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**Immigration and mortality:
The impact of immigration on
educational inequalities in
mortality in Norway**

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Roter visning

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RESEARCH ARTICLE Open Access

Prospective register-based study of the impact of immigration on educational inequalities in mortality in Norway

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Abstract

Background: Differences in mortality with regard to socioeconomic status have widened in recent decades in many European countries, including Norway. A rapid upsurge of immigration to Norway has occurred since the 1990s. The article investigates the impact of immigration on educational mortality differences among adults in Norway.

Background:

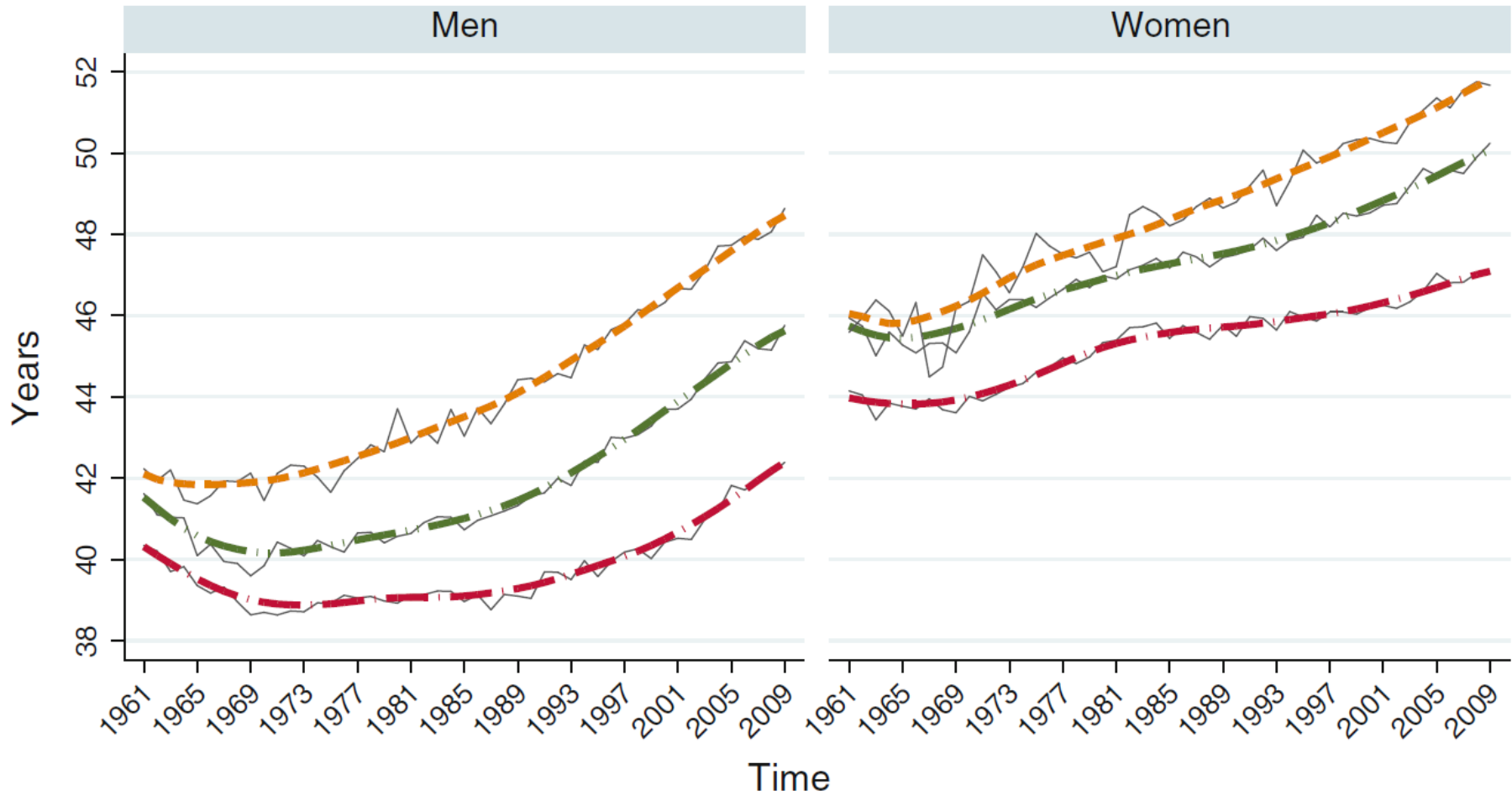
There are substantial socioeconomic inequality in health and mortality in all European countries – that is: systematic inequalities in health corresponding to position in the social hierarchy.

In recent decades, this has come to be regarded as a serious public health issue by health politicians in the EU and in practically every European country, because it

- is unfair (disadvantaged population strata are not only deprived of material welfare and social standing, but also of good health)
- threatens productivity and implies larger health care costs
- and is avoidable (not "natural", but due to social inequalities in level of living, working conditions, knowledge and social networks)

A particular worry: These health and mortality inequalities seem to have widened in many European countries in recent decades.

Life expectancy at age 35 by education



Primary education

Secondary education

Tertiary education

Research from

Norway indicates increasing life expectancy differences since the 1980s

Source: O.A.Steingrimmsdottir et al.: «Trends in life expectancy by education in Norway...» Eur J Epidemiology, 2012

Why larger socioeconomic inequalities in mortality in recent decades?

This is a contested issue in European public health research.

A number of hypotheses have been proposed.

Here, only one will be addressed:

«Increasing socioeconomic inequality in mortality in West-European countries is (partly) an effect of immigration..»

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.. c'tnd:

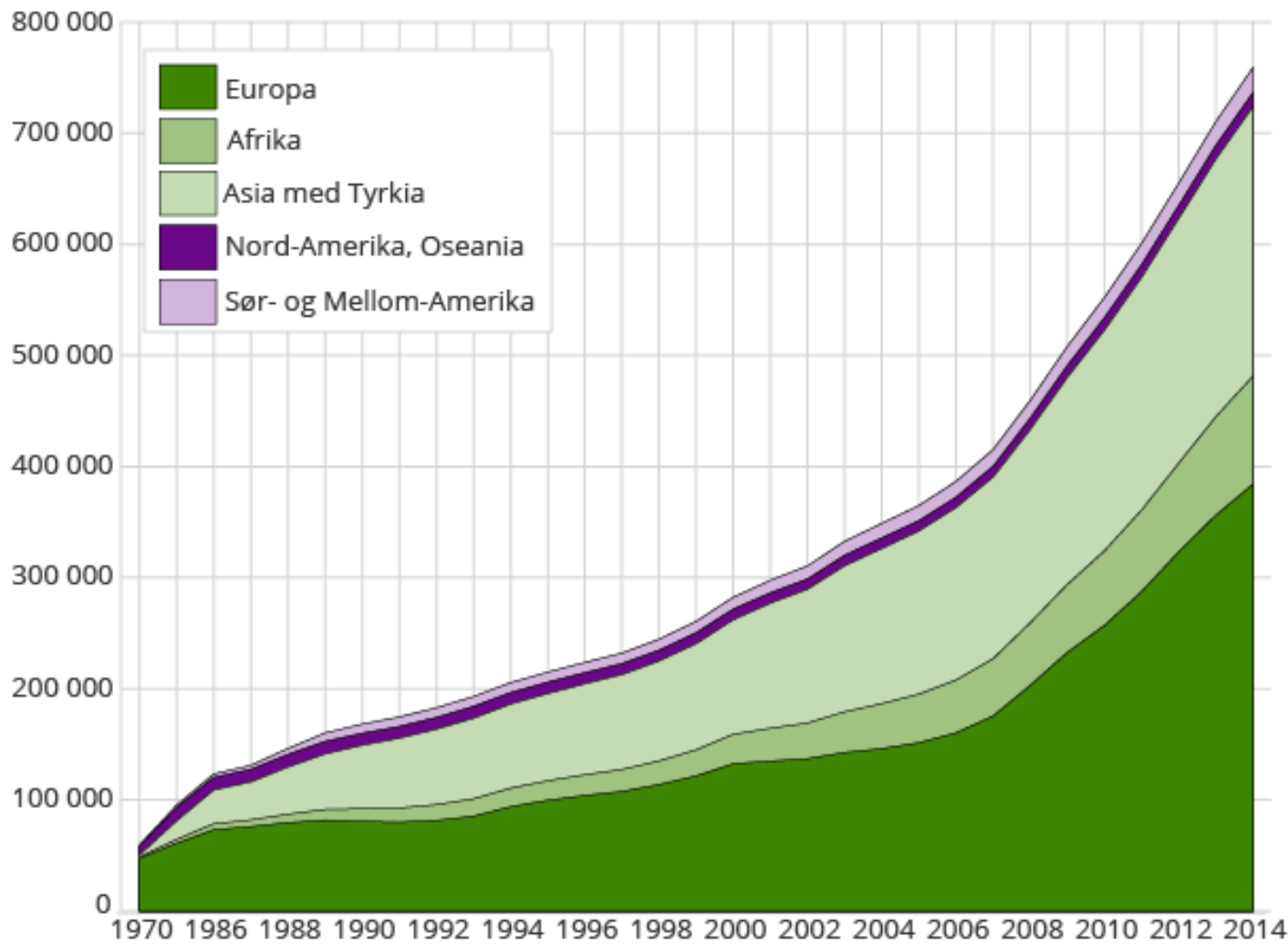
«Increasing socioeconomic inequality in mortality in West-European countries is (partly) an effect of immigration..»

How could this happen?

- In recent decades: large immigration to West-European countries**
- Often, immigrants have low education, low income, and they often enter manual worker occupations**
- Due to their background and their present life situation in the destination country, they may have higher mortality**
- Therefore, overall socioeconomic inequality in mortality could (to some extent) be due to the mortality of the immigrant population**

Number of immigrants registered in the population registry as permanently residing in Norway 1970-2014.

Source: Statistics Norway: Statistics Norway. Immigrants here = foreignborn and Norwegian-born with two foreignborn parents



Kilde: Statistisk sentralbyrå.

In Norway 2014: Ca. 14 per cent of the population = immigrants as defined here

Study design:

Examination of two separate data sets, both based on linking individual information from administrative registers (all information which could be used for identifying concrete individuals has been removed from the data before given to researchers).

The 1993 data file – all individuals registered as permanently residing in Norway (both Norwegian and foreign citizens) aged 20-60 years as of January 1, 1993; information on deaths 1993-1996.

The 2008 data file – all individuals registered as permanently residing in Norway (both Norwegian and foreign citizens) aged 20-60 years as of January 1, 2008; information on deaths 2008-2011.

A number of variable issues (educational information, the calculation of personyears, etc....) and analytic issues (e.g., relative or absolute differences)

Table 1 Descriptive statistics

	1st January 1993 sample, age 20-69			1st January 2008 sample, age 20-69		
	All	Natives	Immigrants	All	Natives	Immigrants
Baseline study cohort	2,600,945	2,465,694	135,251	2,840,119	2,541,288	298,831
Education						
Missing %	3.2	1.3	37.8	2.7	0.7	19.9
Lower %	48.5	49.8	24.5	36.6	37.3	30.9
Medium %	27.7	28.3	16.9	30.0	31.1	20.6
Higher %	20.6	20.5	20.9	30.7	30.9	28.6
No. deaths	46,352	44,867	1,485	39,130	36,844	2,286
Personyears	10,244,727	9,743,461	501,266	11,197,343	10,072,958	1,124,385

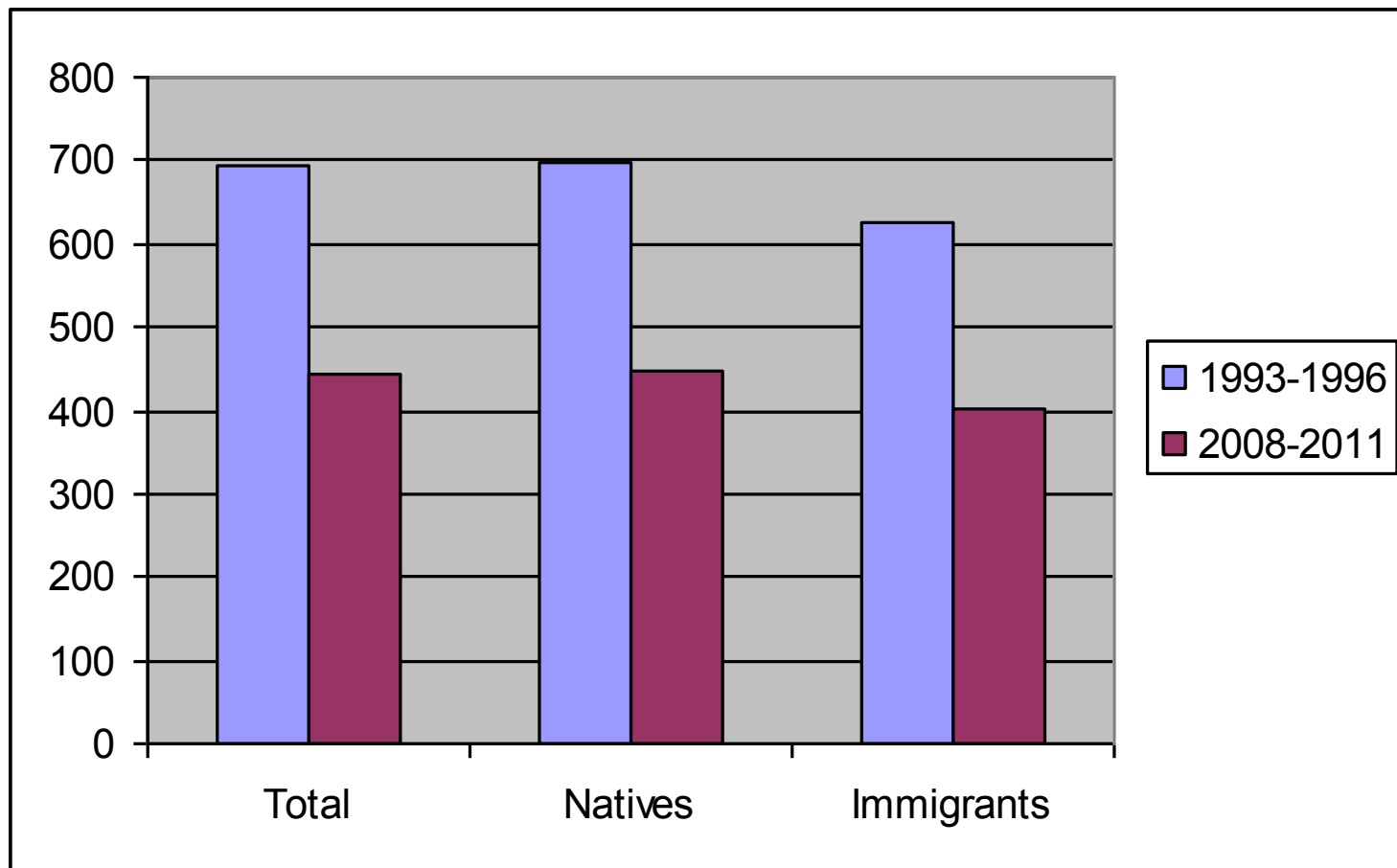
Natives = no immigrant connection; immigrants = foreign-born with foreign-born parents; others (e.g., second-generation immigrants, mixed immigrant/parents, etc. 3.2% of total 20-69 population in 1993, 4.7% in 2008) are not included in the analyses. No. (number) deaths/personyears refer to 1993-1996 and 2008-2011 respectively.

Percentage of immigrants: 5,2% in 1993, 10,5% in 2008.

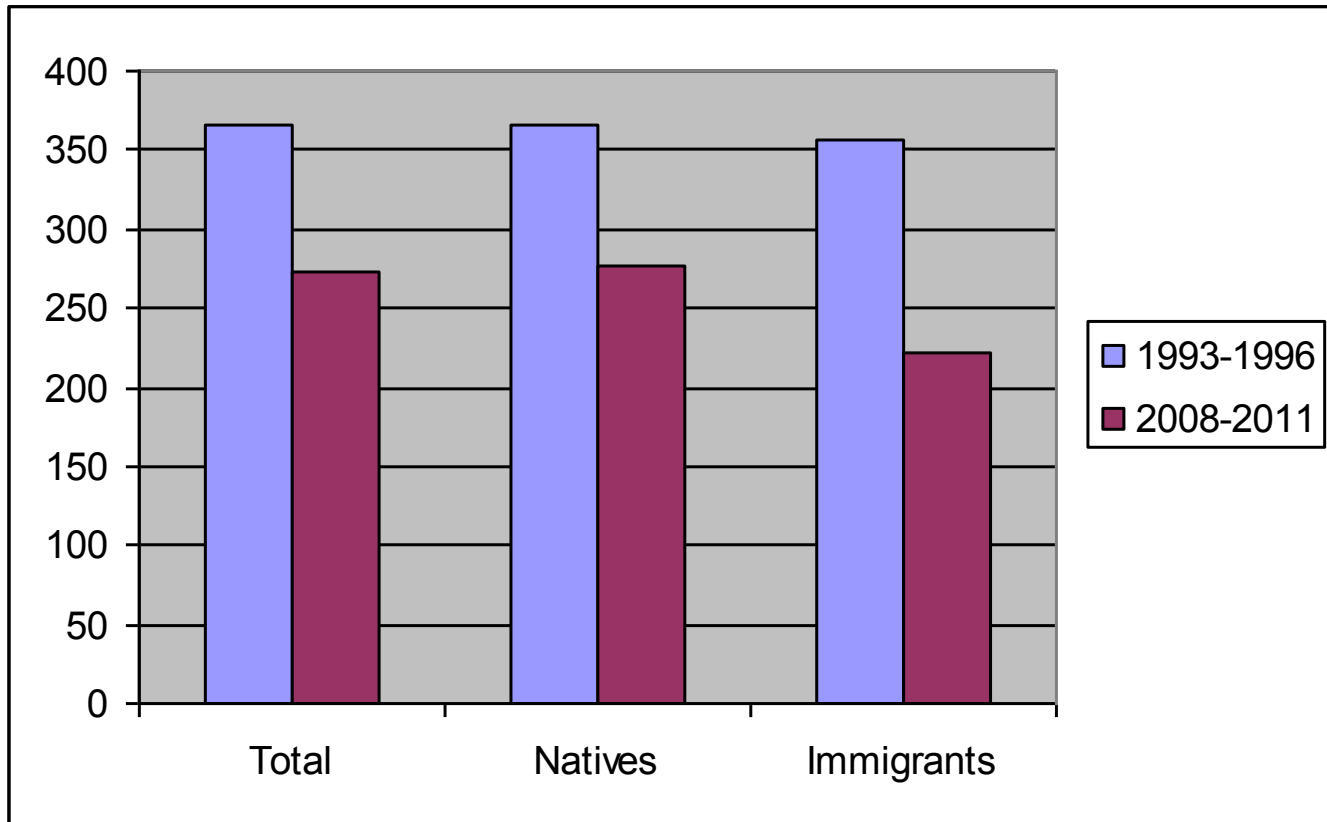
Table 3 Absolute educational inequalities in mortality. Deaths 1993-1996 / 2008-2011 per 100,000 personyears, age 20-69 at baseline, age-adjusted

	1st January 1993 sample, age 20-69			1st January 2008 sample, age 20-69		
	All	Natives	Immigrants	All	Natives	Immigrant
Men						
Total	693	697	625	444	448	402
Education						
Higher	445	445	477	214	214	228
Medium	599	598	648	317	319	300
Lower	823	825	743	500	514	356
Lower incl. missing	824	833	667	672	691	576
Difference*	379	388	190	458	477	348
Women						
Total	365	365	357	273	276	222
Education						
Higher	243	243	243	140	141	136
Medium	300	296	356	174	177	148
Lower	393	392	425	285	293	195
Lower incl. missing	396	397	395	374	385	307
Difference*	153	154	152	234	244	171

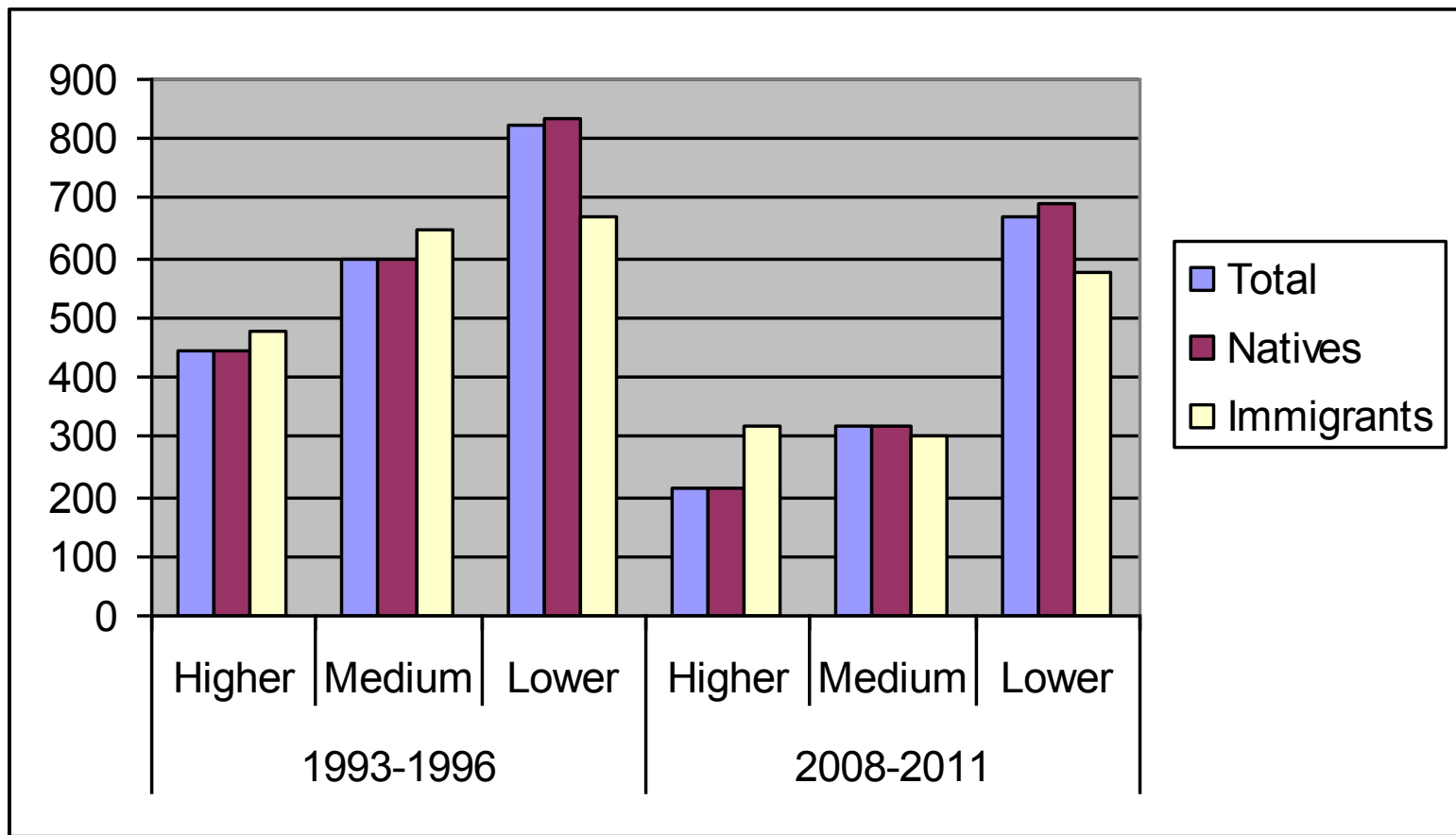
Lower incl.missing: Missing educational information pooled with lower education. Difference* = lower incl. missing minus higher.



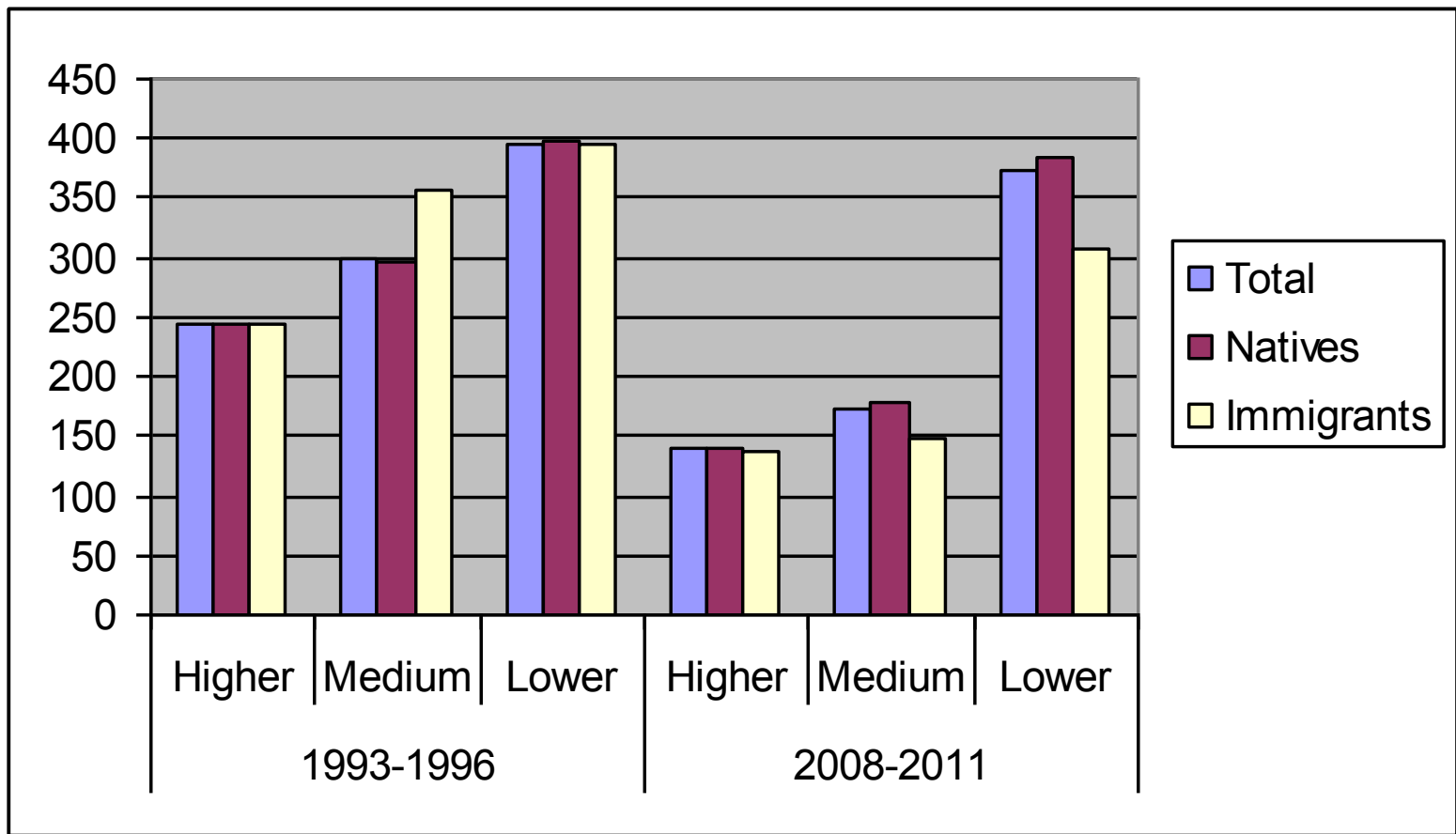
Men aged 20-69 at baseline (1993 and 2008): Age-adjusted number of deaths 1993-96 and 2008-11 per 100,000 personyears



Women aged 20-69 at baseline (1993 and 2008): Age-adjusted number of deaths 1993-96 and 2008-11 per 100,000 personyears



Educational inequalities among men aged 20-69 at baseline (1993 and 2008): Age-adjusted number of deaths 1993-96 and 2008-11 per 100,000 personyears



Educational inequalities among women aged 20-69 at baseline (1993 and 2008): Age-adjusted number of deaths 1993-96 and 2008-11 per 100,000 personyears

Results (1):

- 1. Overall mortality for adults declined markedly from the mid-1990s to the late 2000s, both for men and women, and both in the total population, among natives, and among immigrants.***
- 2. Immigrants had generally lower mortality than natives (exception: women 1993-1996).***

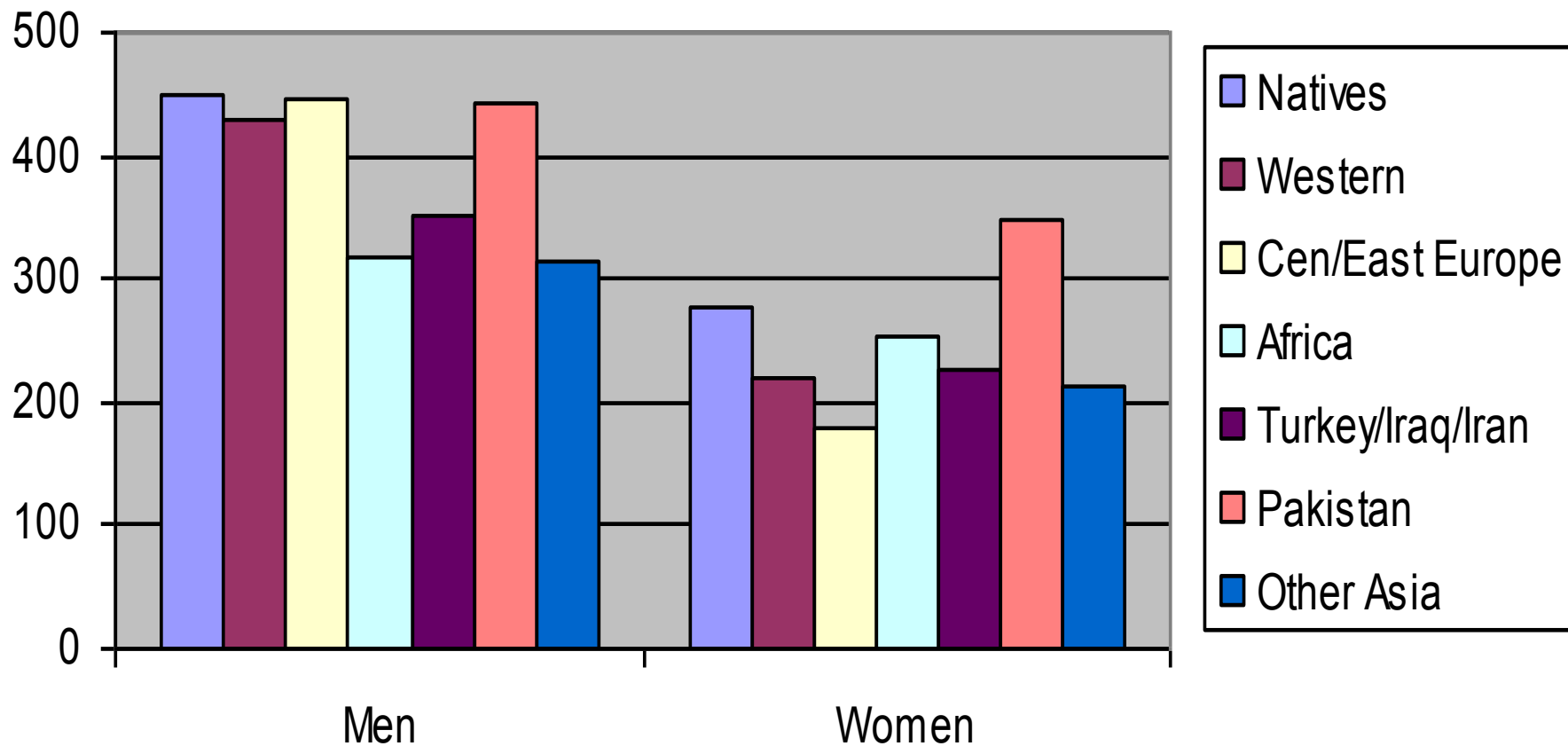
Results (2):

3. Among those with higher or medium education, the mortality levels of natives and immigrants were fairly similar.

4. Among those with lower education, mortality among immigrants was generally lower.

CONCLUSION:

- 1. Without immigration, overall mortality for adults would have been slightly higher***
- 2. Without immigration, educational inequality in mortality would have been larger***
- 3. Without immigration, there would have been slightly more increase in educational mortality inequality from 1993-96 to 2008-11***



Mortality age 20-69 and country/world region background: Age-adjusted number of deaths 2008-11 per 100,000 personyears

WHY HAVE IMMIGRANTS LOWER MORTALITY?

- 1. "Healthy migrant effect" ?***
- 2. The great diversity among immigrants: Country origin, reason for migration, level of, living in destination country, lifestyles, discrimination ...***
- 3. A "salmon effect"?***
- 4. Will the differences disappear over time?***

(Thanks for your attention!)