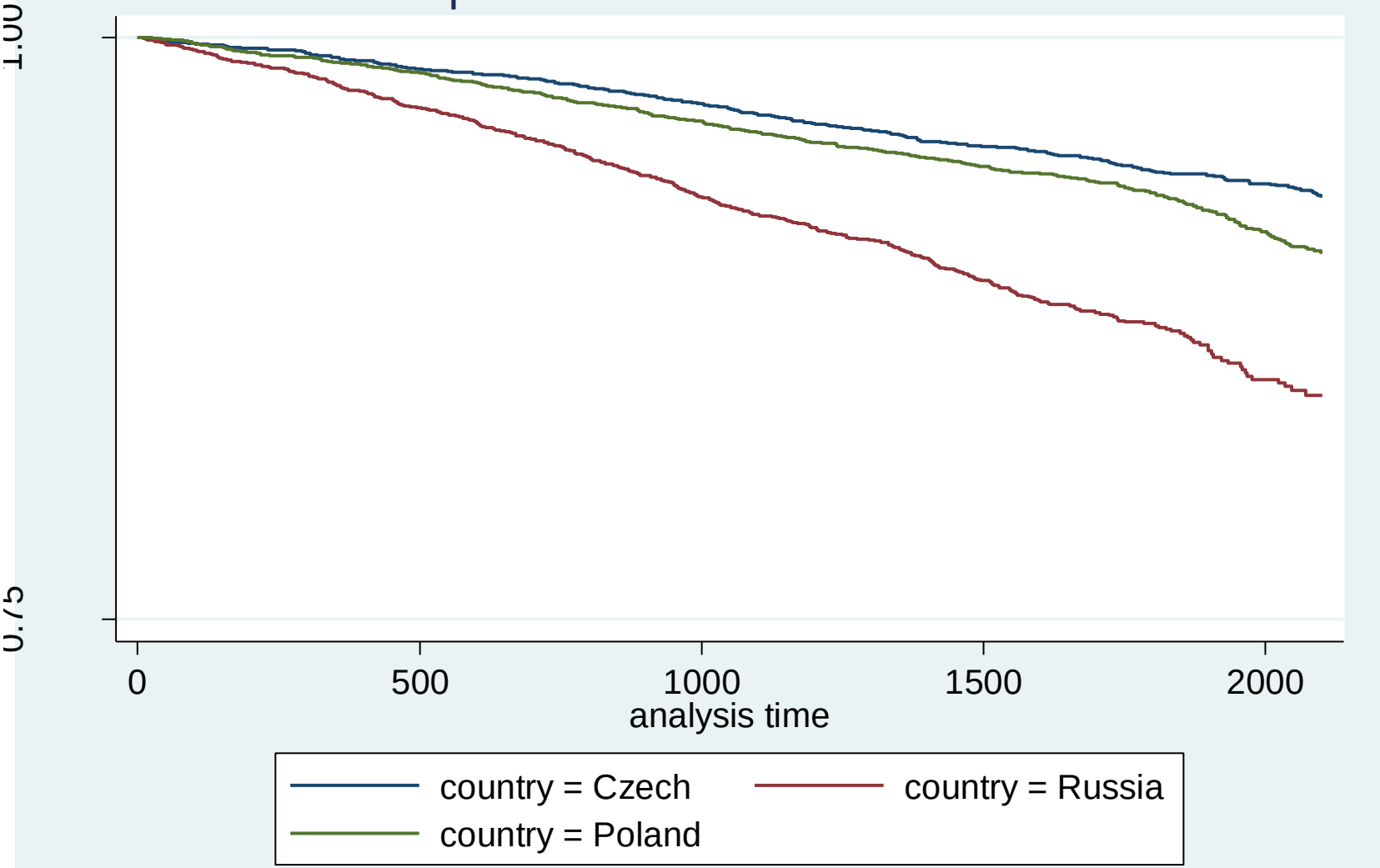
Availability of enzymes and T&T for non-fatal CHD events (follow up)

	CZ	RU
MI		
N	52	139
At least one troponin	98%	0.4%
2+ troponin	98%	20%
Tests and treatment		
N	131	44
Positive	95	33
CABG	19 (20%)	11 (33%)
PCI	60 (63%)	17 (52%)

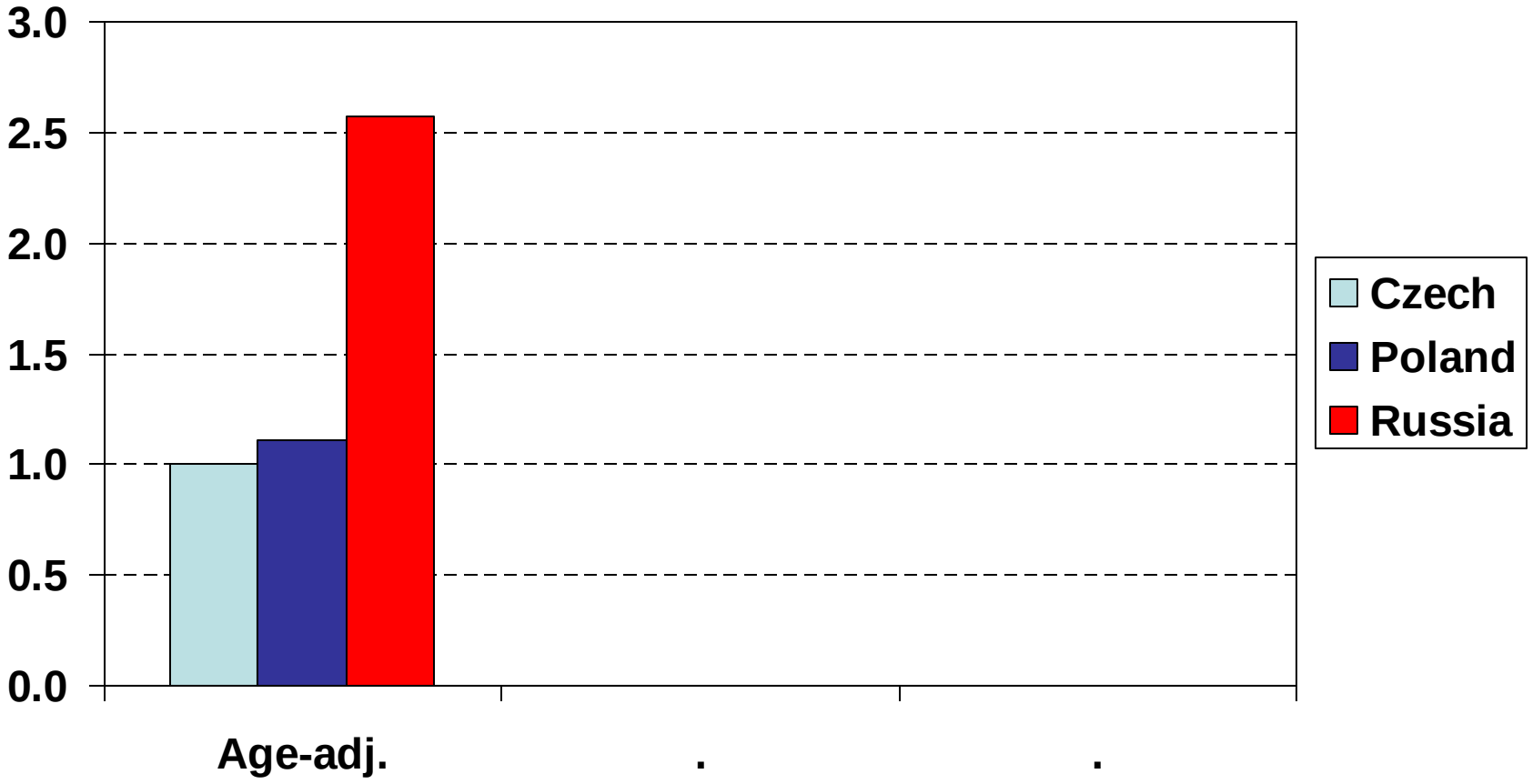
Male participants and deaths in HAPIEE (follow up until end of 2008)

	N	**All deaths**	**CVD deaths**
Czech R	3833	289	99
Poland	4797	431	118
Russia	3741	528	201
Total	12371	1248	418

Survival of men in HAPIEE



Hazard ratio of CVD death by country (CZ=1)



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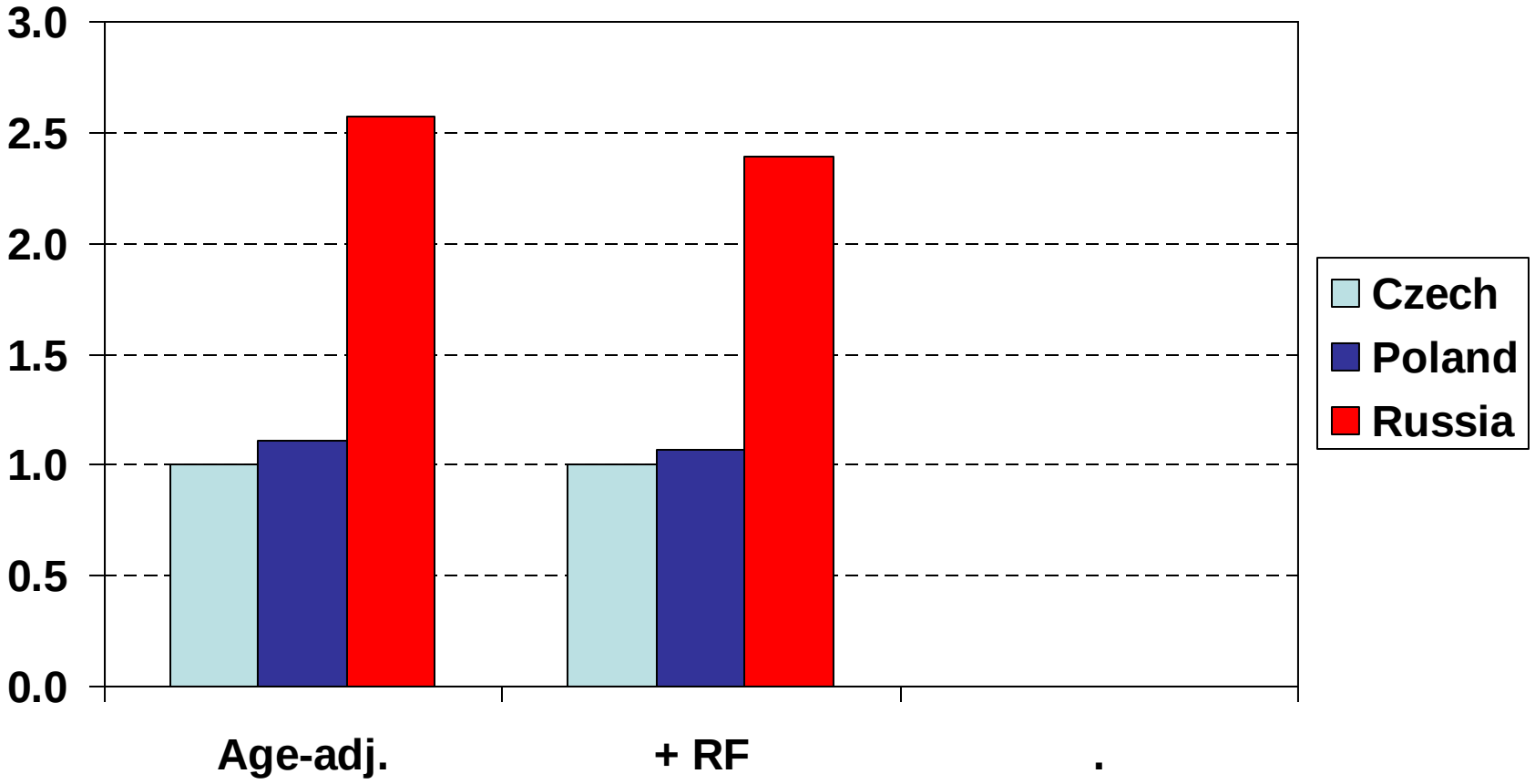
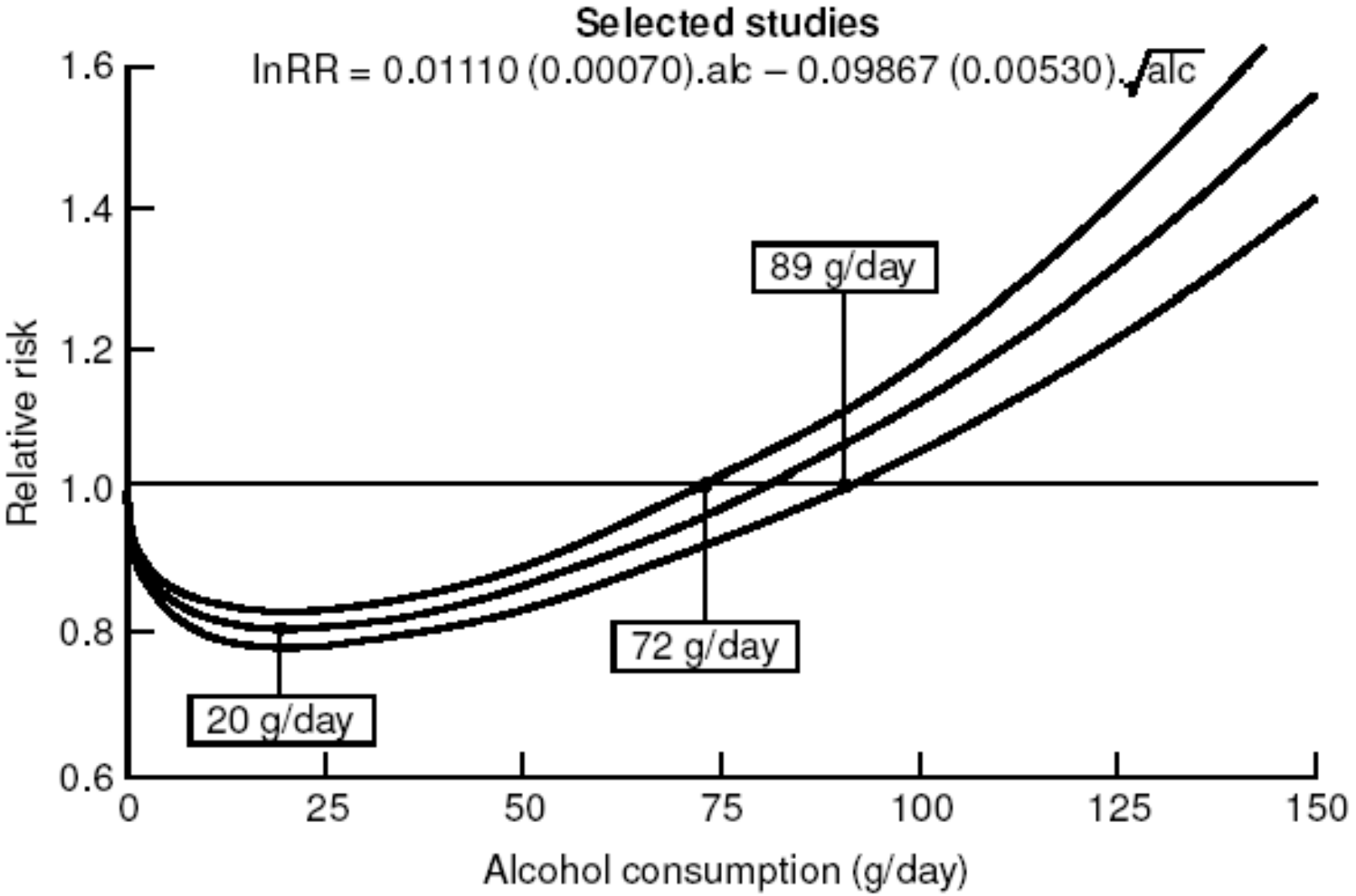


RF: adj. for age, smoking, HT, diabetes, physical act, vit C intake, WHR, control

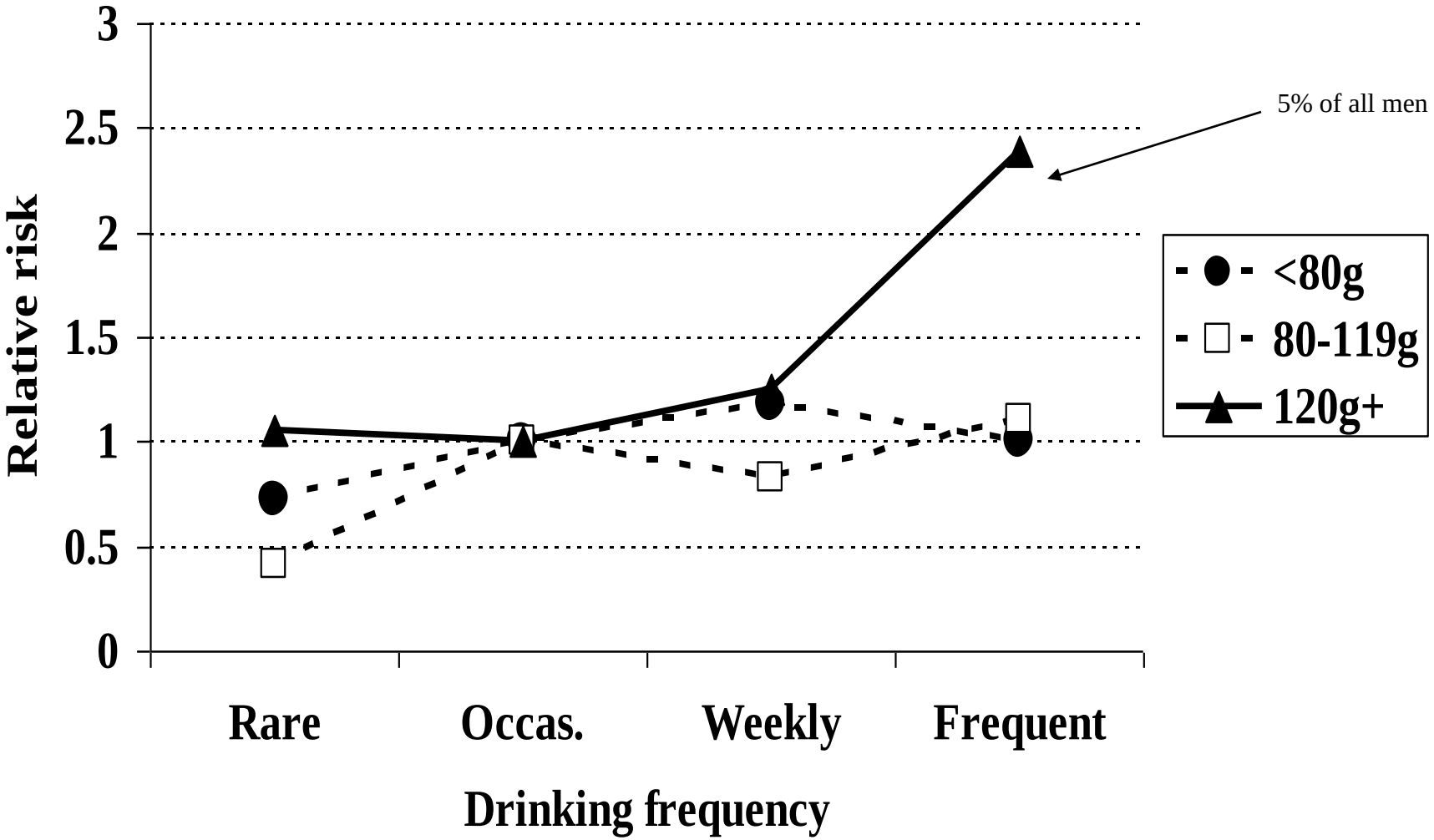
If not risk factors, then what?

Alcohol?

Risk of CHD by alcohol consumption in 28 high quality cohort studies (Corrao et al 2000)



RR of CVD death by drinking frequency and mean dose per occasion in Novosibirsk men



Malyutina et al, Lancet 2003

Alcohol drinking pattern and all-cause mortality in Izhevsk study

	Cases (n=1633)	Controls (n=1587)	OR (95% CI)	
Abstains	132	186	1.3	(1.0-1.7)
Beverage alcohols only, no problem drinking	585	1118	1.0	[ref]
Beverages alcohol only, problem drinking	152	85	3.0	(2.2-4.0)
Surrogates, no problem drinking	99	25	6.3	(4.0-10.0)
Surrogates, problem drinking	500	82	9.7	(7.5-12.6)
Difficult to answer	165	91	3.0	(2.3-4.0)

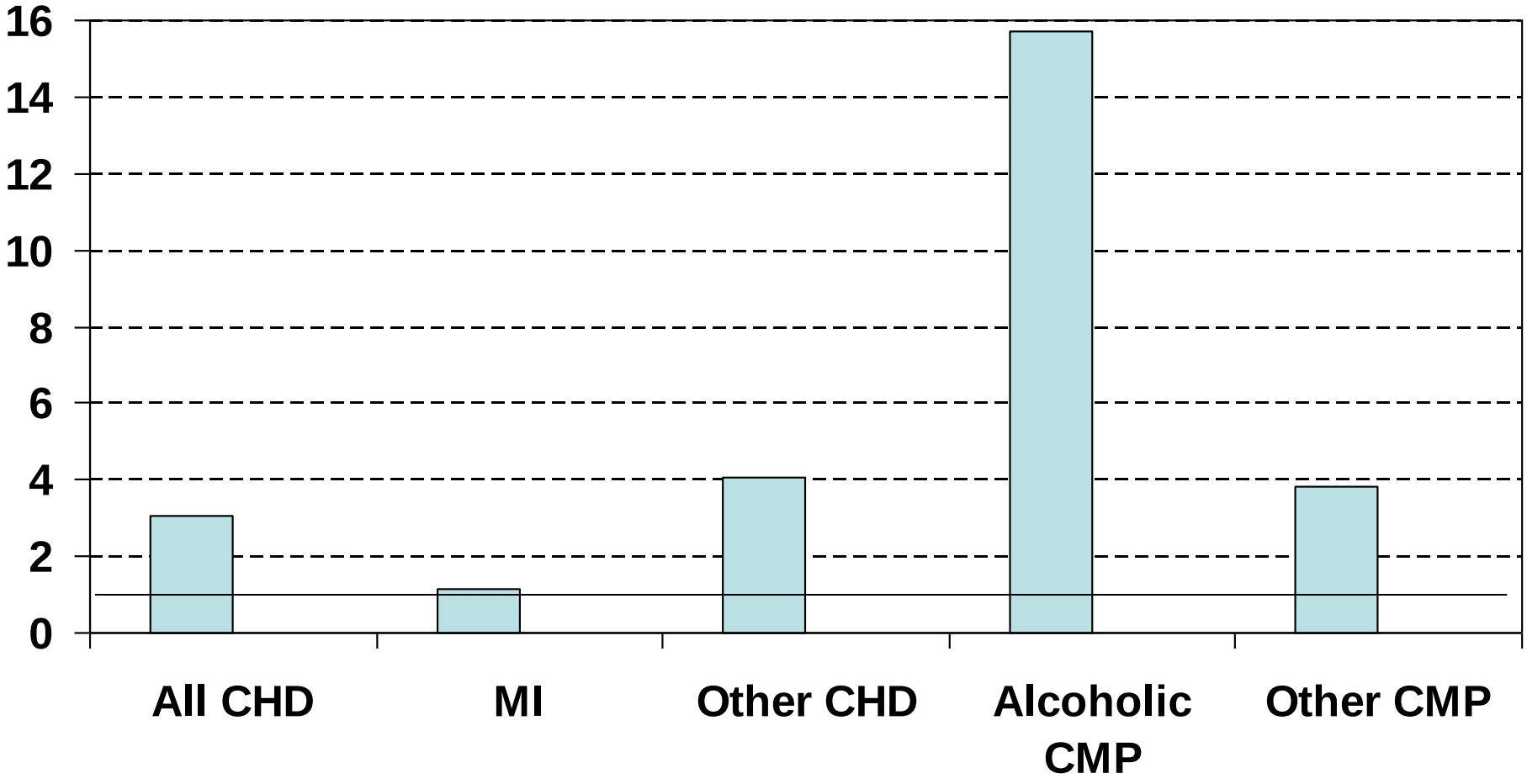
(Leon et al, Lancet 2007)

Relative risks of death from selected diseases for drinking 3+ bottles of vodka per week

	Men	Women
Accidents / violence	5.9	9.3
Alcohol poisoning	21.7	75.2
CHD	3.0	2.6
Respir. Cancers	3.5	2.2
TB	4.1	5.3

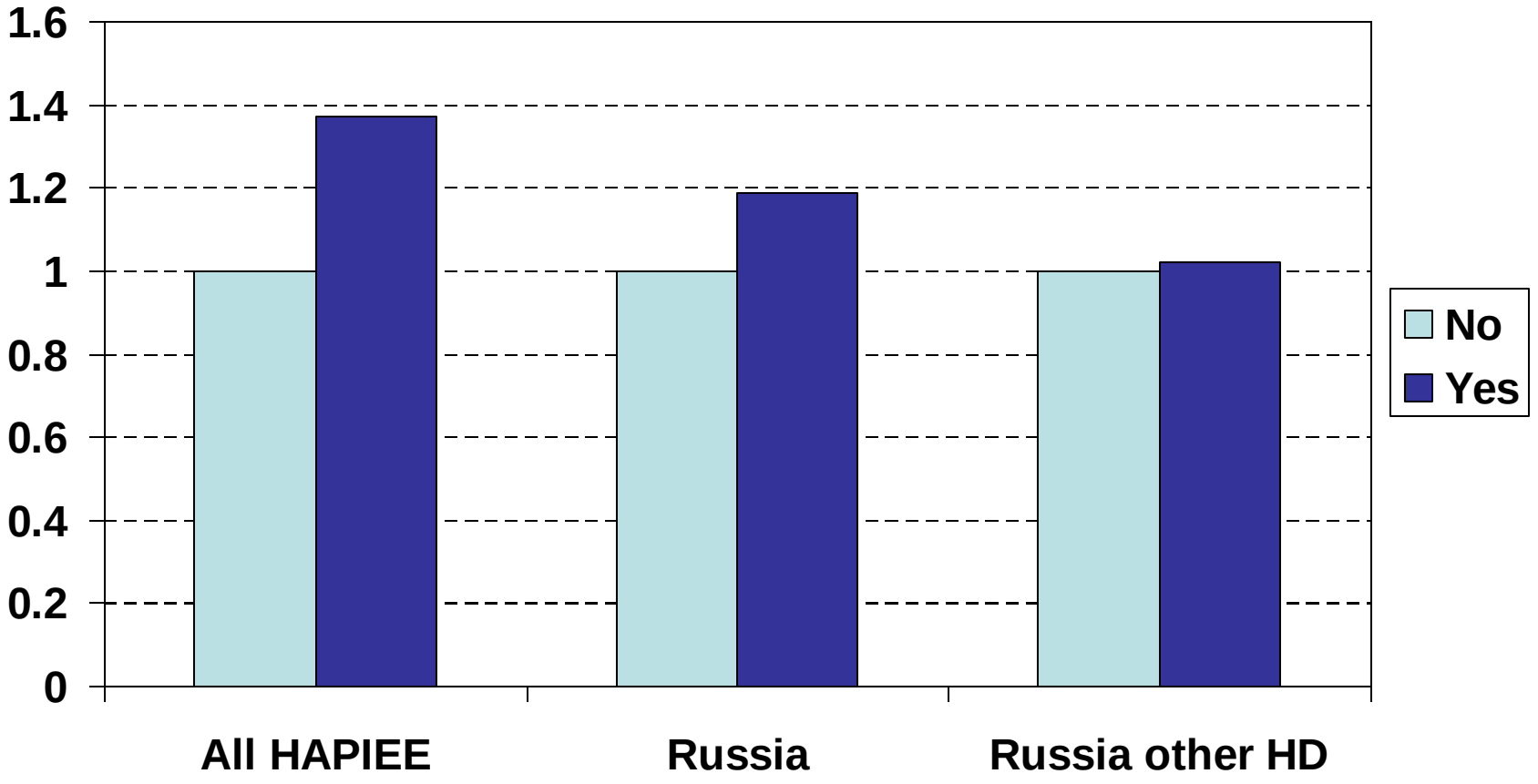
Zaridze et al Lancet 2009

Odds ratio of death for hazardous drinking in the Izhevsk case-control study

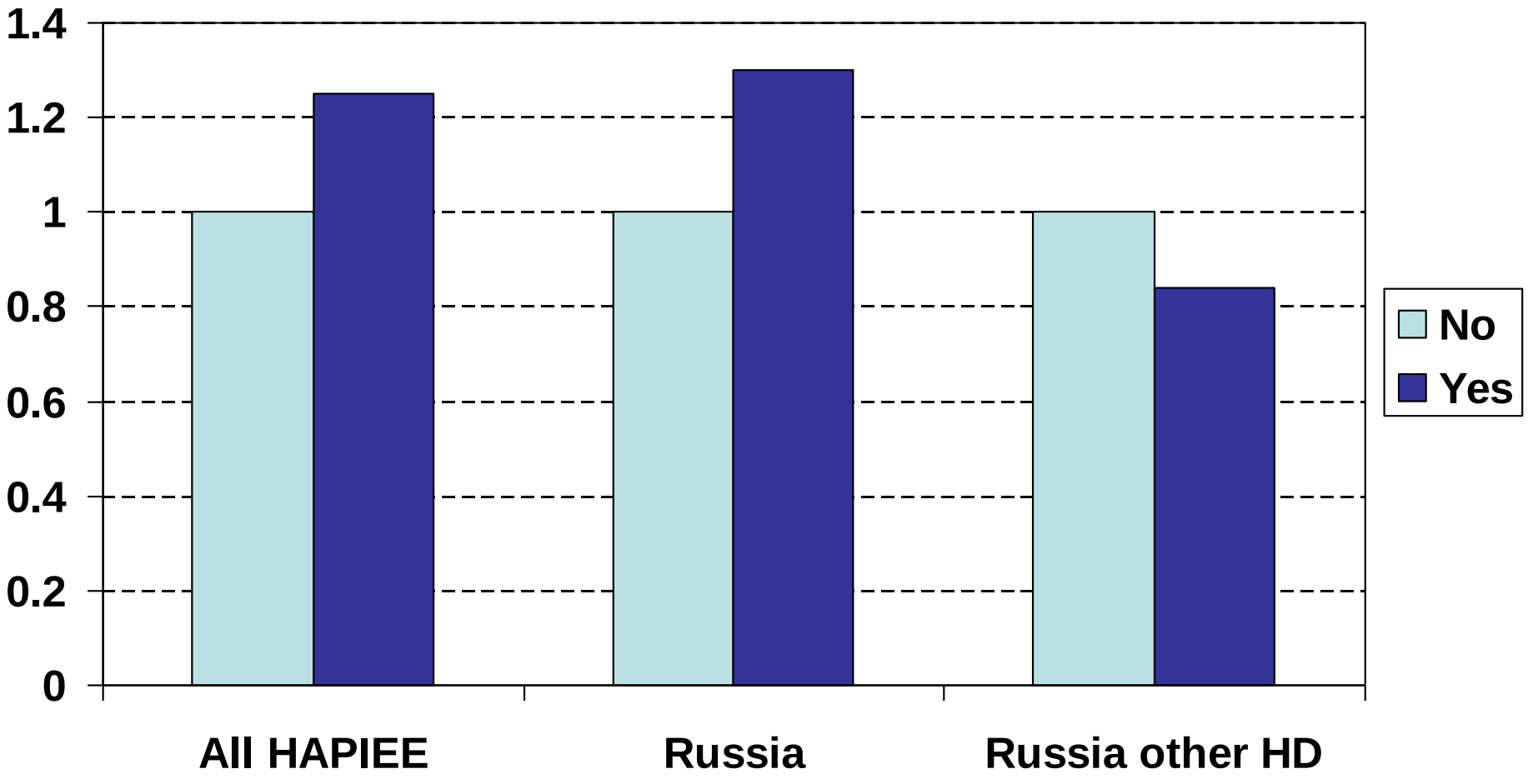


Leon et al. Int J Epidemiol 2010

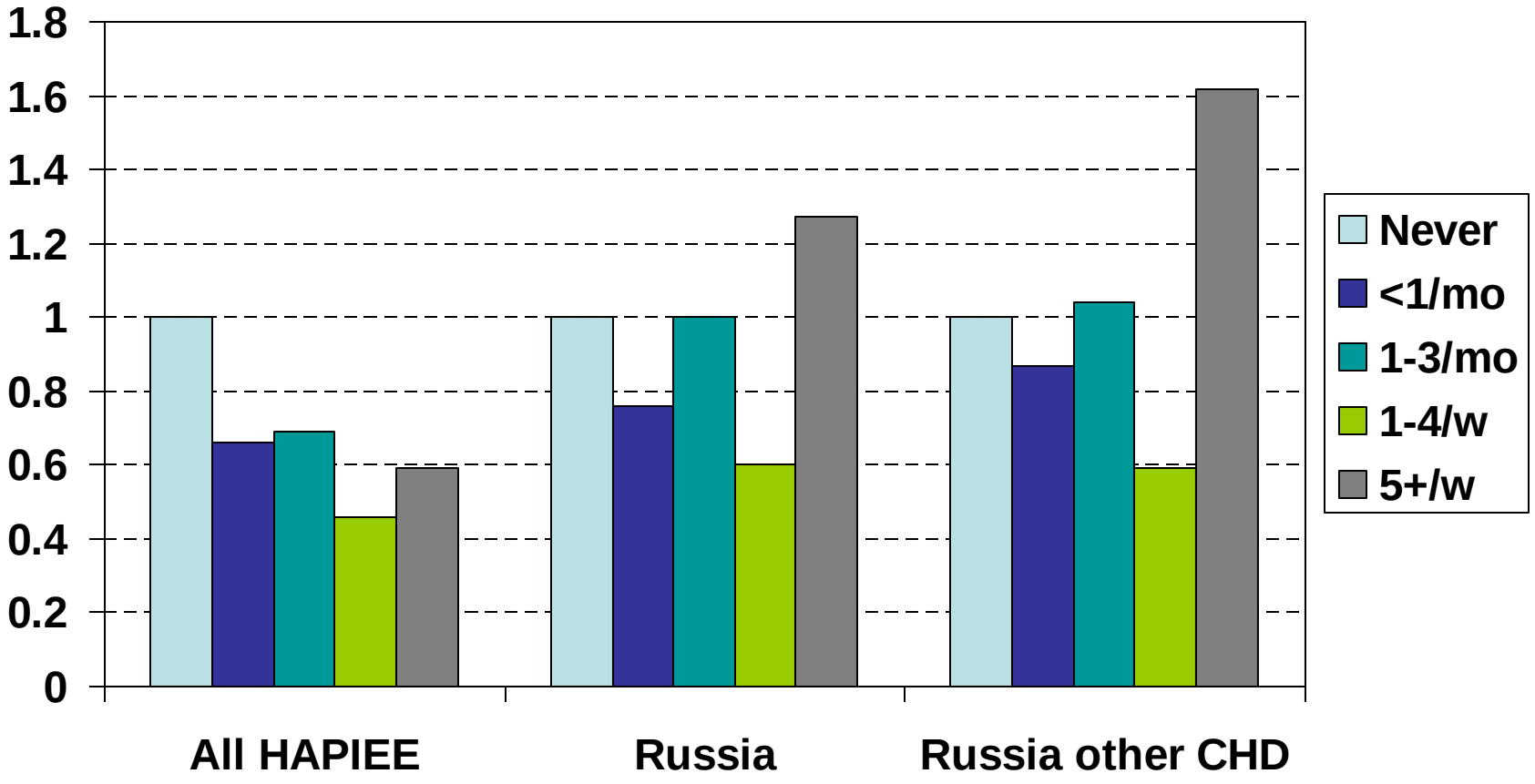
Hazard ratio of CVD death for problem drinking (CAGE 2+) in HAPIEE



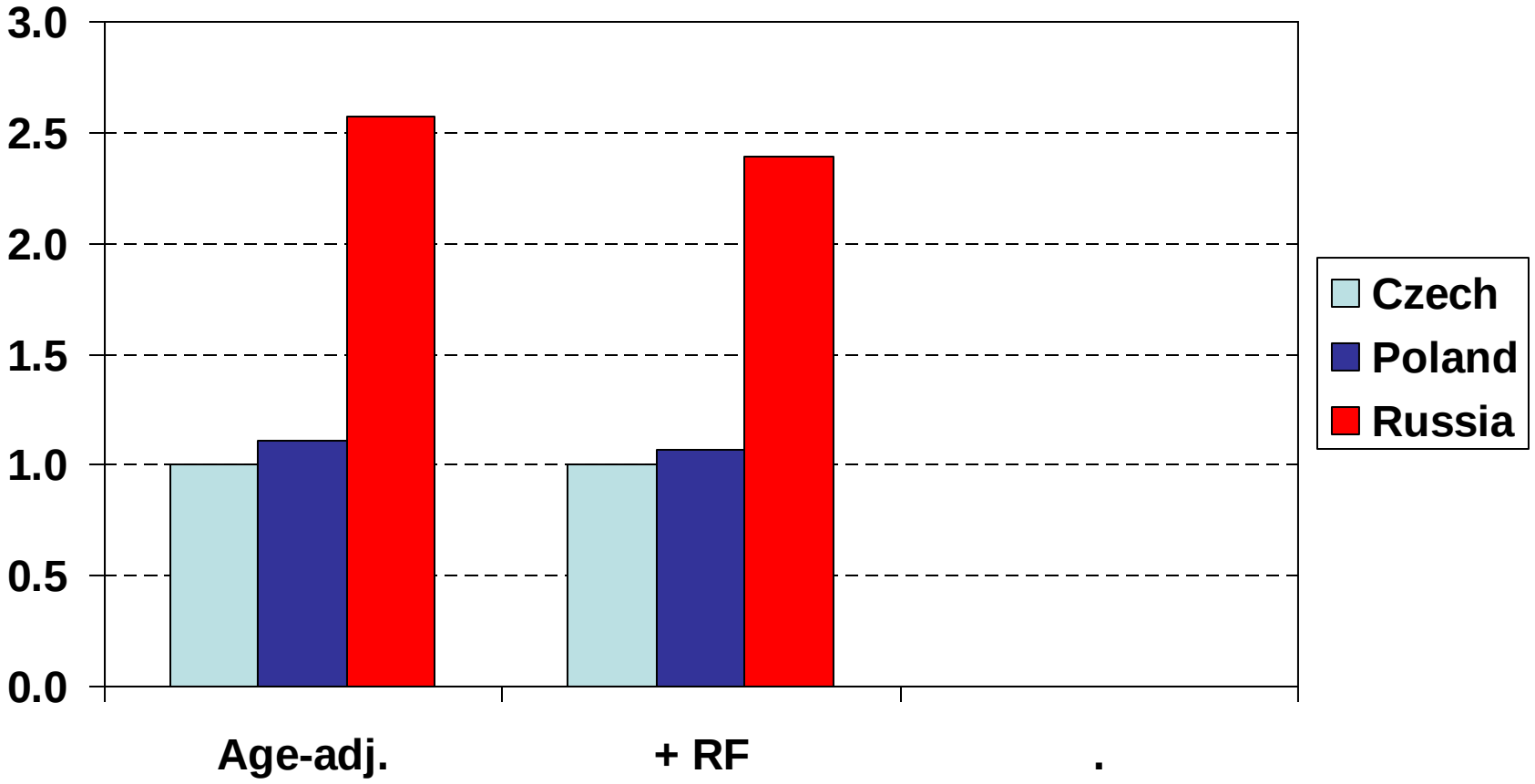
Hazard ratio of CVD death for binge drinking in HAPIEE (>150 g of ethanol at one occasion at least once a month)



Hazard ratio of CVD death by drinking frequency in HAPIEE



Hazard ratio of CVD death by country (CZ=1)



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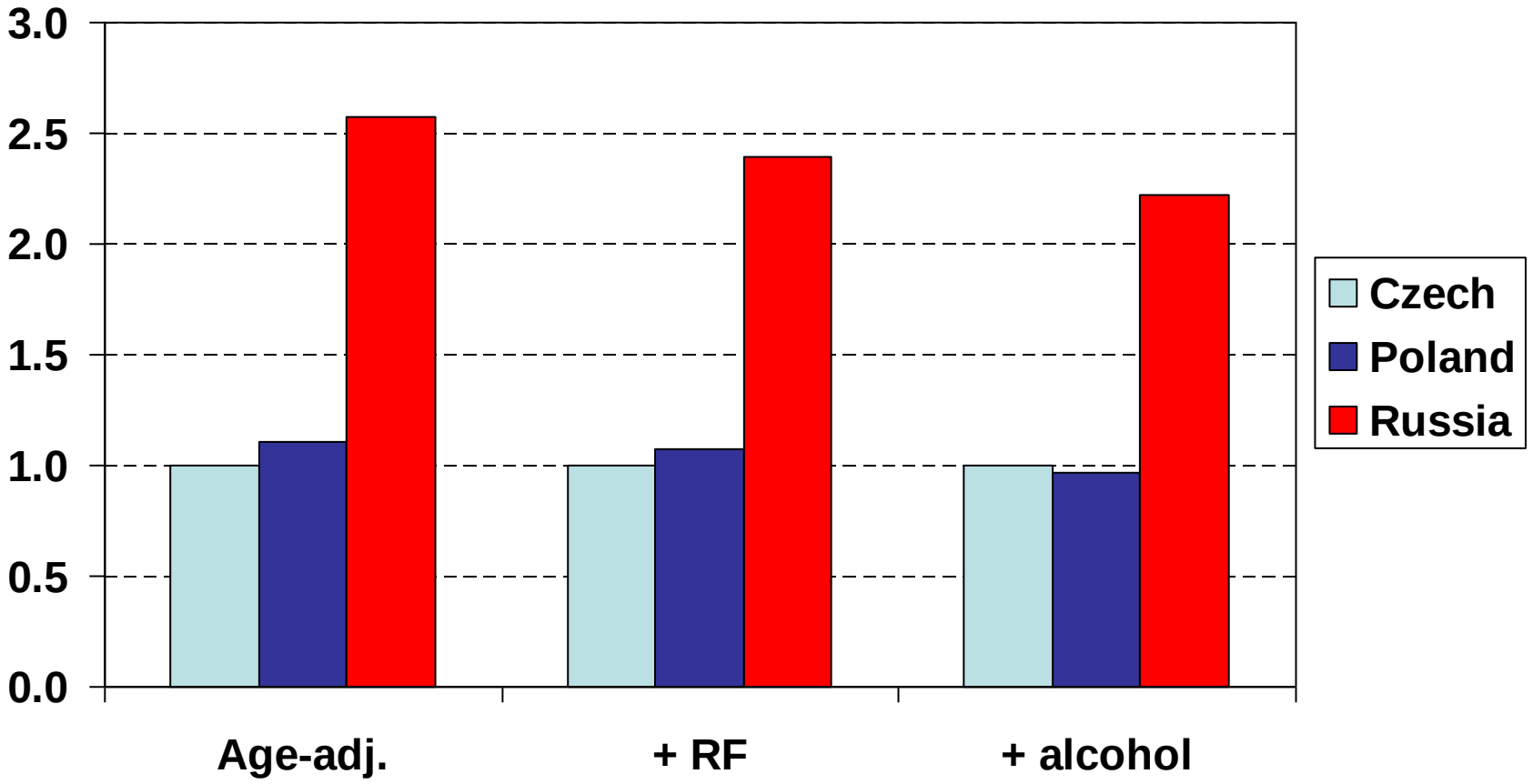
Hazard ratio of CVD death by country (CZ=1)

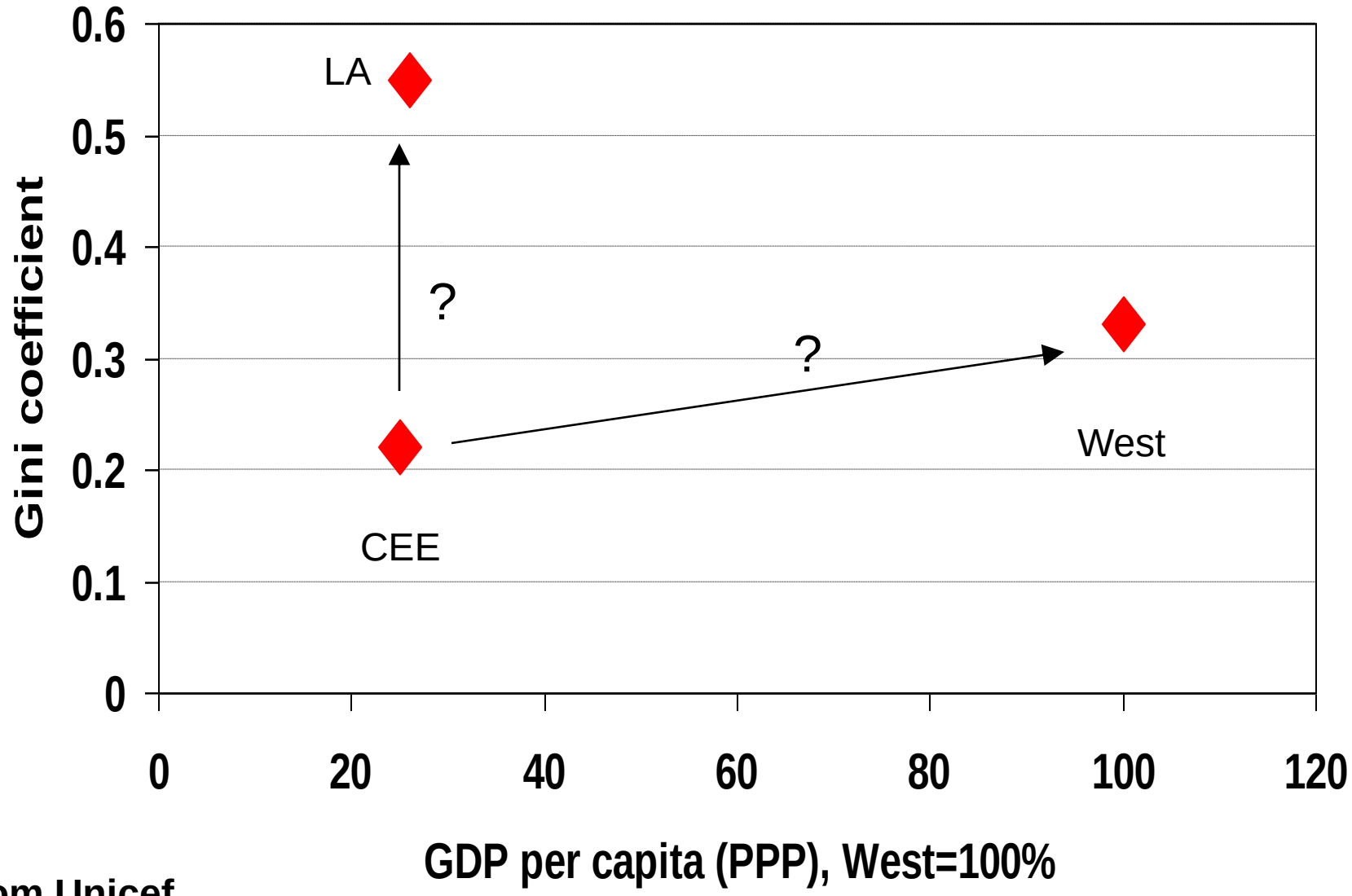


RF: adj. for age, smoking, HT, diabetes, physical act, WHR, vit C intake, control
Alcohol: binge drinking, problem drinking (CAGE) and drinking frequency

If not risk factors and alcohol, then what?

Societal disruption?

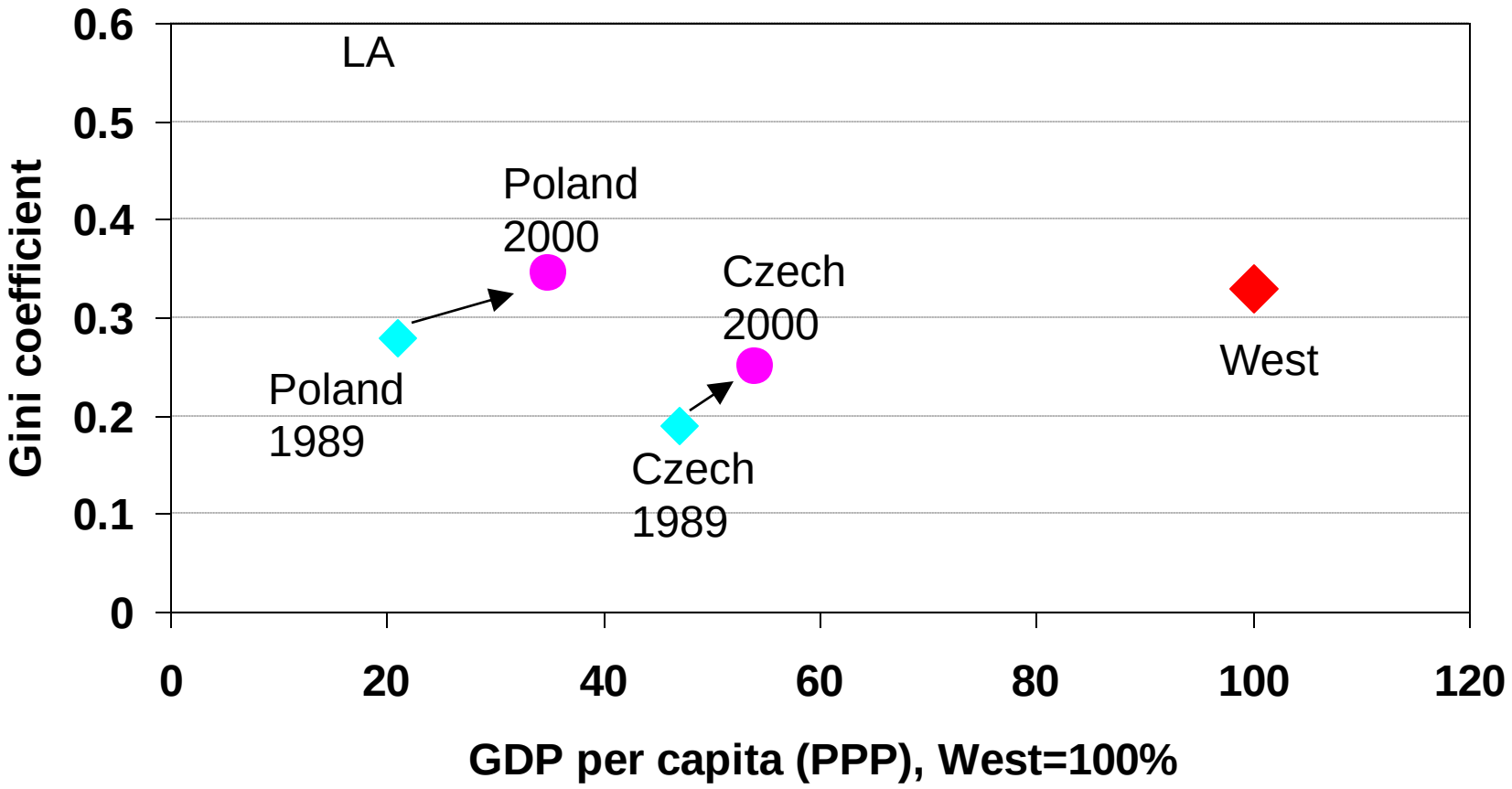
Central and Eastern Europe in 1990



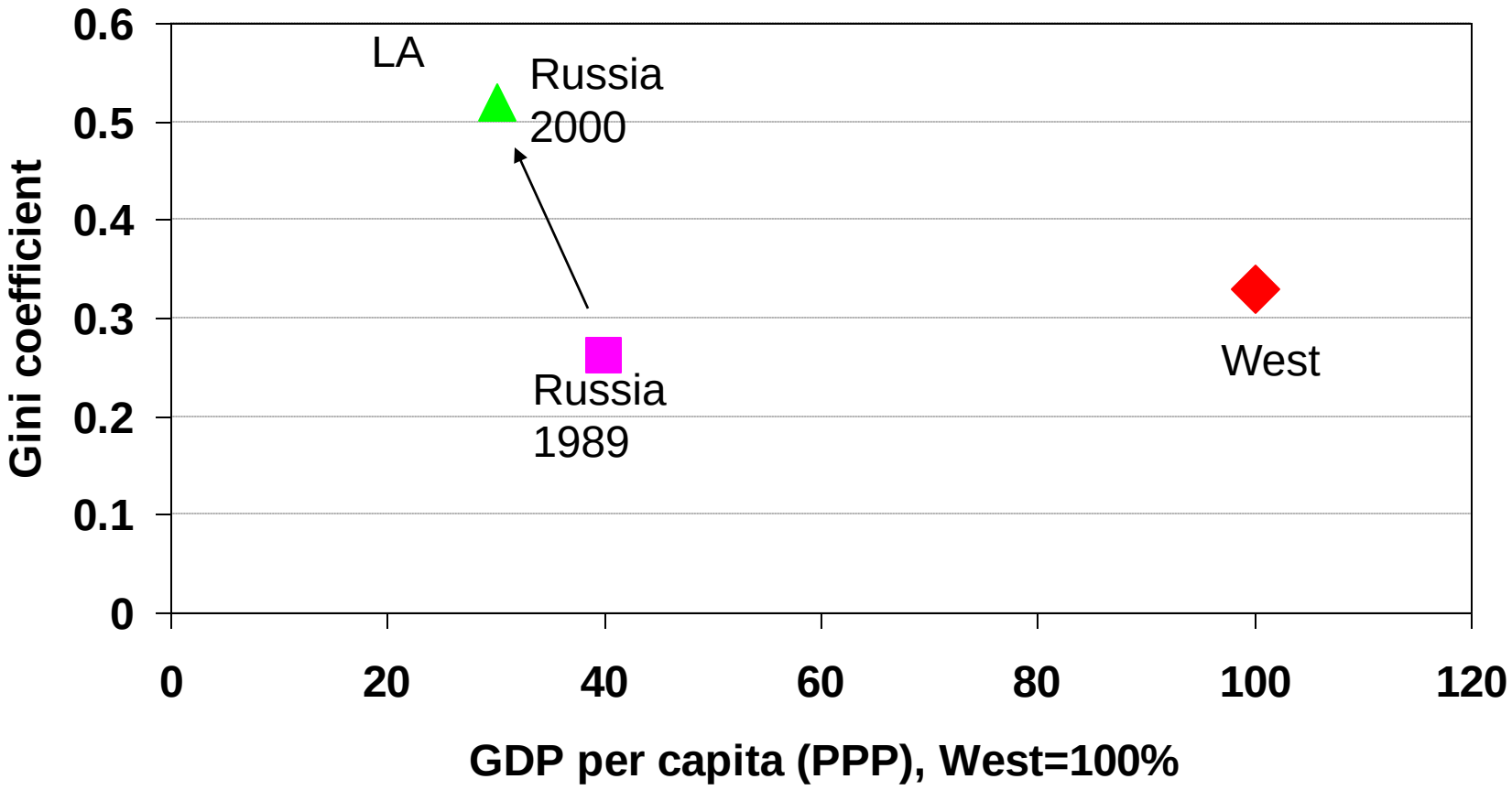
From Unicef

Poland and Czech Rep. 1989-2000

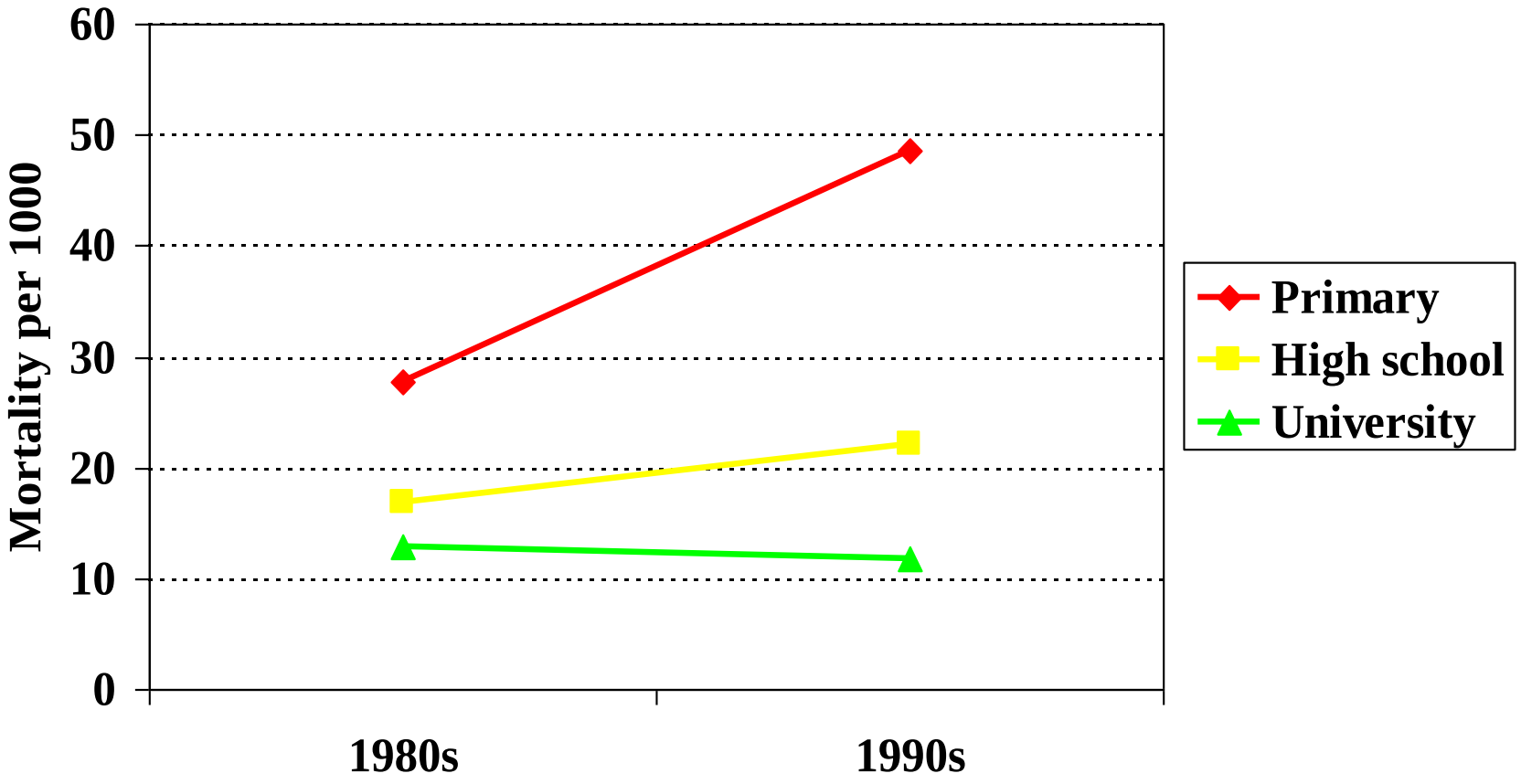
(Data from UNICEF)



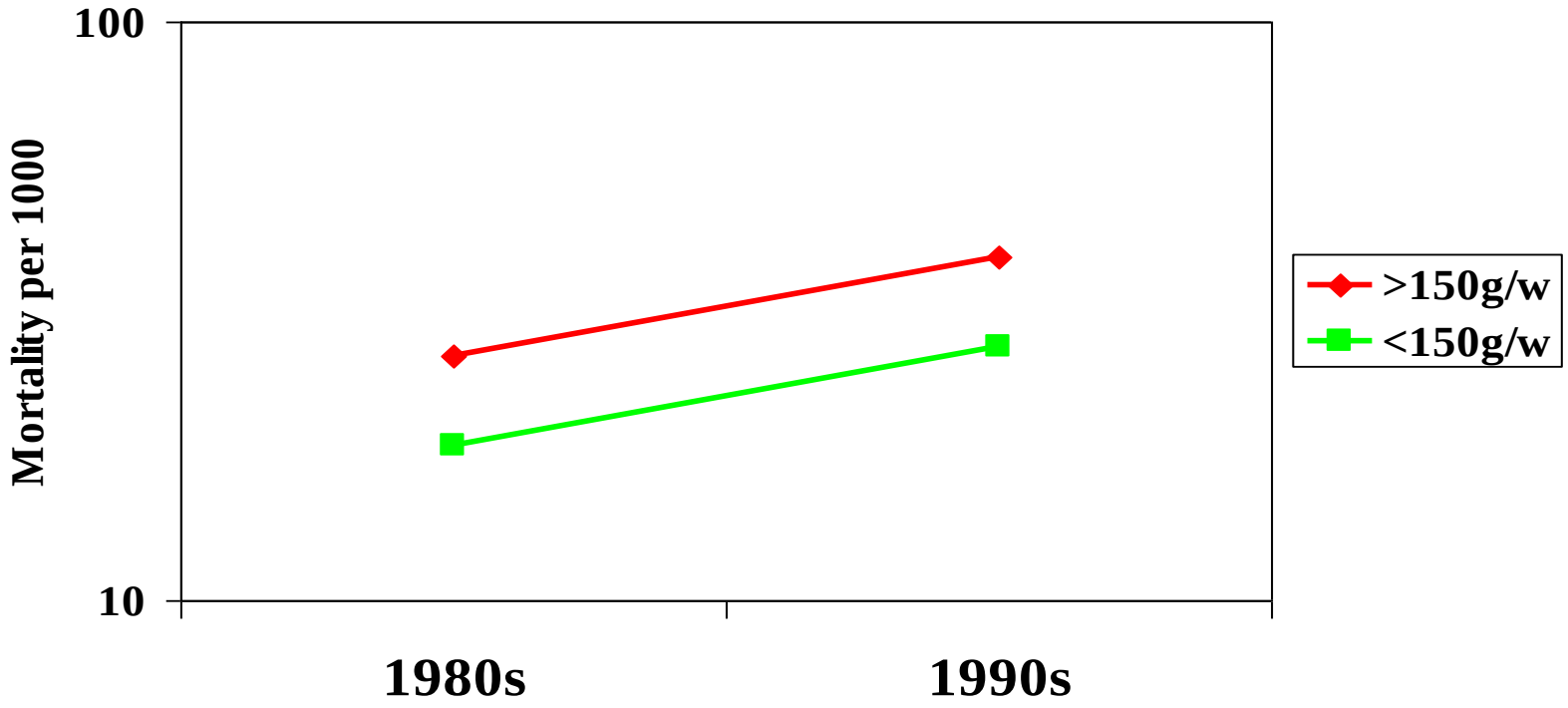
Russia 1989-2000 (Data from UNICEF)



Increase in educational differentials in mortality between 1980s and 1990s in St Petersburg men (based on data from Plavinski et al 2003)



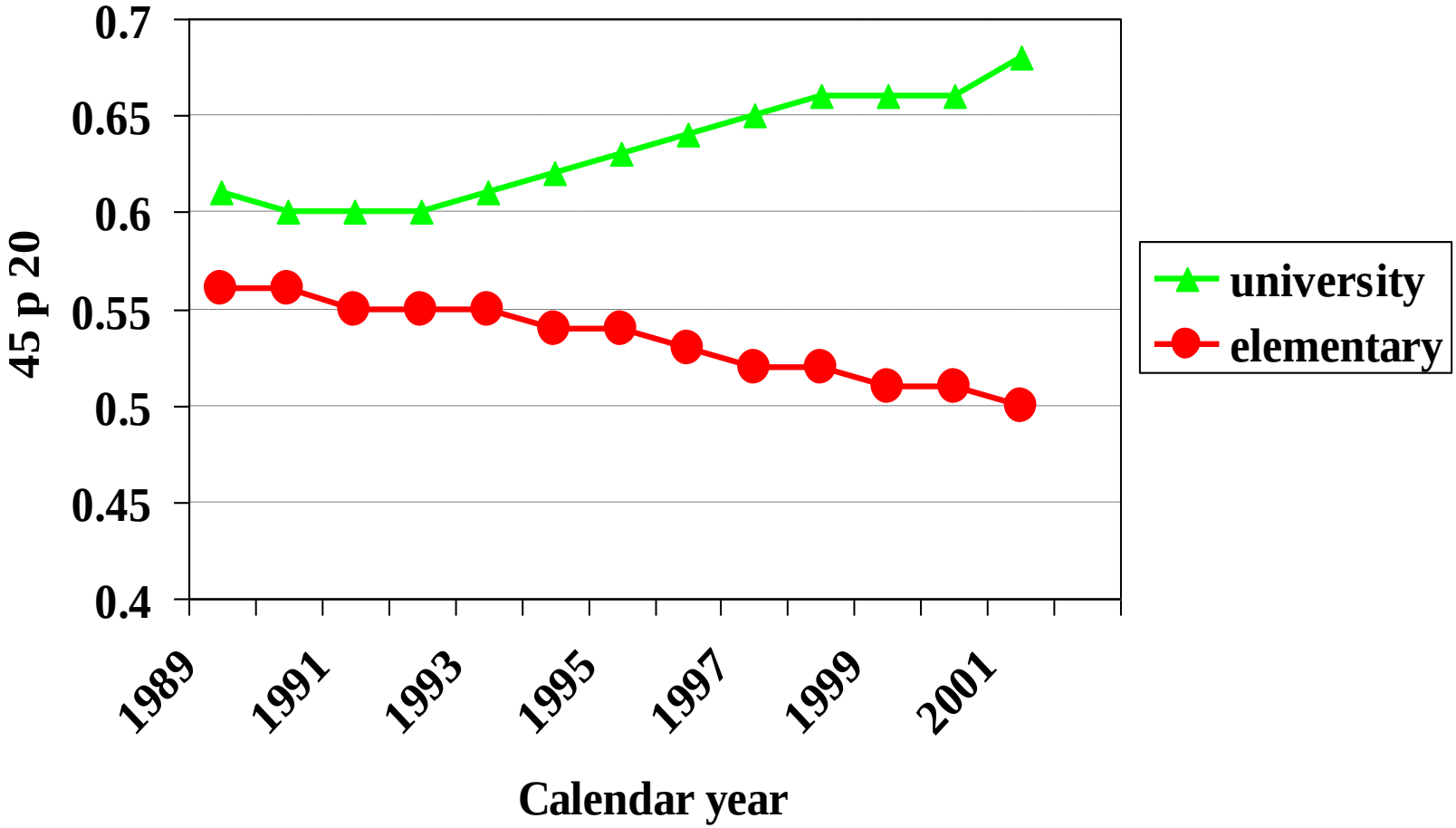
Mortality (per 1000) by weekly alcohol intake in St Petersburg men in 1980s and 1990s



% drinking >150g/w: 19% 15%

From Plavinski et al 2003

Survival in Russian men by education:

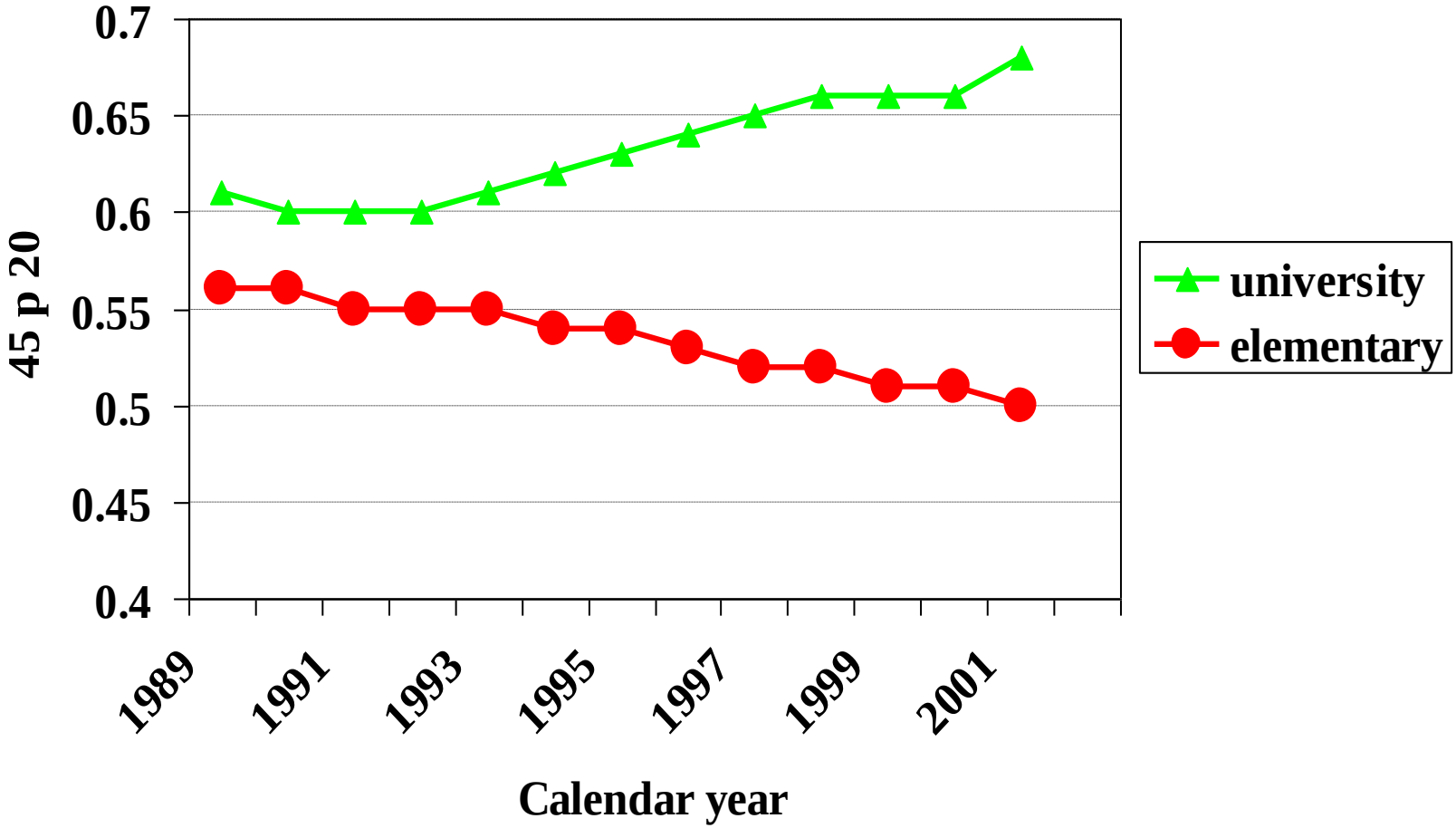


45p20 = probability of living to 65 yrs when aged 20 yrs

Murphy et al, AJPH 2006

Survival in Russian men by education:

Trends remained unchanged after controlling for smoking and alcohol



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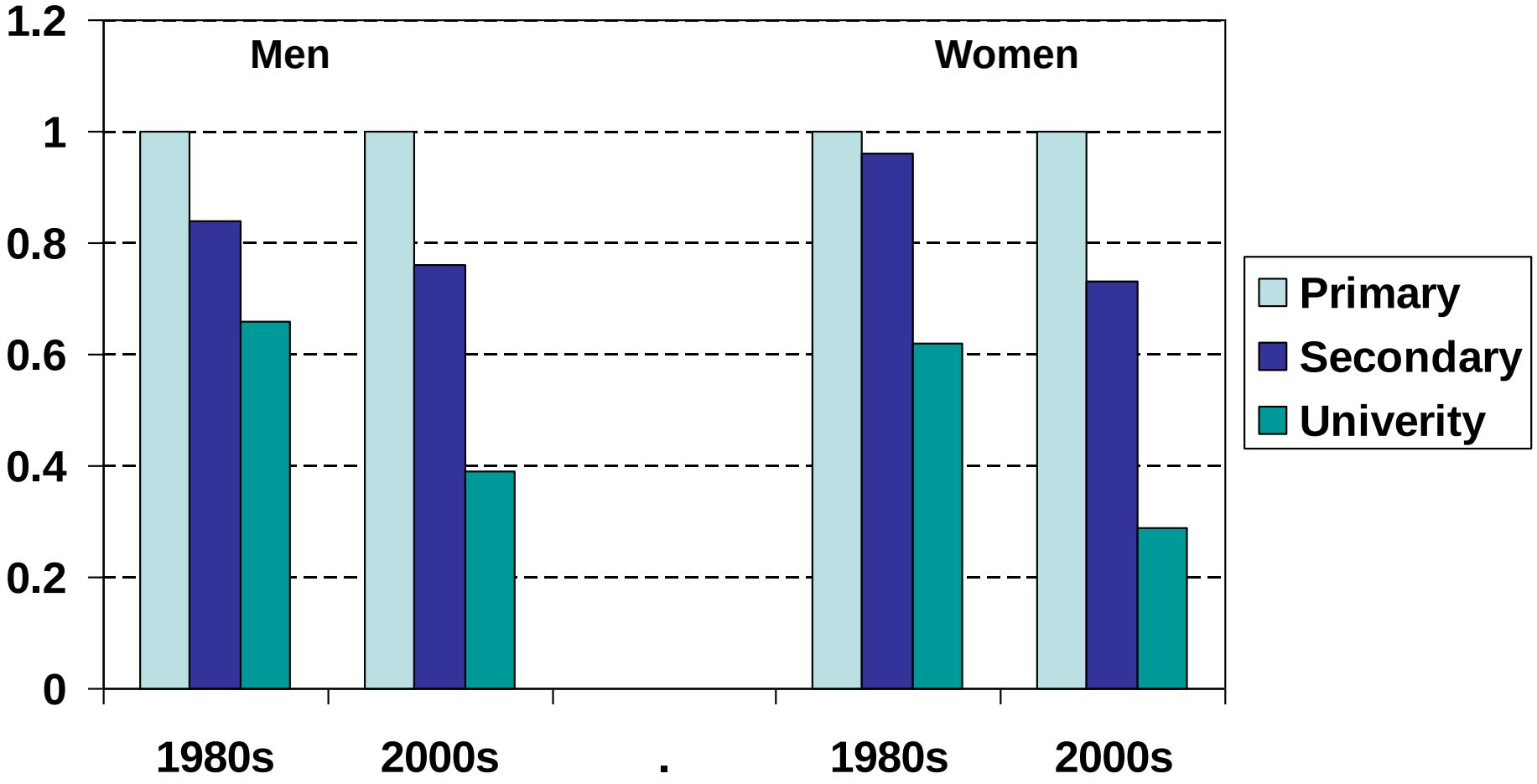
Recent trends: 5-year mortality rate ratios by education in Czech men and women aged 45-64, 1980s and 2000s



Unpublished data

Conclusions

- Huge differences in CVD mortality between Eastern and Western Europe
- Dramatic fluctuations in FSU after 1990
- Conventional risk factors and acute care explain some but not all of the differences between populations
- High rates in FSU may be related to alcohol but results remain inconsistent
- Social changes after 1990 seems to have played a major role in mortality rates but biological mechanisms not clear