

Topical issues in CI pricing



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8 April 2009

Singapore Actuarial Society



Issues



Recent views on CI guarantees
How different reinsurers viewpoints have changed
Impact of new definitions and new diseases
Recent trends in key diseases & future medical advances

CI Guarantees..... a brief bit of history!



Pre 2003, CI market was **very competitive**

Most insurers offered both guaranteed & reviewable CI policies

Small margin between pricing of reviewable & guaranteed CI – most sales were guaranteed

Volumes were excellent – almost 1.2m policies sold in 2002, up almost 50% on prior year

Competition over number of definitions

Large proportion reinsured (90% common) often on nil-premium structures. Mostly with 2 reinsurers (GE & Swiss)



CI guarantees – so what changed?!



Swiss Re **withdrew** from the market thus reducing capacity
Other reinsurers either **increased prices** or backed away from long-term guarantees – some offered 5 years!
Many insurers also withdrew guaranteed product (e.g. Zurich, AEGON, Pru)
The insurers that remained active increased prices by 50-60% in the first couple of months of 2003
Prompted “**fire sale**” as belief grew that the future for guaranteed CI was bleak

CI Guarantees – outcome?



Insurers **reinsured less**

Maximum benefits reduced – sometimes as low as £250k

Maximum term was capped at 25 years

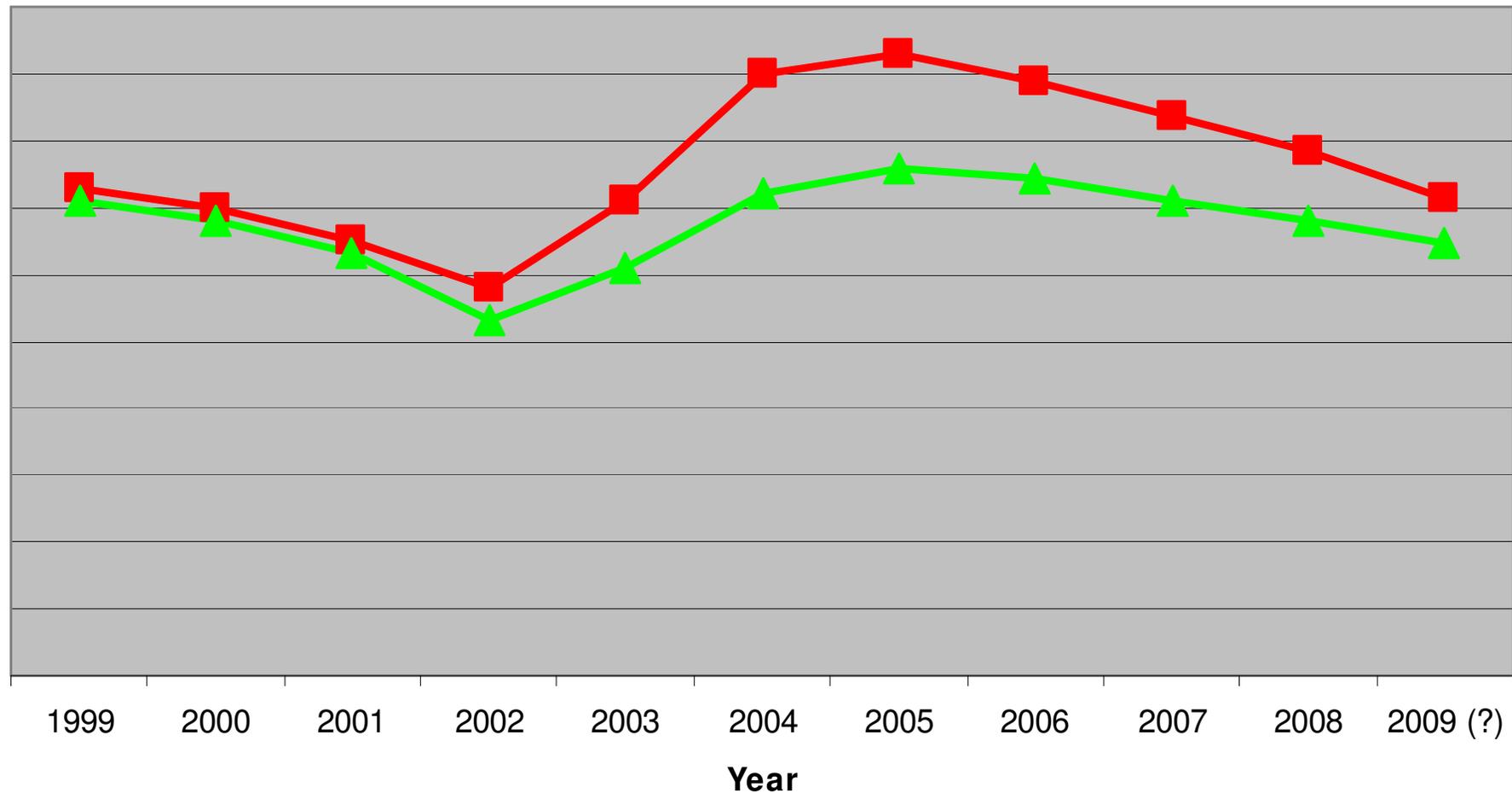
Stand-alone CI was priced same as Accelerated (or withdrawn)

Volumes fell to around half the 2002 peak – 550k policies in 2006

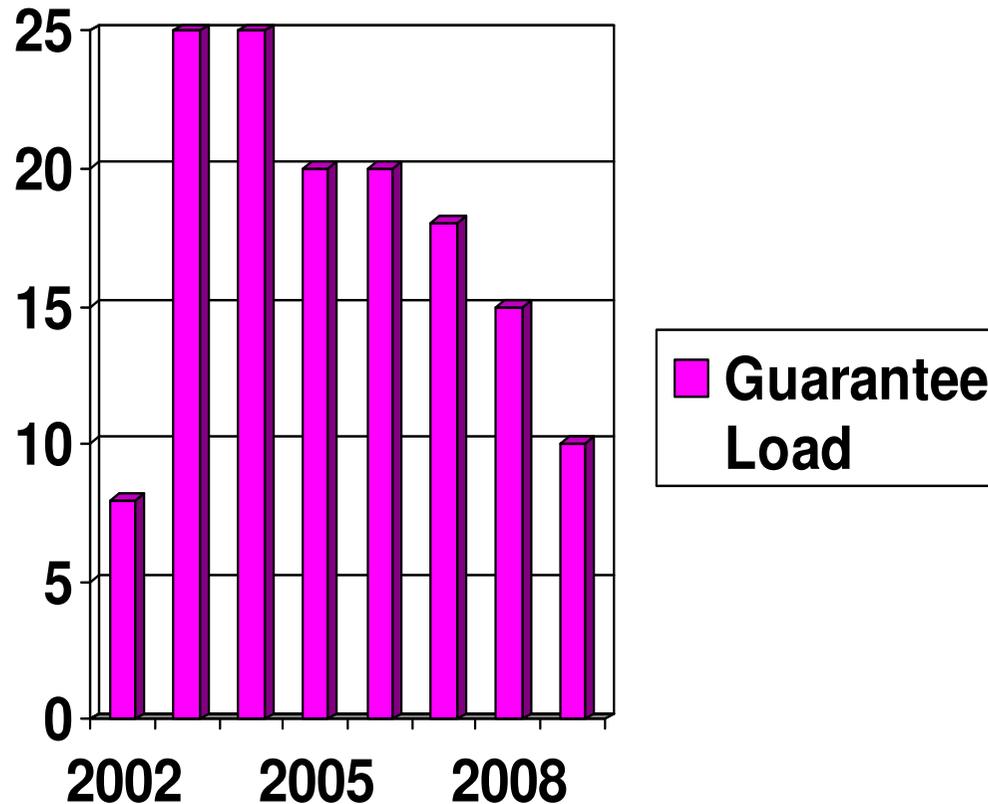
Guaranteed & Reviewable CI Pricing



Guaranteed vs Reviewable Prices



Guarantee Loading



Little difference pre-2003 between gtd & rev

Loadings increased due to reduced reinsurance capacity and uncertainty around prostate cancer, leukaemia, troponins & silent strokes

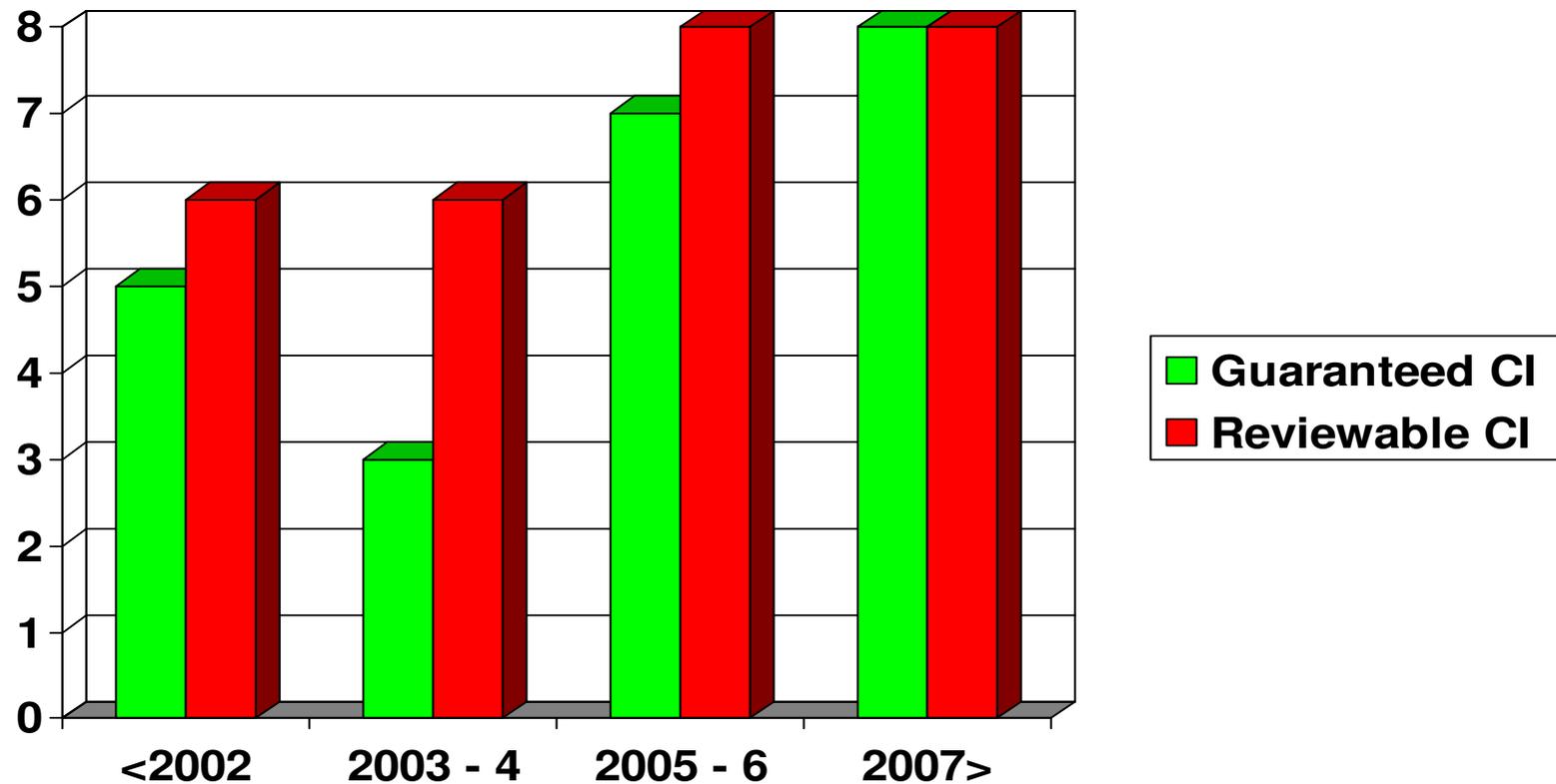
New ABI Definitions have helped to reduce uncertainty and lower the guarantee loadings

Lately very competitive reinsurance markets are driving down guarantee loadings

Changing reinsurance landscape for guaranteed CI



Number of reinsurers quoting



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Impact of new definitions and diseases



Key changes to definition

- Troponin hurdle for heart attacks

- Future proofing of cancer

- Introduction of permanent neurological deficit

New diseases added

- Traumatic head injury

Pricing issues around troponins



Increase in heart attack incidence: in 2001/02 with troponin testing starting to become widespread

UK coverage of troponin testing is not complete as yet:

2006 chest pain survey¹ showed 58% of hospitals having Troponin T capability and 44% having Troponin I (compared to 32% and 23% respectively in 2001)

Authors state: "Development of chest pain services in the UK is progressing in a disorganised way"

Only 90% of the heart attack claims we audited in 2007 had troponin measurements

Past experience needs to be adjusted for the impact of troponins

There may be future adverse trends as coverage becomes complete and claims practices bed down

Pricing issues around troponins



Troponins can also be released:

- During cardiac surgery

- In endurance events

- Septic shock

- Pulmonary embolism

- Scorpion venom

Potential for these to subsequently become claims
– more so cardiac surgery

Depends on claims philosophy and enforcement of
other pillars of the definition

Future proofing of cancer



Largely future proofed except that some terms could become obsolete in the future (shown in bold below);

All cancers which are histologically classified as any of the following:

***pre-malignant**;*

non-invasive;

cancer in situ;

*having either **borderline malignancy**; or*

*having **low malignant potential***

A small risk – but a risk nonetheless

Permanent neurological deficit with persisting clinical symptoms



Evolved to replace “permanent neurological **damage**” but is it an improvement?

Symptoms of dysfunction in the nervous system that are present on clinical examination and expected to last throughout the insured person's life.

Symptoms that are covered include.... (a big list that takes up two slides!).

The following are not covered:

- An abnormality seen on brain or other scans without definite related clinical symptoms

- Neurological signs occurring without symptomatic abnormality, e.g. brisk reflexes without other symptoms

- Symptoms of psychological or psychiatric origin

Where does the burden of proof lie on these? The Brain is a complex organ and there is no severity criterion in the definition

Permanent neurological deficit



Offices have not had issues so far with the generic term
Issue could arise in the future as medical science is able to track more deficits back to injuries to the brain

Could the following be causes of claim in the future? Are we looking at the next TPD with many declined claims?

Seeing flashing lights

Vague cognitive impairment – no longer the same person

Inability to orgasm

My Jerry Springer Slide:



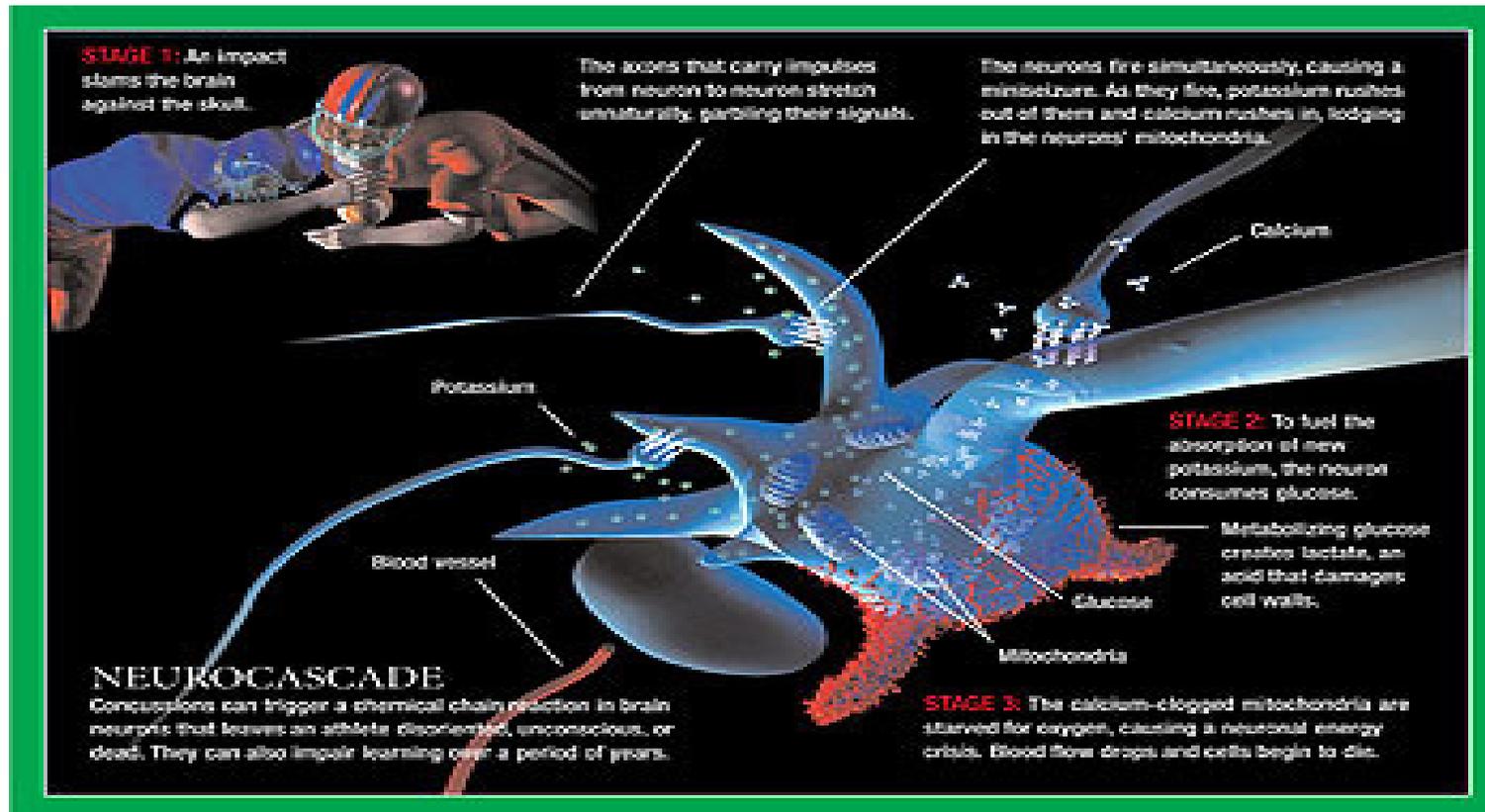
Reduced libido – about half of people with traumatic head injury experience reduced libido

Erectile dysfunction – men have either erectile dysfunction or difficulty maintaining an erection after head injury

Inability to get pregnant – women report difficulty getting pregnant after head injury

Is the insurance industry equipped to deal with claims of this nature? Can you imagine a claims form for this?!

Traumatic head injury – Not a complete overlap with stroke⁷



Traumatic Head Injury Cost



The CI Trends Working Party will be commenting on this in their final version of “The Critical Paper” paper

Our view is that the cost could be higher for younger ages and males where most THI occurs

Thought needs to be given to whether it is included in Children’s CI cover

Companies have the option to not cover THI

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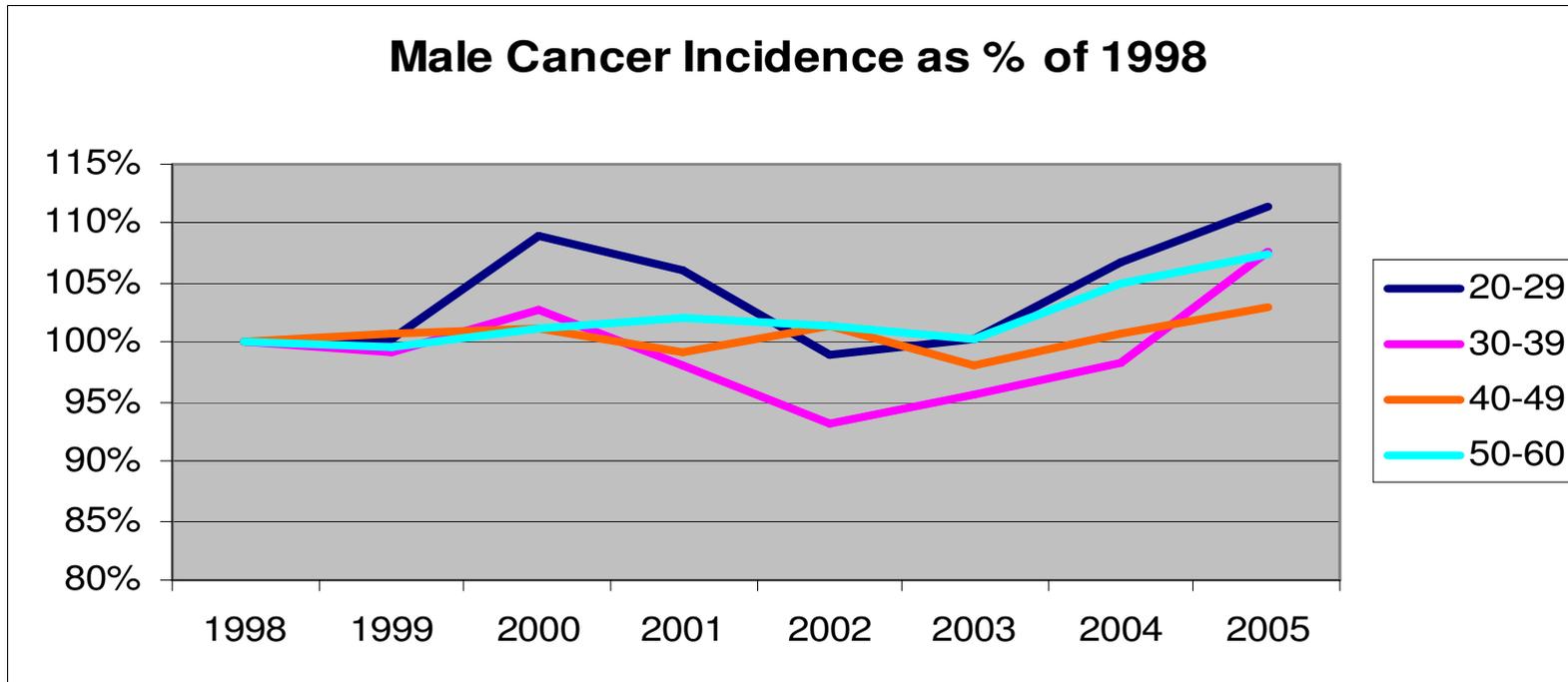
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Cancer

Heart Attack

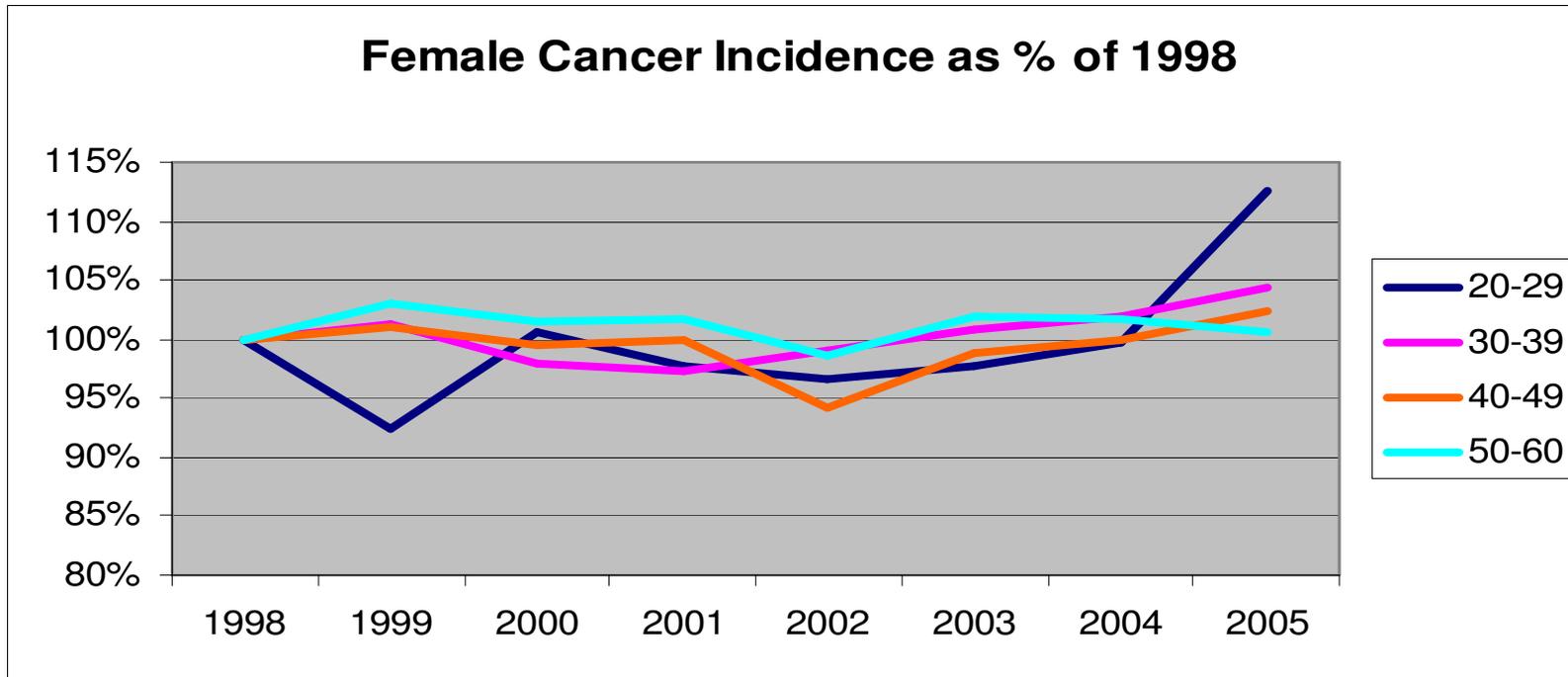
Stroke

Cancer Trends - Males



Flat trend up to 2004. Melanoma increases balanced by others. 2005 jump in most cancers including melanoma and prostate

Cancer Trends - Females



Flat trend in 1998-2003 with jump in 2004-05. Recent increases due to melanomas and ovarian cancer. Cervical cancer has shown improvements to counteract some of this.

Cancer trends: what the experts say



Many cancer registries are having a go at projecting future trends using age-cohort and age-period models

Scottish trend projected to be relatively flat with only a slight deterioration in the next 5 years⁹

North West Cancer Intelligence Service projects a 1% p.a. deterioration for the next 15 years in the region

Thames Cancer Registry shows trends by individual cancer site¹⁰

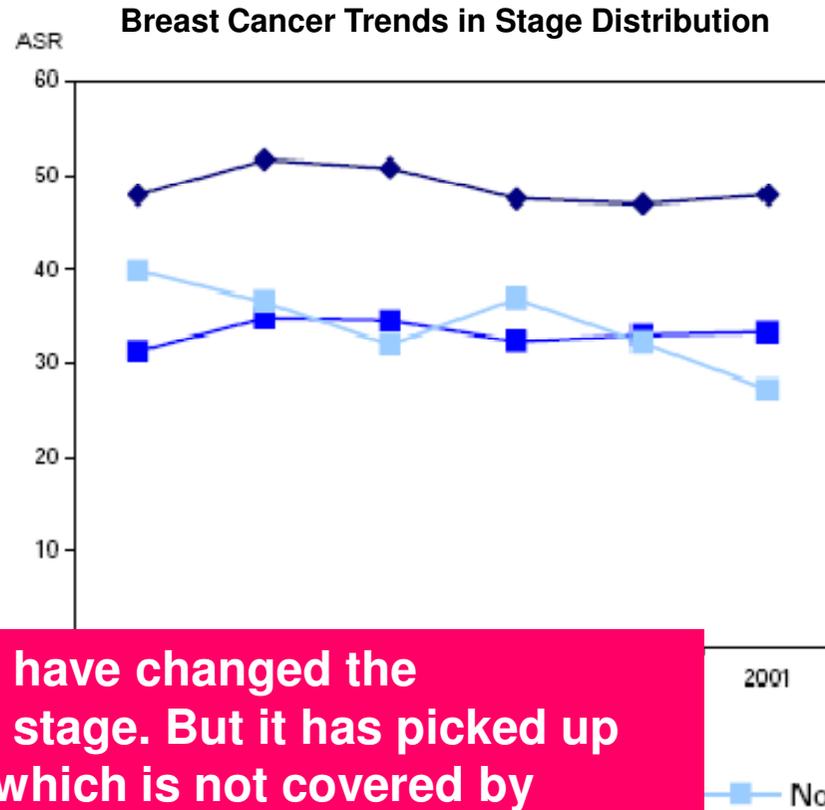
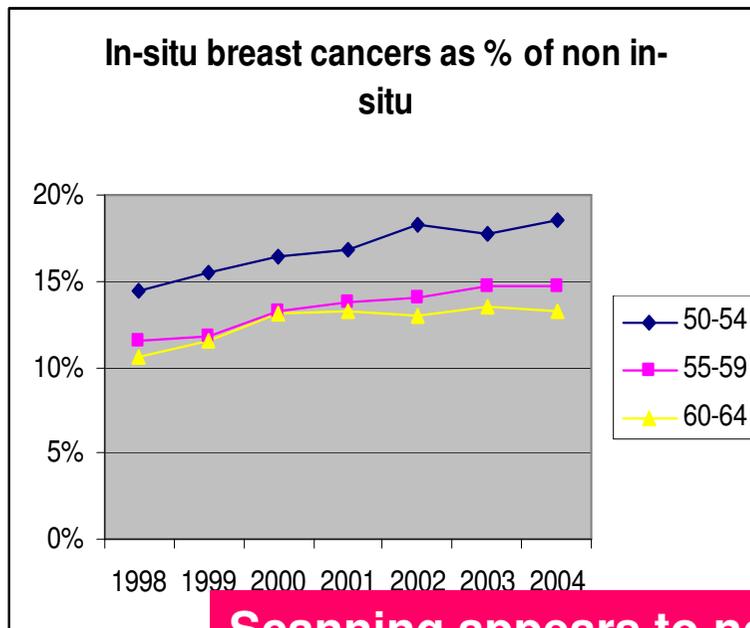
Researchers at KCL predict little change in age-standardised incidence rates in England¹²

Irish trend extrapolated to be circa 0.9% p.a. deterioration¹¹

Breast cancer scanning

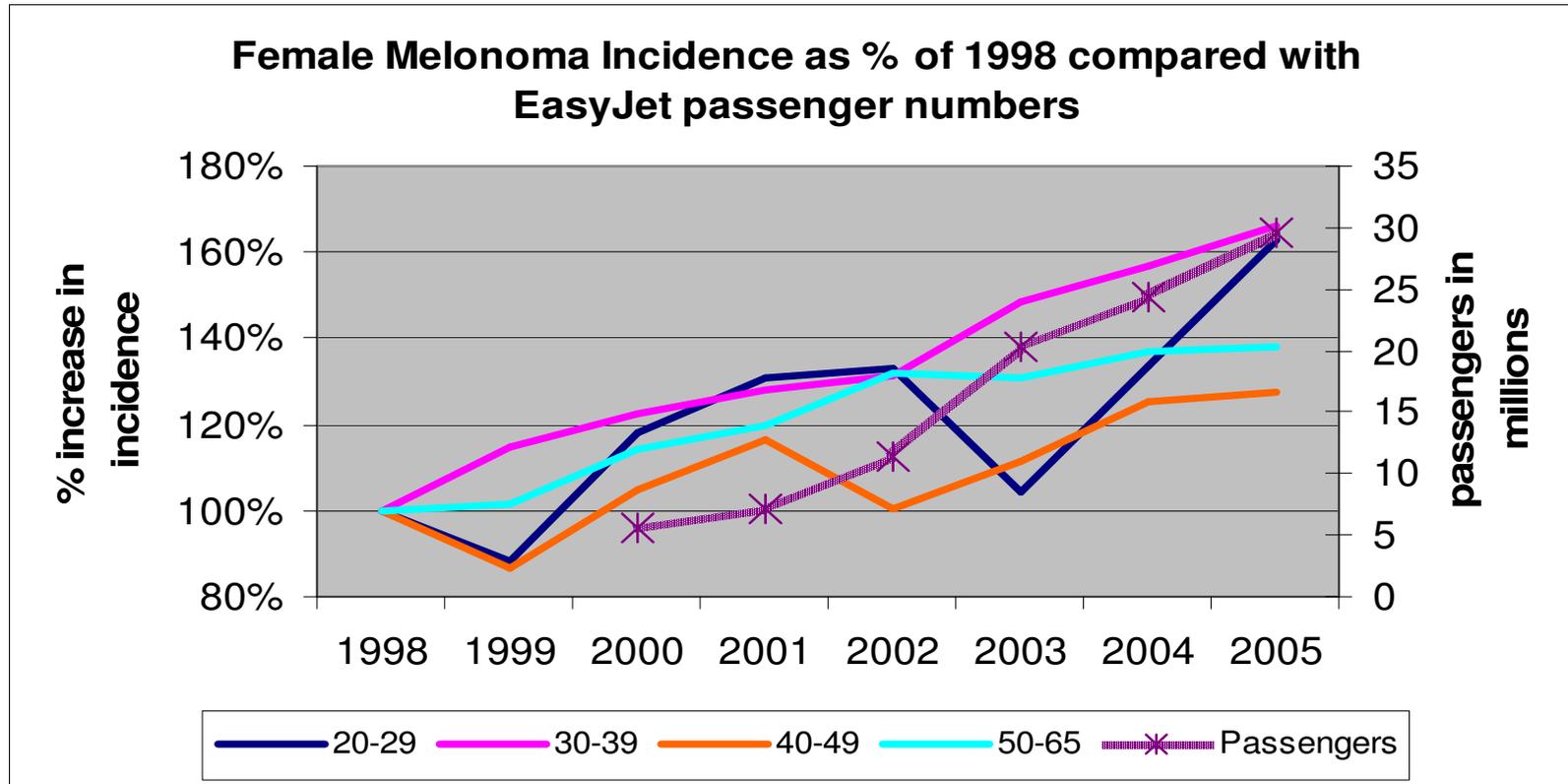


Malignant breast cancer trends have been fairly flat over the last few years, so what impact has scanning had?



Scanning appears to not have changed the distribution of cancer by stage. But it has picked up more carcinoma in situ, which is not covered by insurance

Melanoma and Cheap Flights



Melanoma trends have been bad for some time – sun exposure many years ago can do the damage. Cheap Spanish holidays in the 80s



PACIFIC LIFE RE

Heart attack trends

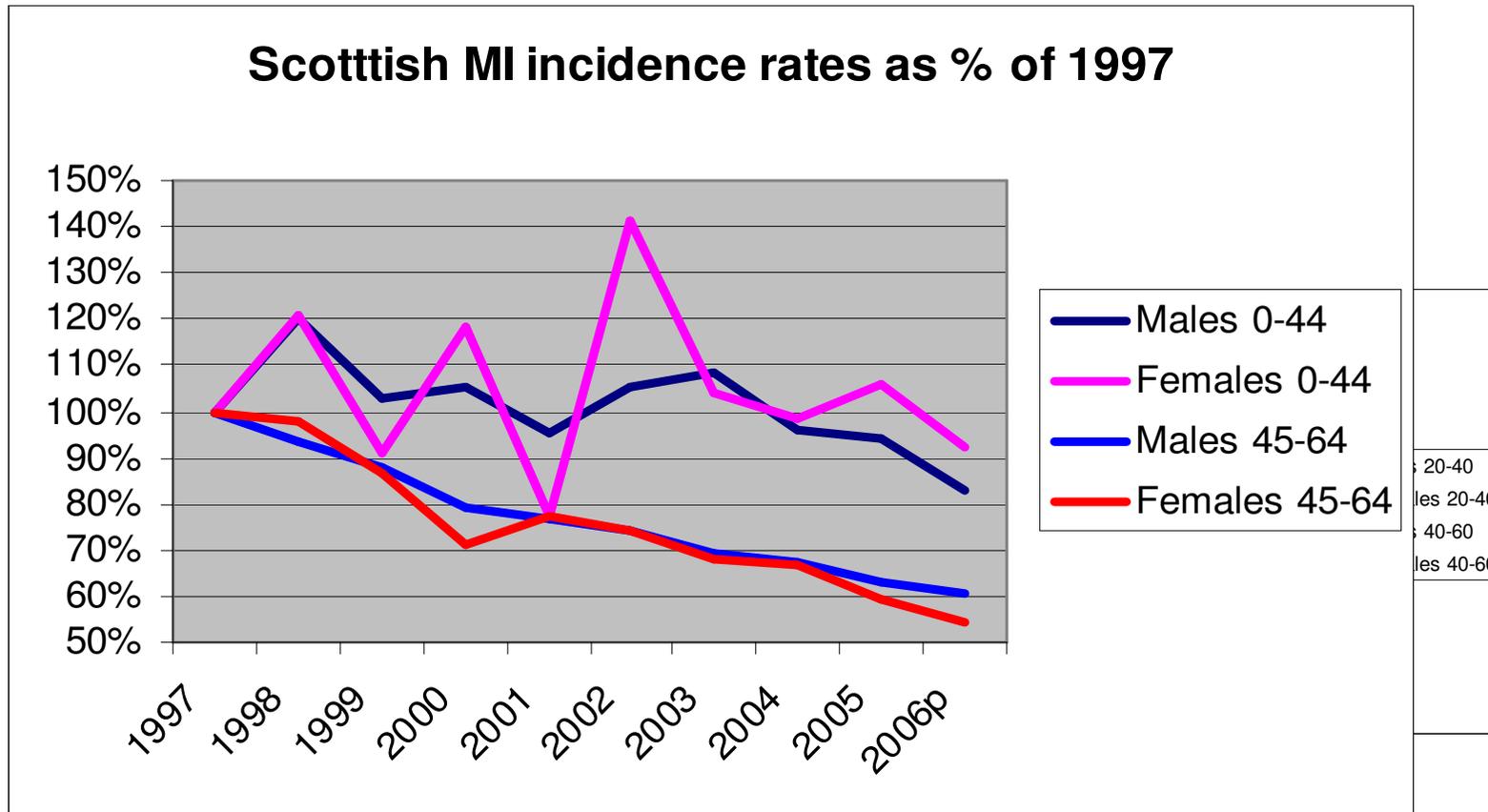


HES data has shortcomings so trends have been corroborated with Scottish data (which has different shortcomings!)

Scottish data shows continuing strong improvements at older ages... but a level trend at younger ages

English data shows a slight increase in rates at older ages and an much greater increase in rates at younger ages

Heart attack trends



Heart attack trends



Flattening of improvements for postulated to be due to:

reductions in smoking cessation^{4,6},

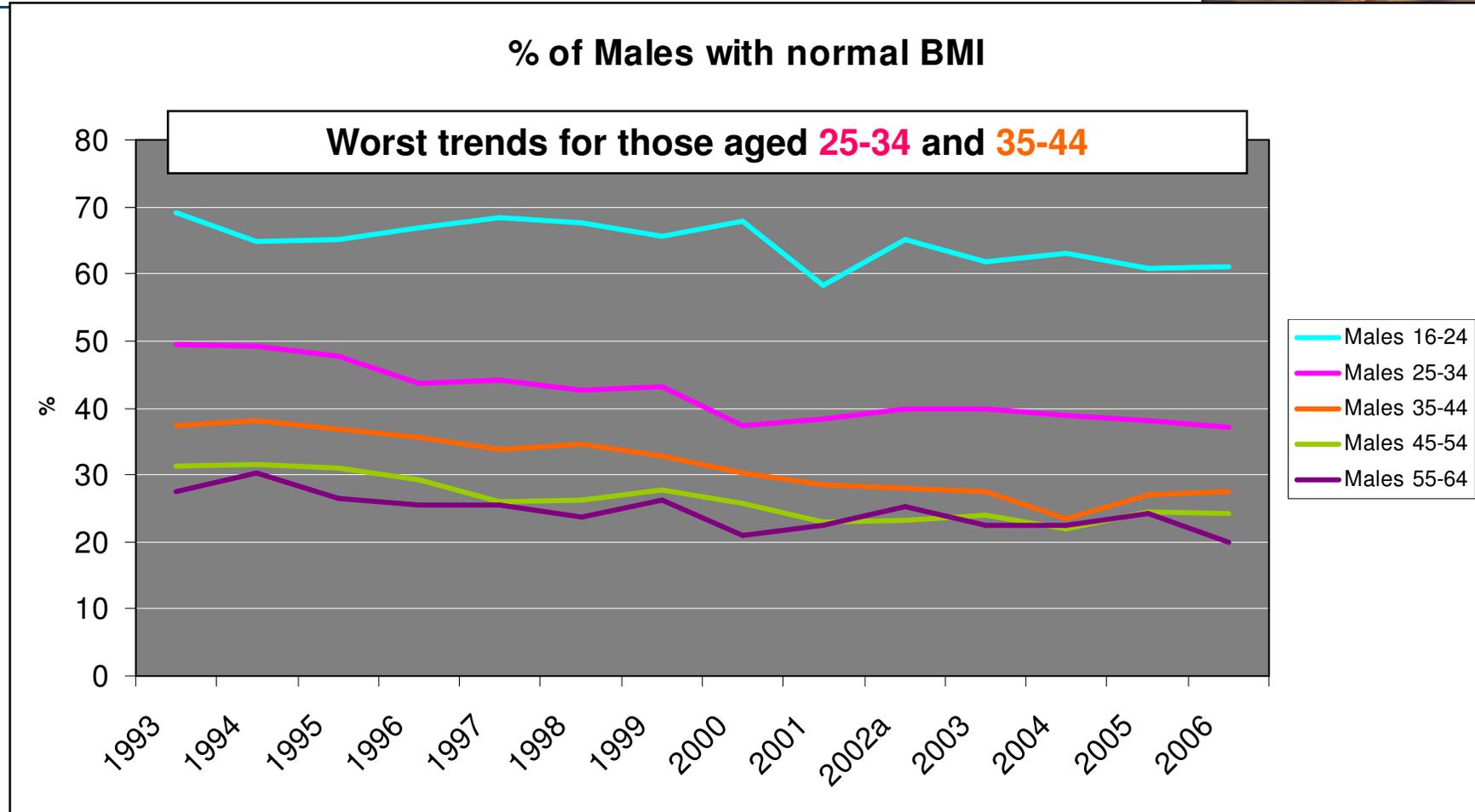
increased obesity and diabetes^{4,6},

higher resting heart rates in young adults³

Interestingly levels of physical activity have not changed much over the period suggesting that diet and lifestyle are more to blame⁴

Troponins are not mentioned in the literature as cause for the increase but clearly is

BMI trends⁴



Emotional upset and heart attacks



30 June '98 semi-finals of the World Cup: England lost to Argentina. 25% more heart attacks on that day and in the 2 days following⁵

Increase in admissions suggests that MI can be triggered by emotional upset, such as watching your football team lose an important match

With England not in Euro 2008 it probably would have been a good year for heart attacks!

Seriously....



With the credit crunch this is something to watch...

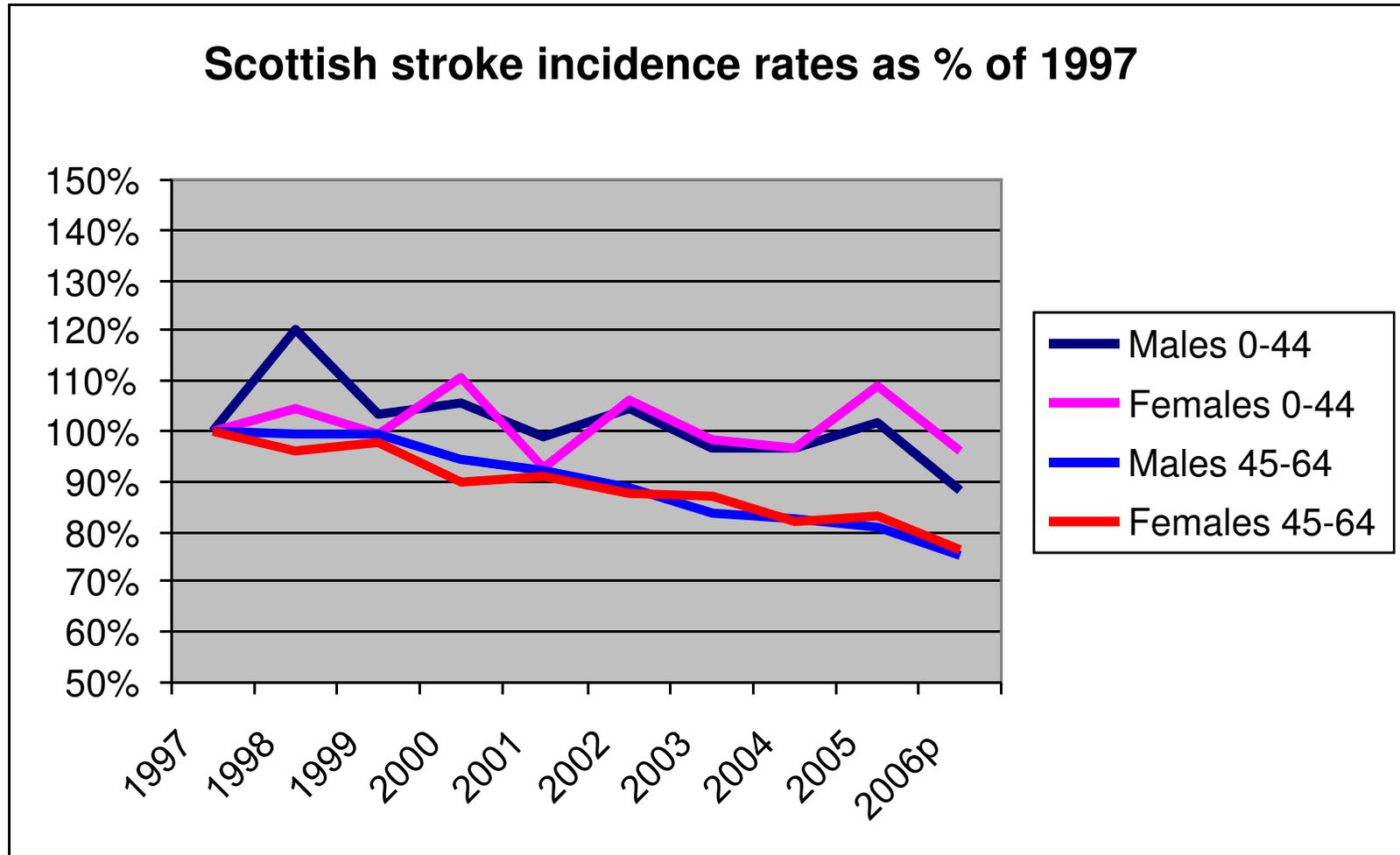
A Cambridge study suggests that a system-wide banking crisis increases population heart disease mortality rates by 6.4% (95% CI: 2.5% to 10.2%, $p < 0.01$) in high income countries⁸

The effect could be 4 times worse in lower income countries

Stroke Trends



Scottish stroke incidence rates as % of 1997



Stroke trends commentary



Scottish data excludes incidence where a patient has had a stroke in the last 10 years. English data includes all strokes

Upward trend in English data driven by CT scanning

Both show younger ages having lower improvement rates than older ages

Reasons are as per MI – obesity, smoking, general health

Is this cohort more unhealthy?

Trends summary and future outlook



Trends for cancer relatively flat

Trends for MI increasing for younger ages and flat or reducing slightly for older ages

Stroke trends indeterminate

Off the shelf testing a big risk for underwriting and claims in the future

- Tests for cancer

- Family history

- Genetics

Not just a problem for new policies but also anti-selective lapsation and earlier claims identification

References



1. Development of acute chest pain services in the UK, *Elizabeth Cross, Steven How, Steve Goodacre, Emerg Med J 2007;24:100–102*
2. http://www.disability.vic.gov.au/dsonline/dsarticles.nsf/pages/Traumatic_brain_injury_and_sexual_issues?opendocument/
3. Secular trends in heart rate in young adults, 1949 to 2004: analyses of cross sectional studies, *Black, Murray, Cardwell, Davey, Smith, McCarron, Heart 2006;92:468-473*
4. Health Survey for England, *Department of Health*
5. Admissions for myocardial infarction and World Cup football: database survey, *Carrol et al, BMJ 2002;325:1439-1442*
6. Coronary heart disease trends in England and Wales from 1984 to 2004: concealed levelling of mortality rates among young adults, *O’Flaherty et al, Heart 2008;94:178-181*
7. <http://discovermagazine.com/2004/dec/lights-out/>
8. Can a bank crisis break your heart? *David Stuckler et al, Globalization and Health 2008*
9. Cancer in Scotland: Sustaining Change, Cancer Incidence Projections for Scotland (2001-2020), *The Scottish Government Statistics*
10. Cancer in South East England 2005, *Thames Cancer Registry*
11. Trends in Irish cancer incidence 1994-2002 with predictions to 2020, *National Cancer Registry*
12. The future burden of cancer in England: incidence and numbers of new patients in 2020. *Møller et al, British Journal of Cancer 2007*