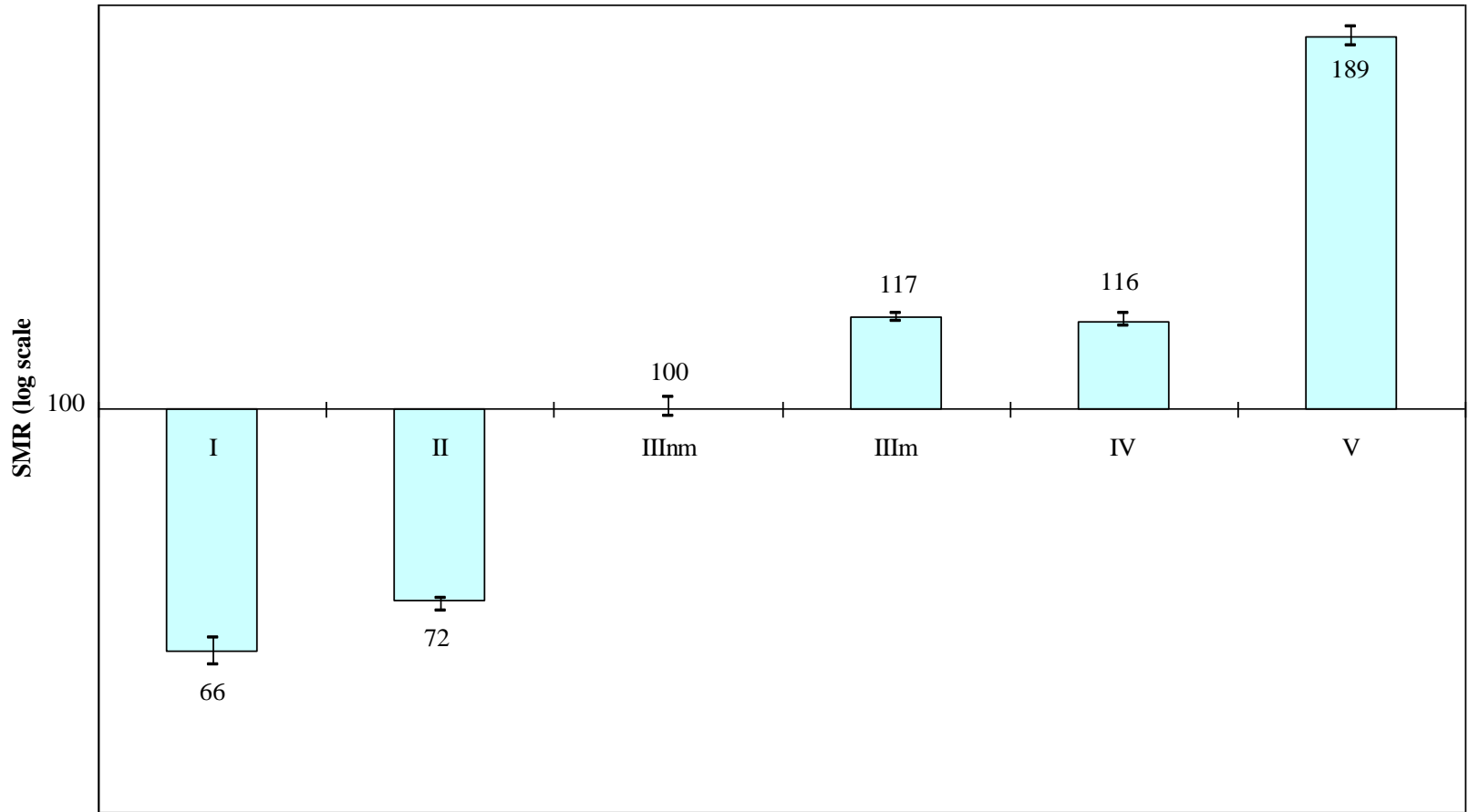


# Social Inequalities in Avoidable Mortality

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**SMRs by Social Class based on Occupation,  
men aged 20-64, England and Wales 1991-93**

**(Fitzpatrick, 2003)**

# Theoretical orientation

Link and Phelan's (1995) "fundamental cause" hypothesis

*...socioeconomic disparities endure despite changing mechanisms because socioeconomic status embodies an array of resources, such as money, knowledge, prestige, power, and beneficial social connections, that protect health no matter what mechanisms are relevant at any given time...*

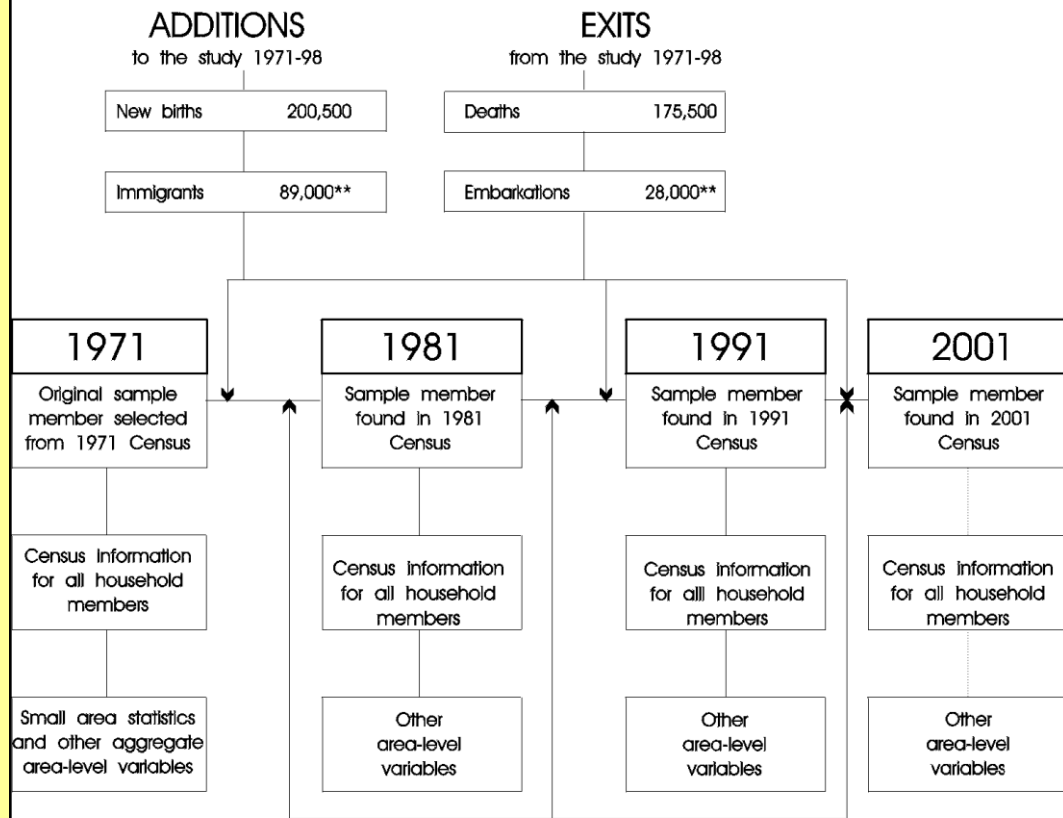
Leads to a hypothesis that socioeconomic status will be more strongly associated with causes of death that are preventable or amenable to medical intervention

## **Protean**

*versatile, mutable, capable of assuming many forms*

Phelan et al. (2004) study – US National Longitudinal Mortality Study, nine year follow up, SEP measures income and education

# The Structure of the ONS Longitudinal Study (LS) and events recorded from 1971-1998



## EVENTS 1971-98

(all sample members)

Births to sample women	189,500
Births to sample men (1971-8, 1981)	49,500
Infant deaths	2,000*
Widow(er)hoods	59,500*
Cancer registrations	52,500#

Most events cover the period to the end of 1998. However:  
 \* = 1971 to end 1997  
 # = 1971 to end 1992  
 \*\* = 1971 to part of 1999

Note: Death registration data now available to 2006

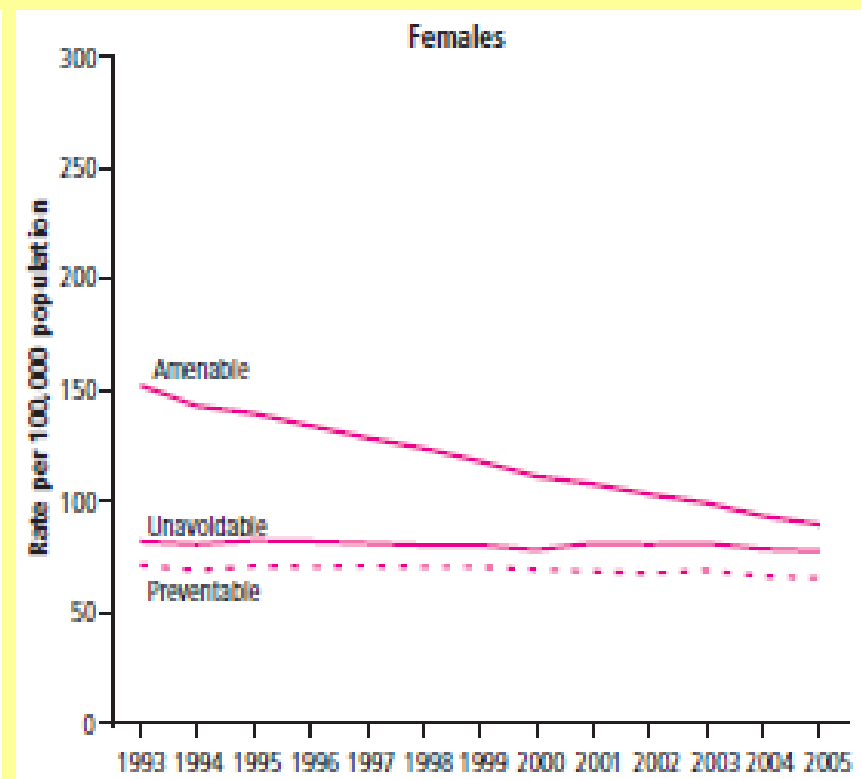
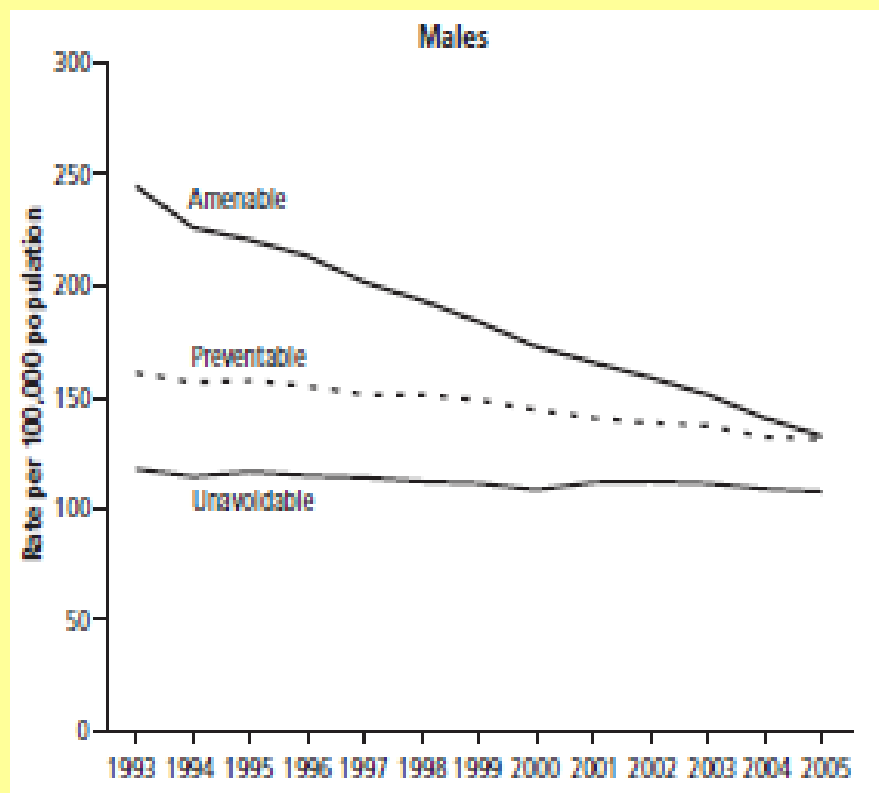
# Mortality Type Definitions

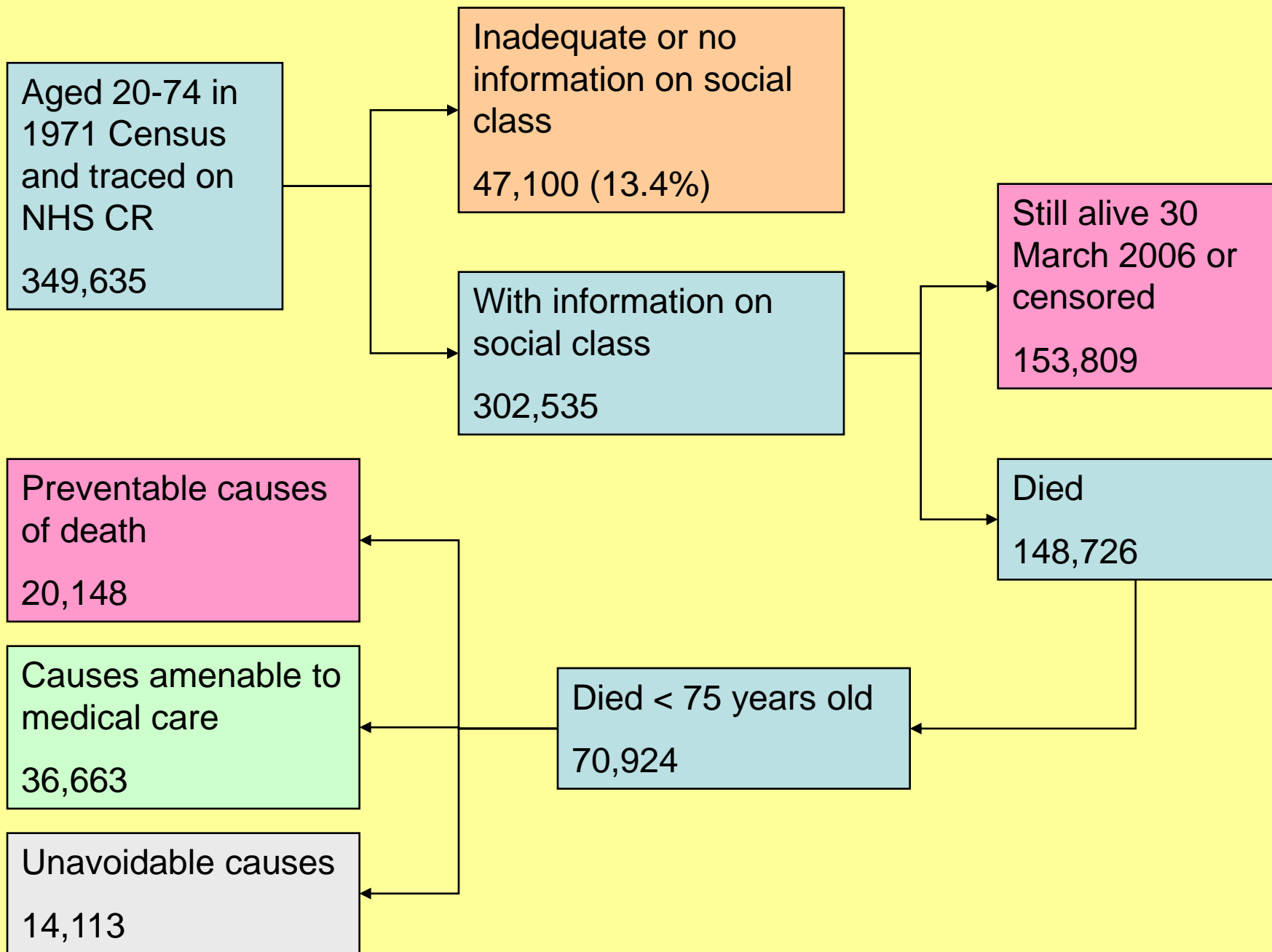
1. **Amenable mortality** – deaths occurring before age 75 from causes that are considered amenable to medical intervention. Examples include: breast cancer, cancer of colon and rectum, leukaemia, gastric and duodenal ulcer, and hypertensive diseases. Deaths from these causes may be avoidable through treatment of the condition after onset.
2. **Preventable mortality** – deaths occurring before age 75 from causes that are considered to be preventable through (a) individual behaviour, and/ or (b) public health measures limiting individual exposure to harmful substances/conditions (e.g. through things such as social interventions or immunisation programmes). Examples include: lung cancer, illicit drug use disorders, land transport accidents, and Hepatitis B. Deaths from these causes are avoidable through prevention of the disease, or external event, occurring altogether.
3. **Unavoidable mortality** – deaths occurring before age 75 from causes that are considered both (a) not amenable to medical intervention and (b) not preventable through changes in individual behaviour/public health measures. Examples include cancers of the pancreas, ovary, and prostate.

Cause of death	ICD-9	ICD-10
<b>Page, Tobias and Glover Definition: Avoidable: Amenable to medical care</b>		
<b>Condition group and cause</b>		
Tuberculosis	010-018,137	A15-A19, B90
Selected invasive bacterial and protozoal infection	034-036, 038, 084, 320, 681, 682	A38-A41, A46, A48,1 B50-B54, G00, G03, J02.0, L03
Malignant neoplasm of colon and rectum	153, 154	C18-C21
Malignant melanoma of skin	172	C43
Other malignant neoplasms of skin	173	C44
Malignant neoplasms of breast	174-175	C50
Malignant neoplasm of corpus uteri and uterus unspecified	179, 182	C54, C55
Malignant neoplasm of cervix uteri	180	C53
Malignant neoplasm of bladder	188	C67
Malignant neoplasm of thyroid gland	193	C73
Hodgkin's disease	201	C81
Lymphoid leukaemia - acute/ chronic	204.0, 204.1	C91.0, C91.1
Benign neoplasms	210-229	D10-D36
Disorders of thyroid gland	240-246	E00-E07
Diabetes mellitus	250	E10-E14
Epilepsy and status epilepticus	345	G40, G41
Rheumatic and other valvular heart disease	390-398	I01-I09
Hypertensive diseases	401-405	I10-I15
Ischaemic heart diseases	410-414	I20-I25
Cerebrovascular diseases	430-438	I60-I69
Nephritis and nephrosis	580-589	N00-N07, N17-N19, N25-N27
Obstructive uropathy & prostatic hyperplasia	592, 593.7, 594, 598, 599.6, 600	N13, N20, N21, N25, N40, N99.1
Asthma	493	J45, J46
Peptic ulcer	531-534	K25-K28
Acute abdomen, appendicitis, intestinal obstruction, cholecystitis / lithiasis, pancreatitis, hernia	540-543, 550-553, 574-577	K35-K38, K40-K46, K80-K83, K85, K86.1, K86.9, K91.5
Congenital malformations, deformations and chromosomal anomalies	740-759	Q00-Q99
Complications of perinatal period	760-779	P00-P96

Condition group and cause	ICD-9	ICD-10
<b>Page, Tobias and Glover Definition: Avoidable: Preventable</b>		
HIV/AIDS	042-044	B20-B24
Viral hepatitis	070	B15-B19
Malignant neoplasm of lip, oral cavity and pharynx	140-149	C00-C14
Malignant neoplasm of oesophagus	150	C15
Malignant neoplasm of stomach	151	C16
Malignant neoplasm of liver	155	C22
Malignant neoplasm of trachea, bronchus and lung	162	C33, C34
Alcohol-related diseases, excluding external causes	291, 303, 305.0, 425.5, 571.0-5, 571.8, 571.9	F10, G31.2, G62.1, I42.6, K29.2, K70, K73, K74 (excl. K74.3-K74.5), K86.0
Illicit drug use disorders	292, 304, 305.2-305.9	F11-F16, F18, F19
Aortic aneurysm and dissection	441	I71
DVT with pulmonary embolism	415.1, 451.1-451.2, 451.9, 453.9	I26, I80.1-I80.3, I80.9, I82.9
Influenza	487	J10-J11
Pneumonia	480-486	J12-J18
COPD	490-492, 496	J40-J44
Land transport accidents	E800-E829	V01-V89
Accidental poisonings	E850-E869	X40-X49
Falls	E880-E886, E888	W00-W19
Exposure to fire, smoke and flames	E890-E899	X00-X09
Accidental drowning and submersion	E910	W65-W74
Fracture, cause unspecified	E887	X59 with secondary cause S72
Suicide and self inflicted injuries	E950-E959, E980-E989 (excl. E988.8)	X60-X84, Y10-Y34 (excl. Y33.9)
Homicide/ assault	E960-E969, E988.8	X85-Y09, Y33.9

Age-standardised mortality rates by mortality type 1993–2005  
(Page, Tobias and Glover definition)  
from Wheller et al. (2007)







1971                      1981                      1991                      2001                      2006 (35 years)

N = 131,318                      Still alive & < 75

N = 70,924                      Died < 75: yrs at risk = 1971 to year of death

N = 77,802                      Alive at 75: yrs at risk = 1971 to 75 birthday

N = 4,005                      Embarkations: yrs at risk = 1971 to yr left (no return)

N = 18,486                      No embarkation record, no death record +  
no subsequent Census record: yrs at risk =  
1971 to last Census + [5 years or random]

Total: 302,535 individuals and 6,994,306 years at risk

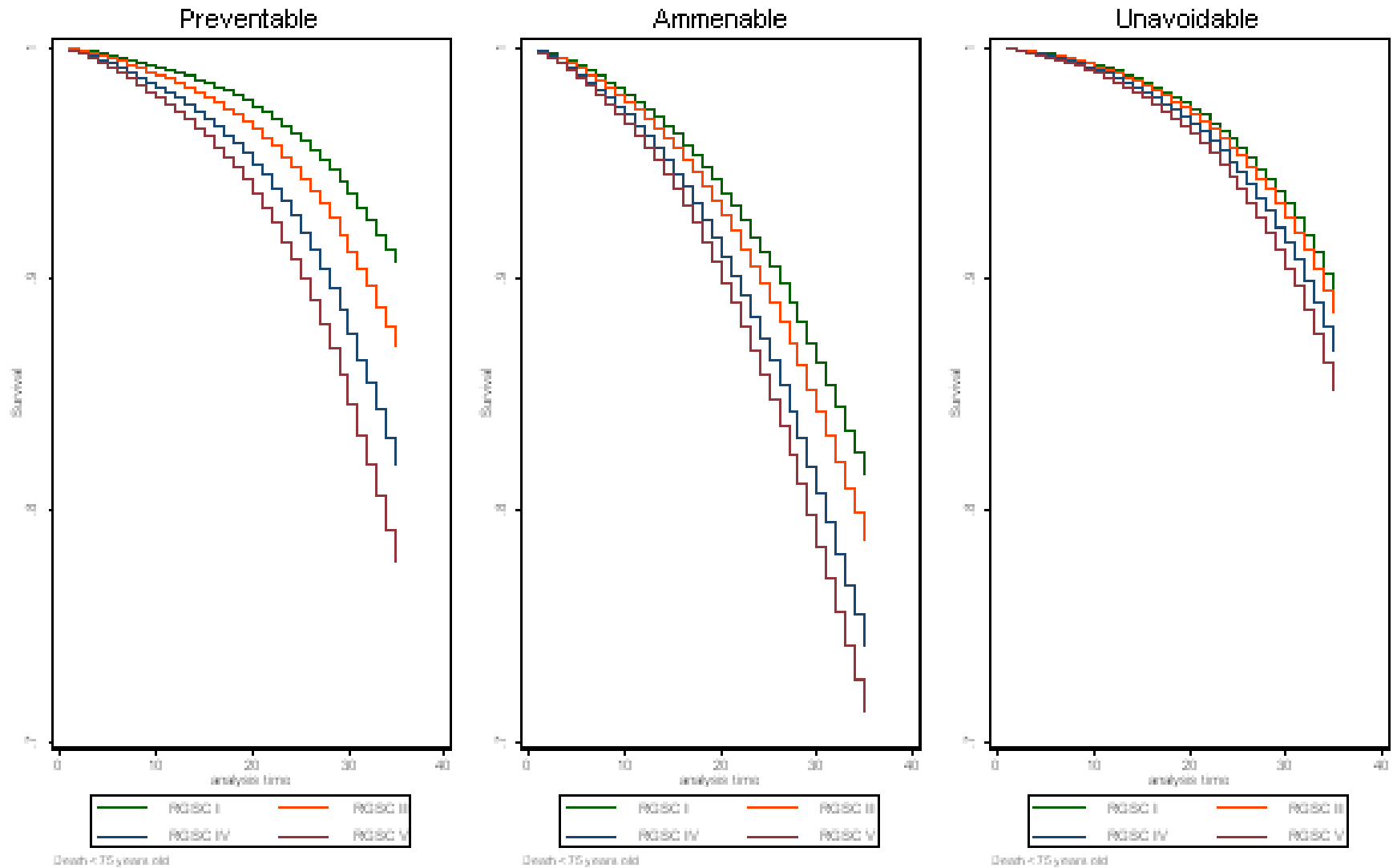
RGSC 1971	Freq.	Percent
-----+-----		
RGSC I	13,239	4.38
RGSC II	57,133	18.88
RGSC IIIN	55,083	18.21
RGSC IIIM	91,743	30.32
RGSC IV	61,210	20.23
RGSC V	24,127	7.97
-----+-----		
Total	302,535	100.00

Statistical analysis: Three Cox proportional hazard models adjusting for sex and age (in 1971).

RGSC “effect” coded to compare classes with overall sample risk.

# Estimated survival functions by social class.

Page, Tobias and Glover definitions



## Social class differences in mortality types

