Wellness….and what causes it

Alison Chesney and Eddie Killoran

Memorial Lecture

Barcelona 2015

Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

Medicine's silver bullets

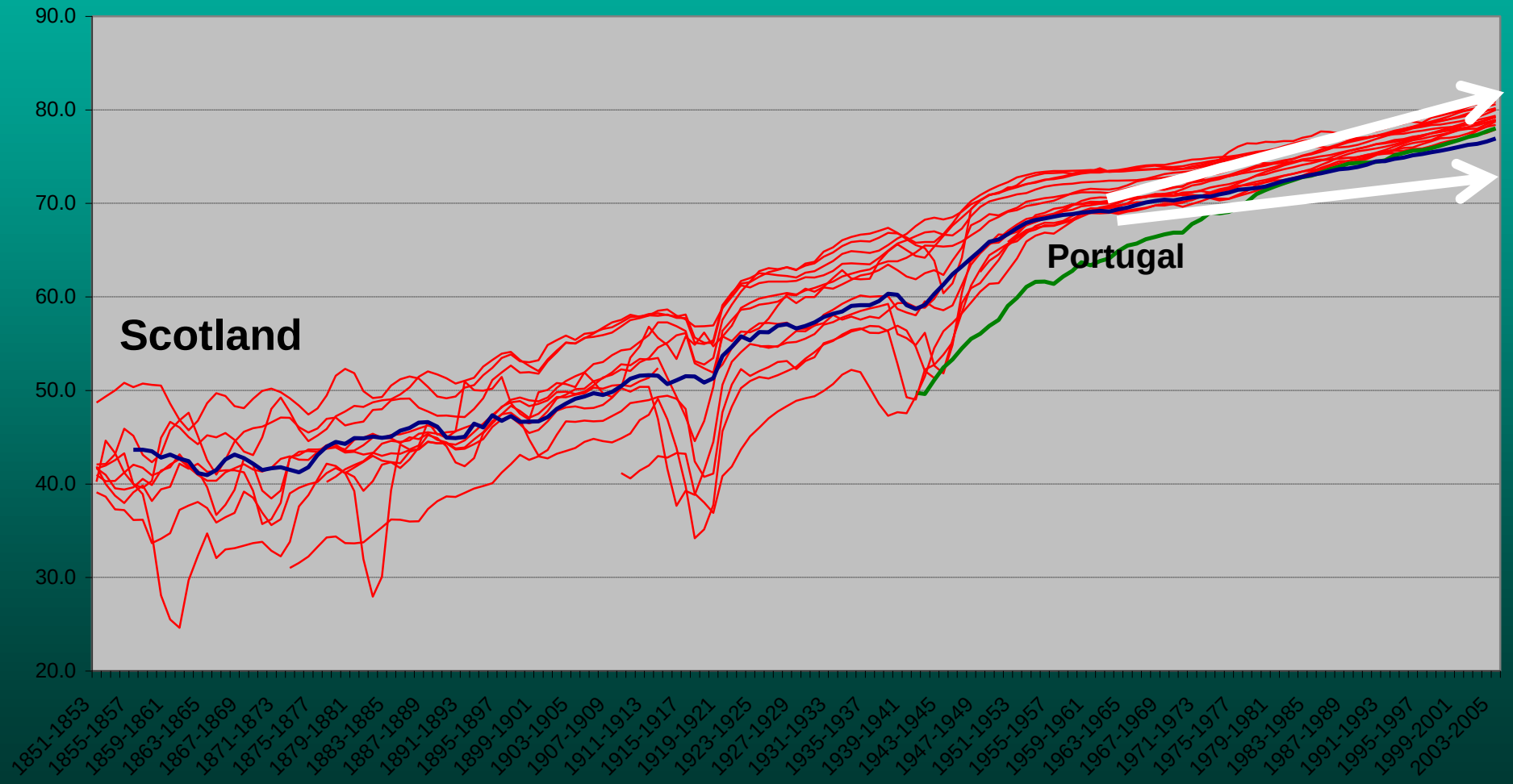
- Diabetes and insulin 1922
- Tuberculosis and streptomycin 1943
- Polio and Salk vaccine 1955

What people believe about Scotland's health

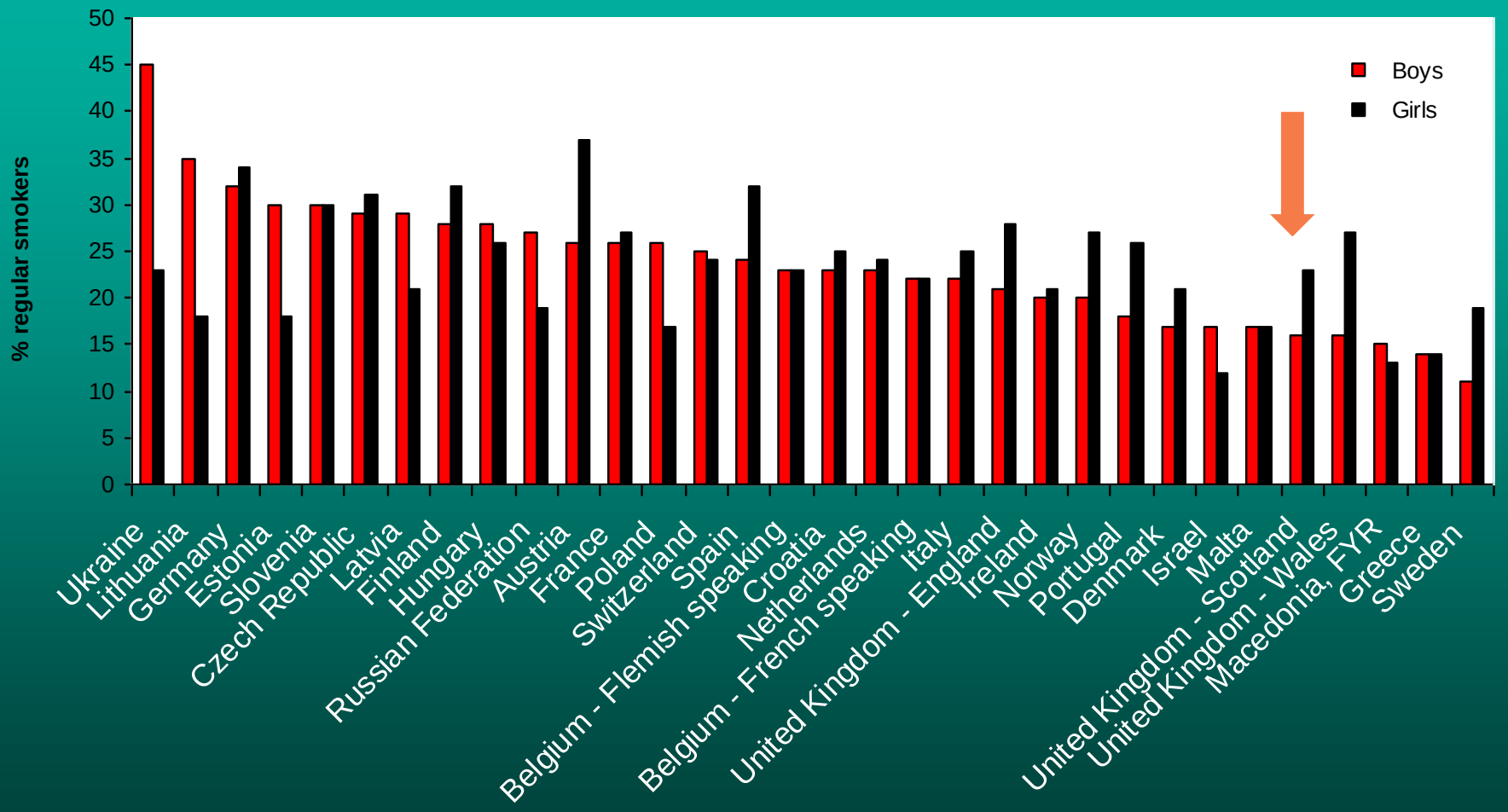
- The Scots are unhealthy
- It's because they smoke a lot
- They eat the wrong kind of food
- They drink too much
- If only they adopted healthy habits, they would be healthy
- Only ONE of these statements is true!

Life expectancy trends

Life expectancy: Scotland & other Western European Countries, 1851-2005
Source: Human Mortality Database



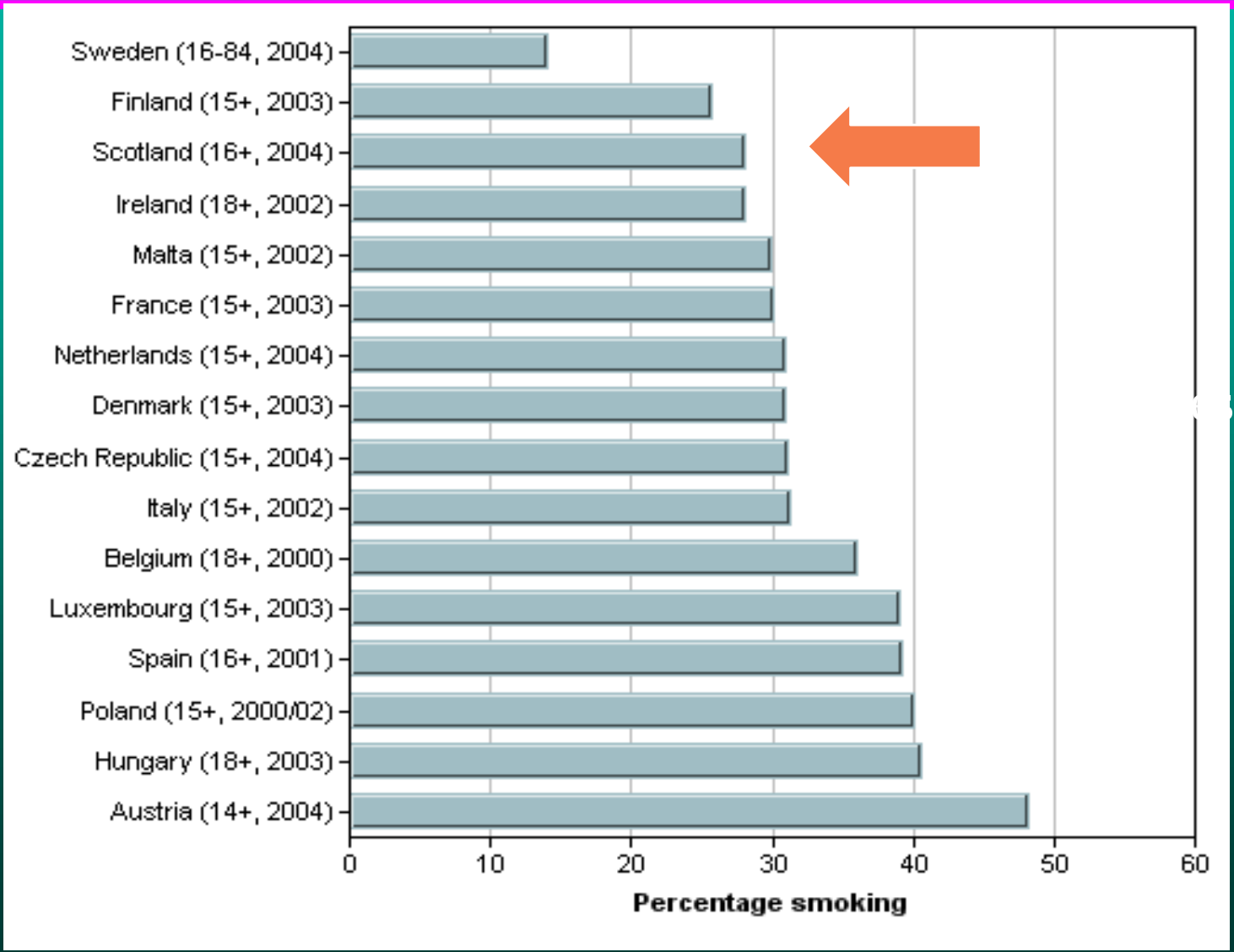
Prevalence of smoking by country, in 15 year olds by sex, 2000/01, Europe



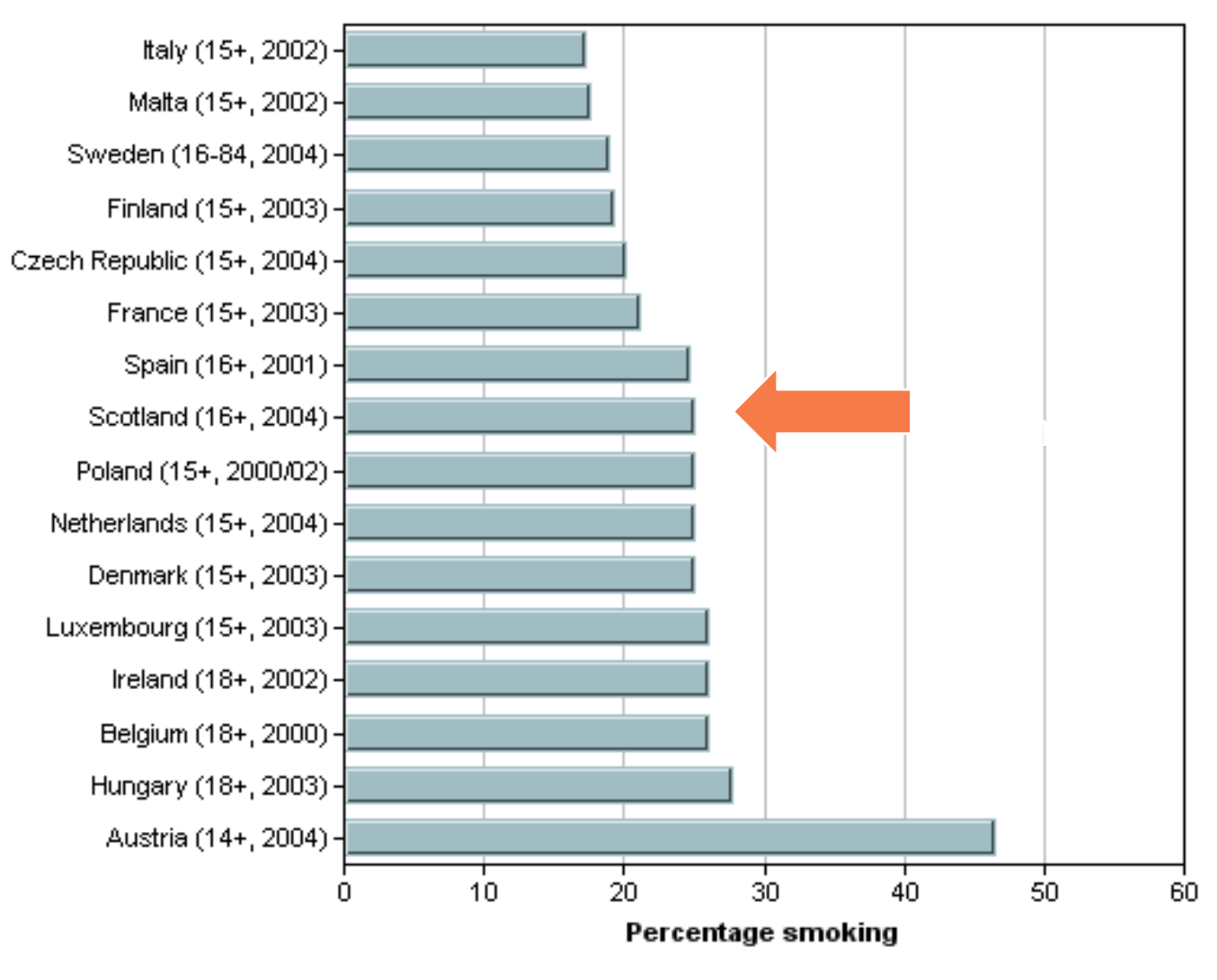
World Health Organization (1997 and 2003)

www.heartstats.org

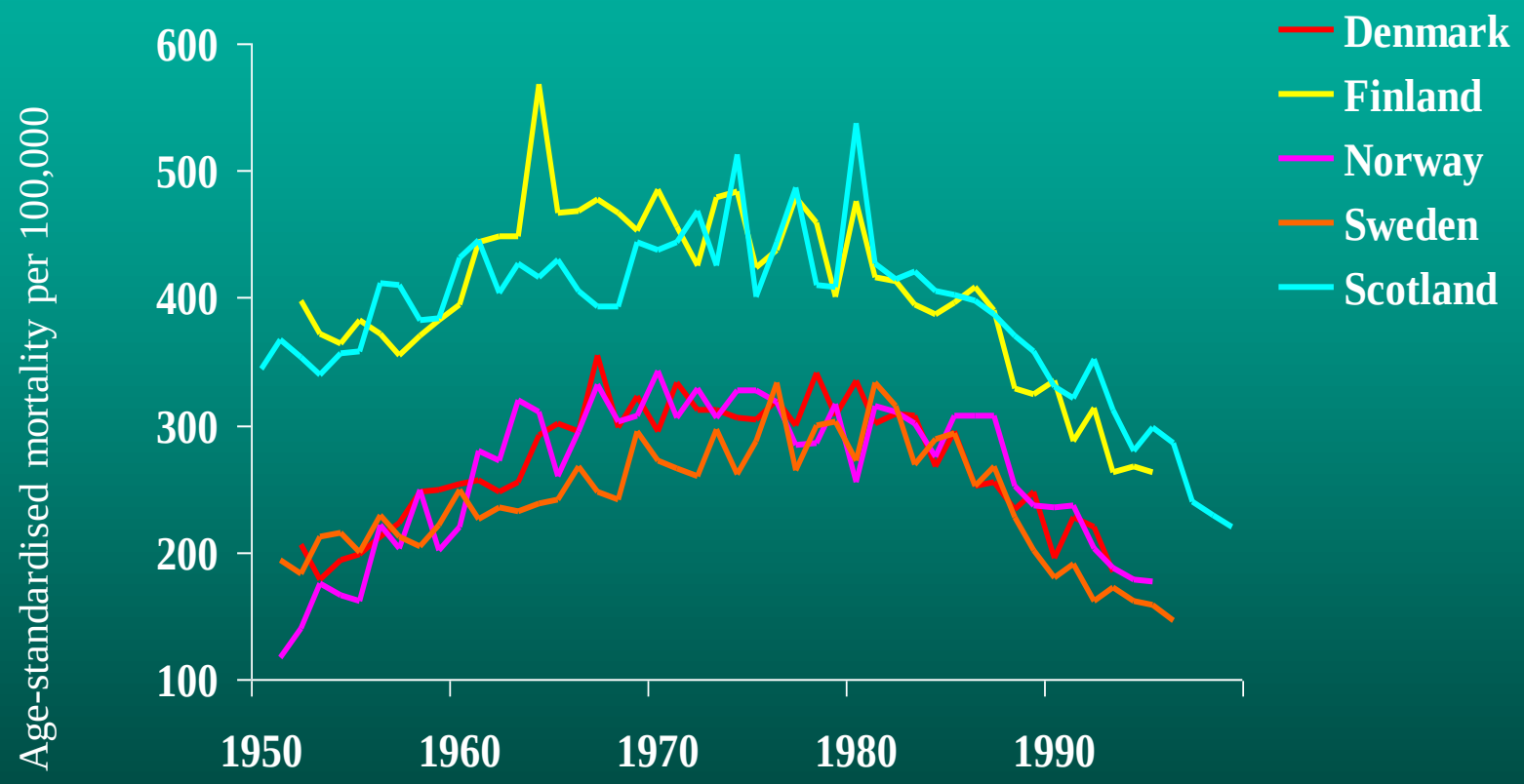
Smoking prevalence - Males



Smoking prevalence - Females

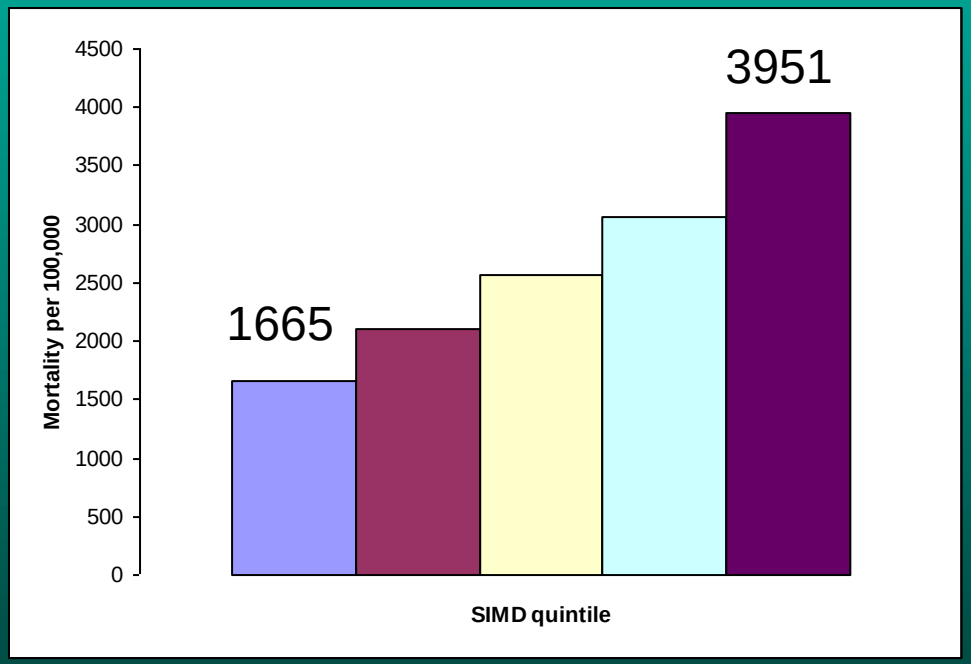


Coronary heart disease mortality
Men aged 15-74 years



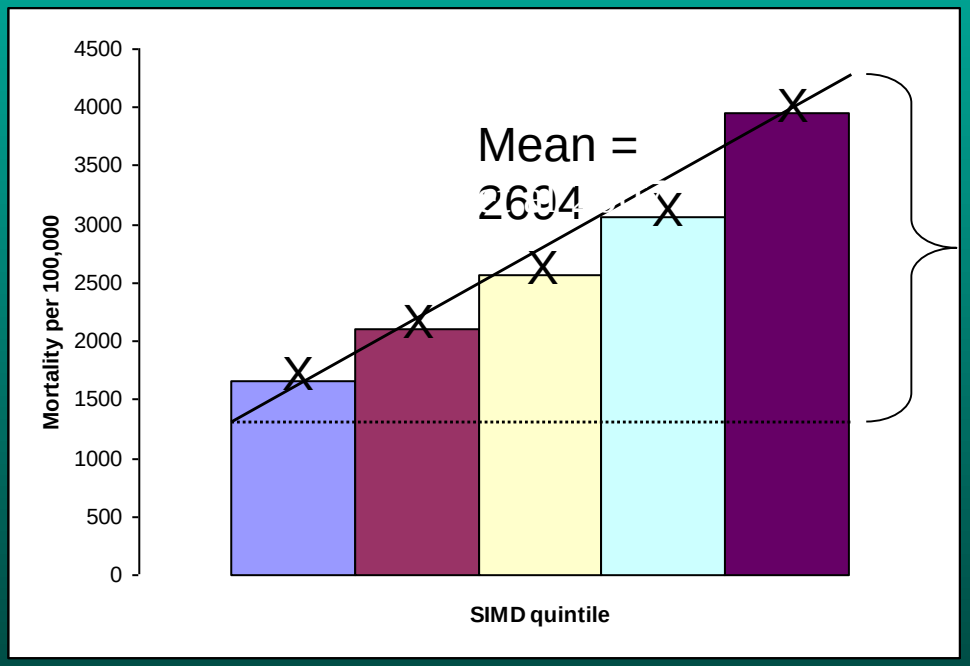
So, what causes wellness?

All cause mortality,men 65-69



Leyland et al 2007

Slope index of inequality

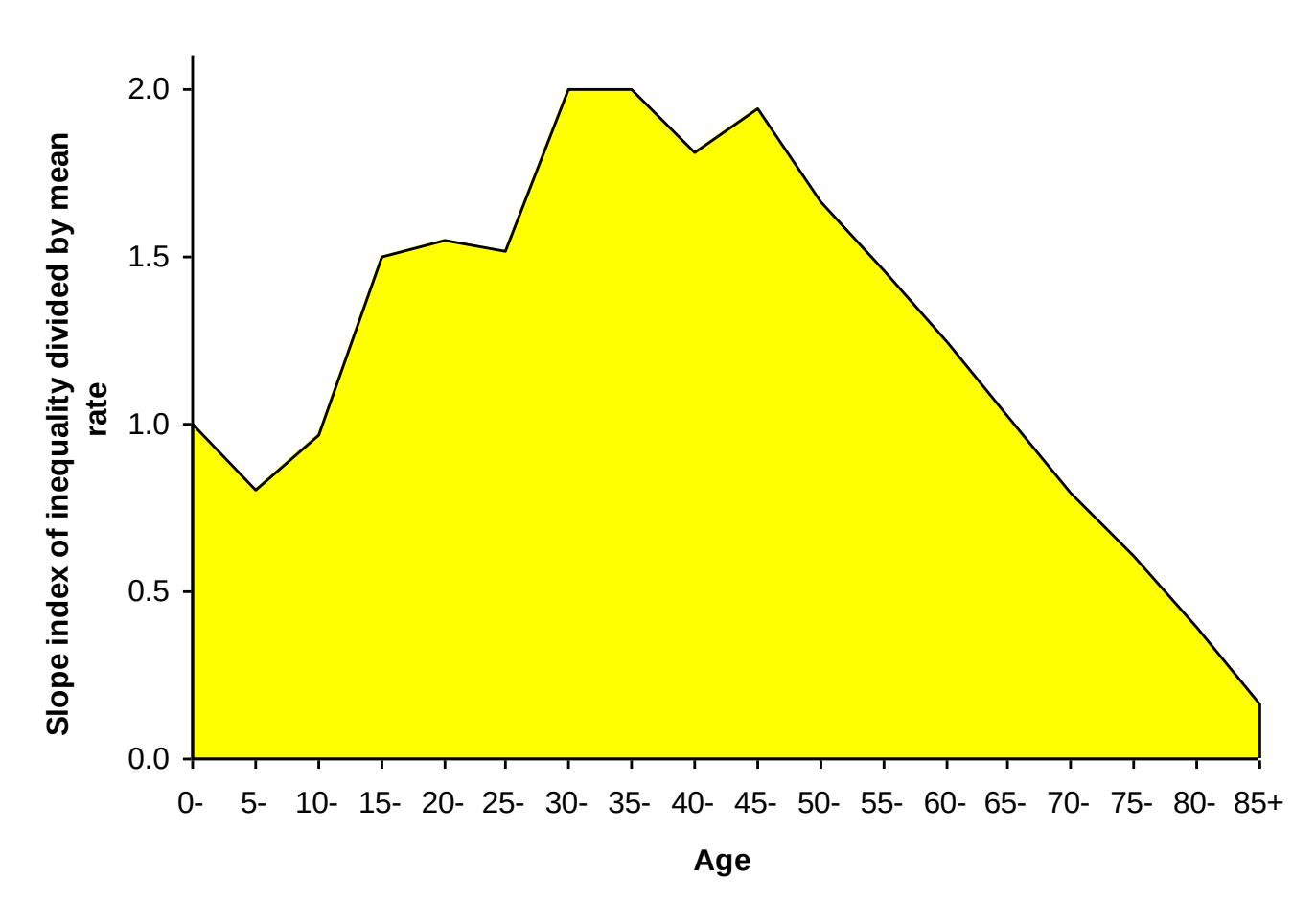


2763

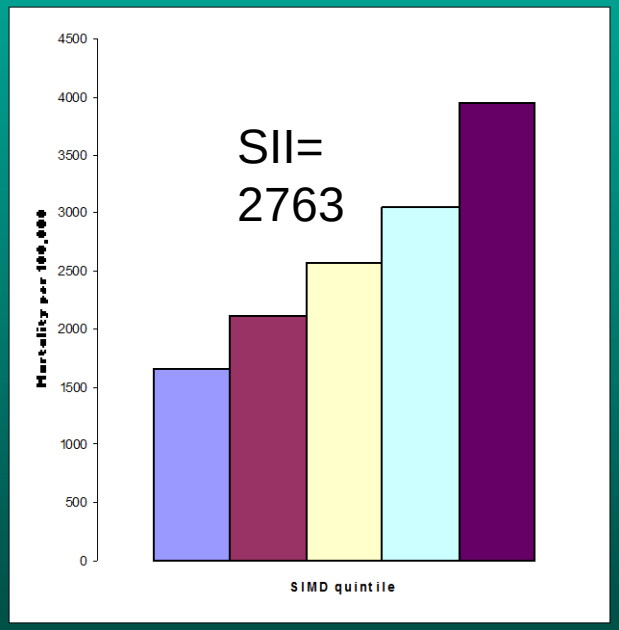
All cause, M65-69
2763/2694 = 1.025

Leyland et al 2007

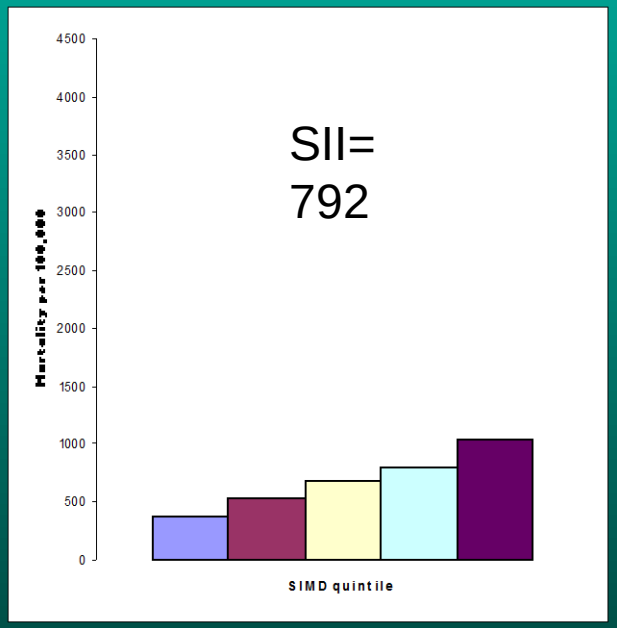
Male inequalities, all causes, all ages



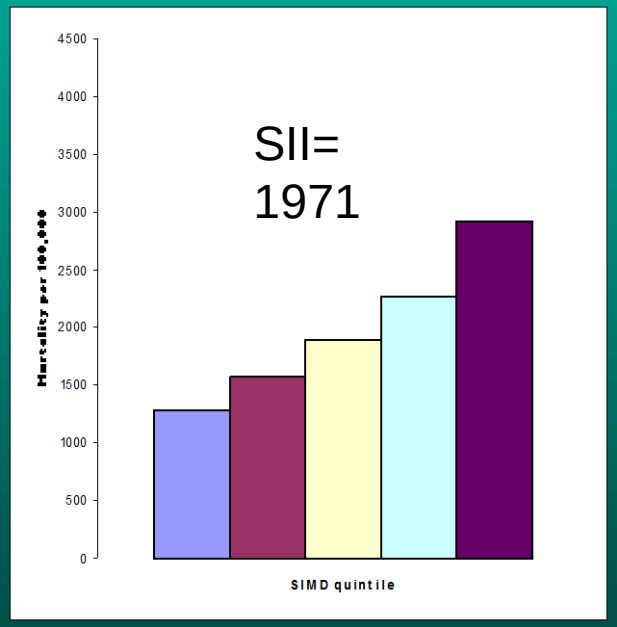
Slope index of inequality breakdown by cause of death



All cause

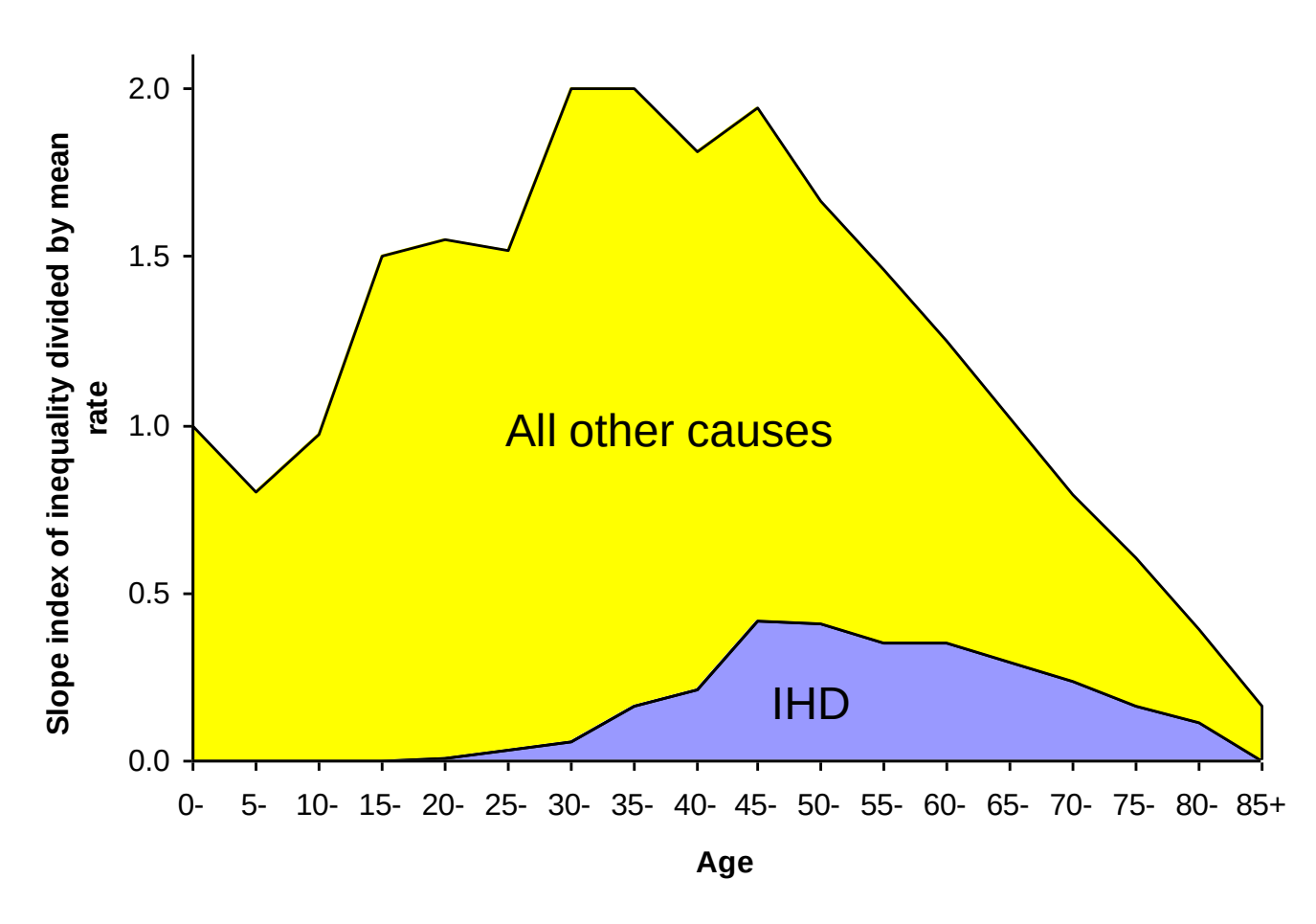


IHD

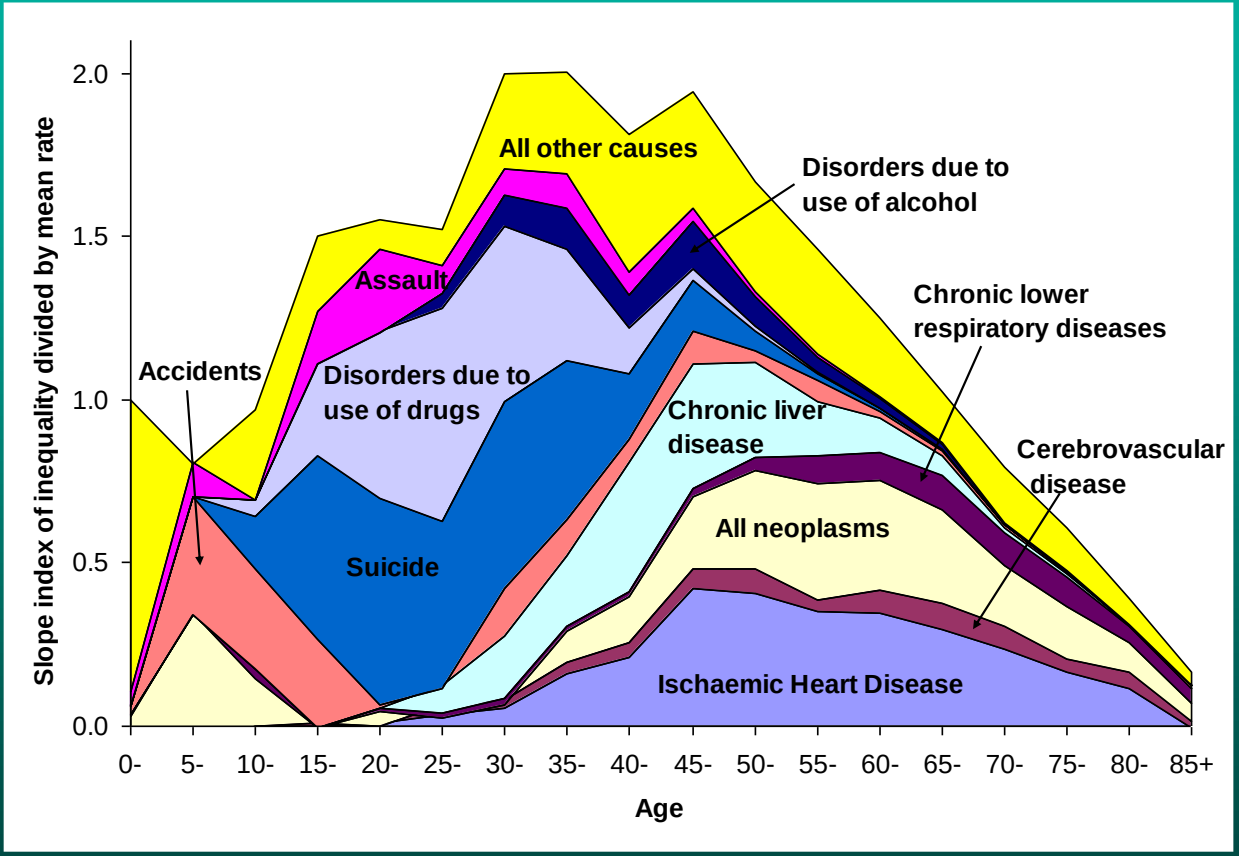


Other causes

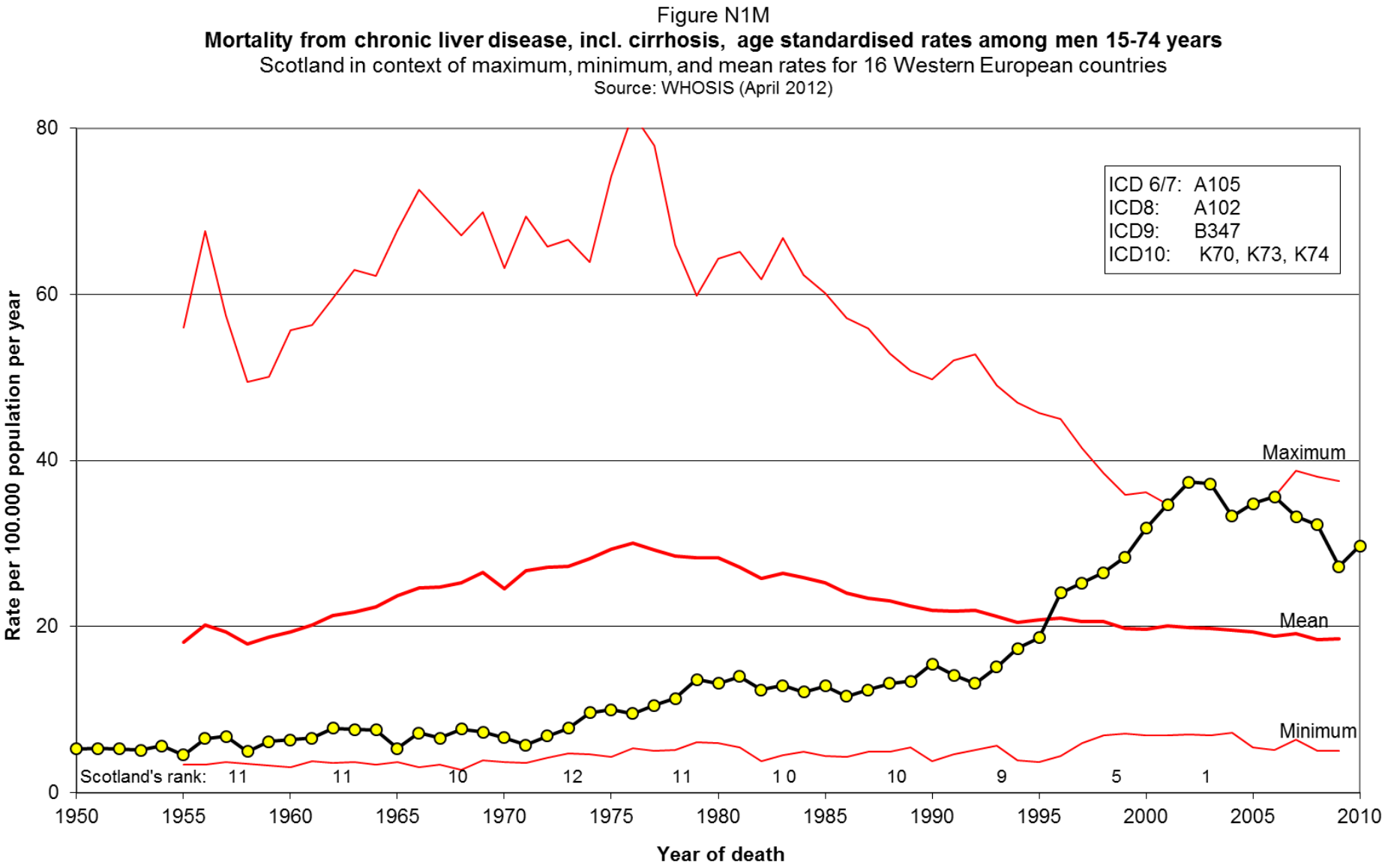
Male inequalities, all ages, by cause



Relative inequalities in mortality by cause Men, Scotland 2000-02

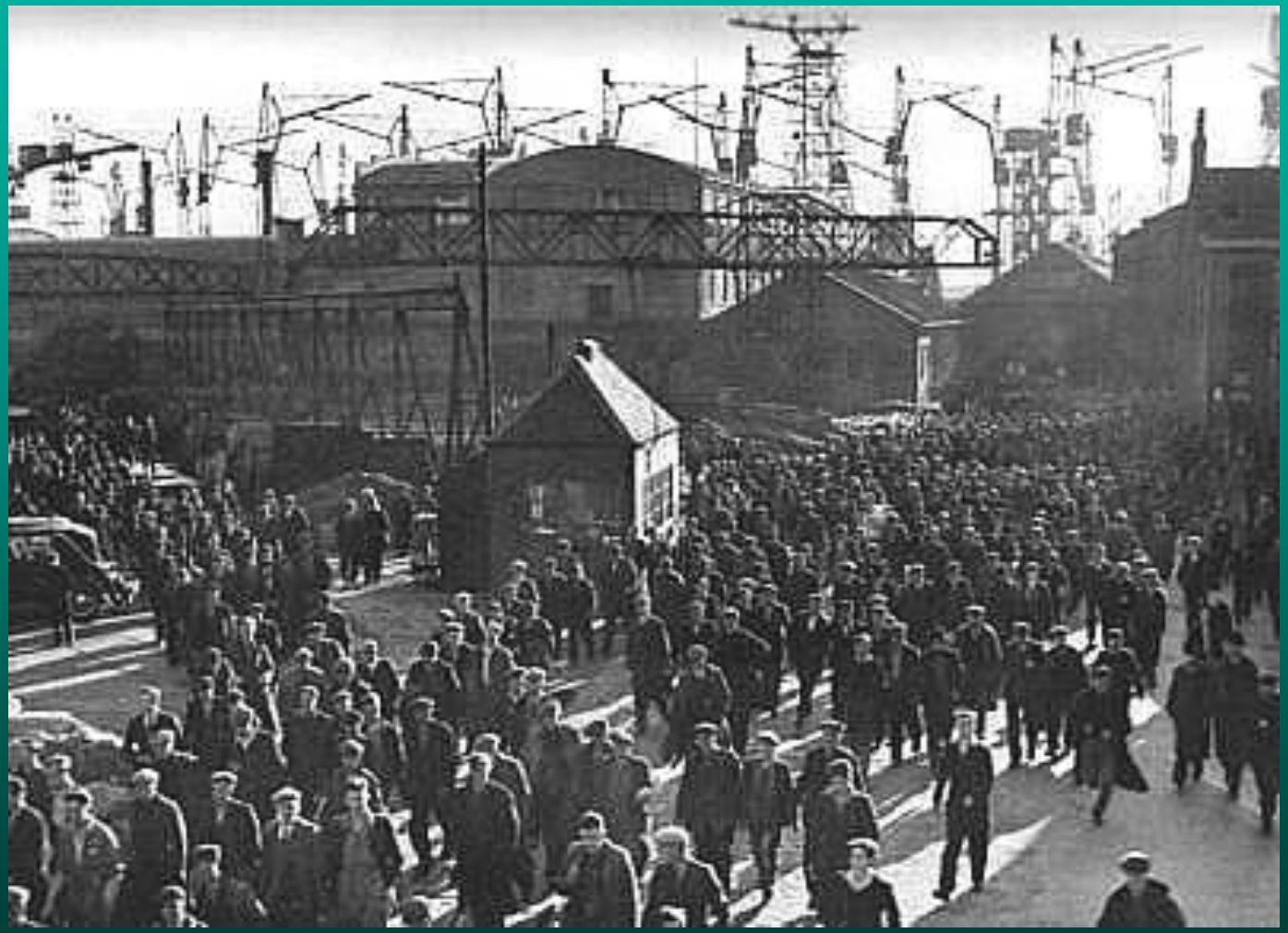


Chronic liver disease, including cirrhosis



Source: Whyte B., Ajetunmobi T. Still "the sick man of Europe"? GCPH, 2012

Workers in the 1950s



More liveable housing?

© Bengt Lindström, Monica Eriksson, Peter Wikström

Salutogenesis

An assets approach

Gratitude
(McGullough)

Self-efficacy
(Bandura)

Hardiness
(Kobasa)

Empathy
(Eisenberg)

Humour
(Martin)

Learned resourcefulness
(Rosenbaum)

Learned optimism
(Seligman)

Learned hopefulness
(Zimmerman)

Sence of coherence
(Antonovsky)

Emotional intelligence
(Goleman, Akerjordet et al)

Cultural capital
(Bourdieu)

Quality of Life
(Lindström)

Connectedness
(Blum)

Social capital
(Putnam)

Resilience
(Werner)

Flourishing
(Keyes)

Action competence
(Bruun Jensen)

Empowerment
(Freire)

Will to meaning
(Frankl)

Interdiciplinarity
(Klein)

Coping
(Lazarus)

Locus of control
(Rotter)

Wellbeing
(Diener)

Ecological system theory
(Bronfenbrenner)

Attachment
(Bowlby)

Corey Keyes and Flourishing

- They are happy and satisfied; they tend to see their lives as having a purpose
- They feel some degree of mastery and accept all parts of themselves
- They have a sense of personal growth and are always growing, evolving, and changing
- They have a sense of autonomy and an internal locus of control
- They chose their fate instead of being victims of fate.

Antonovsky and sense of coherence

"…..expresses the extent to which one has a feeling of confidence that the stimuli deriving from one's internal and external environments in the course of living are structured, predictable and explicable, that one has the internal resources to meet the demands posed by these stimuli and, finally, that these demands are seen as challenges, worthy of investment and engagement."

The causes of wellness?

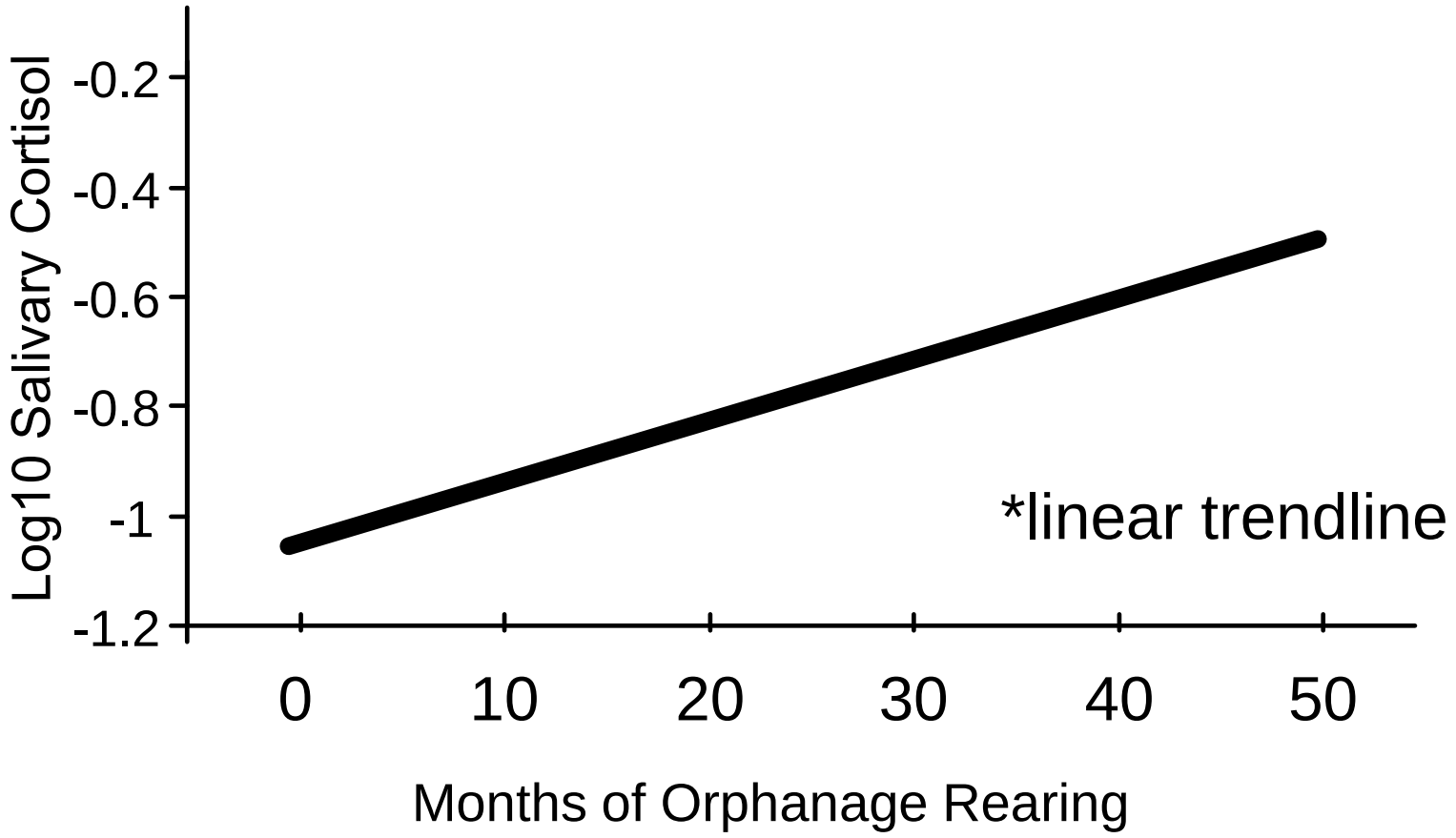
- Optimistic outlook
- Sense of control and internal locus of control
- Sense of purpose and meaning in life
- Confidence in ability to deal with problems
- Supportive network of people
- Nurturing family

For the creation of health....

....the social and physical environment must be:

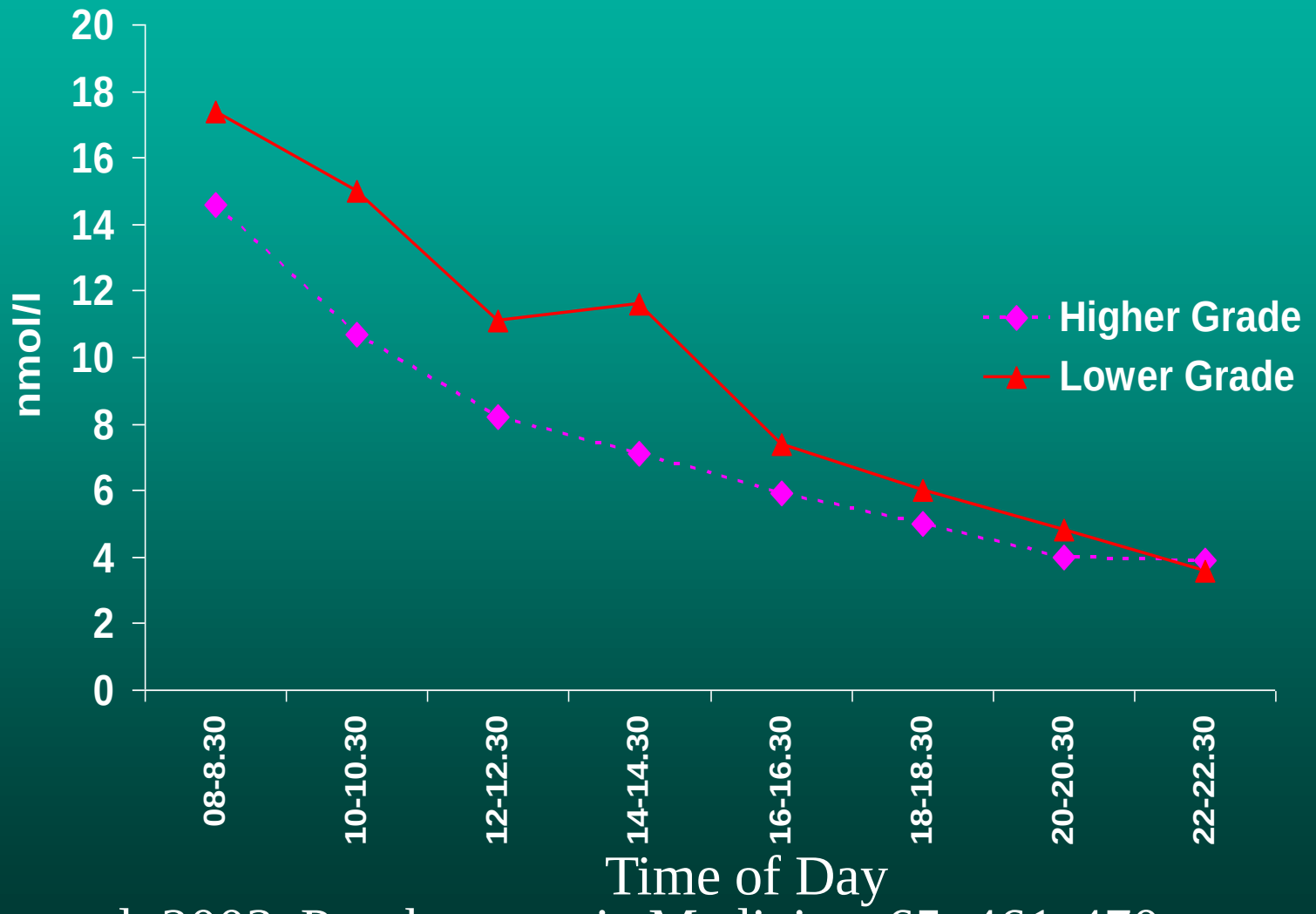
- Comprehensible
- Manageable
- Meaningful
- .....or the individual would experience chronic stress

Evening Cortisol Levels Increase with Months of Orphanage Rearing *



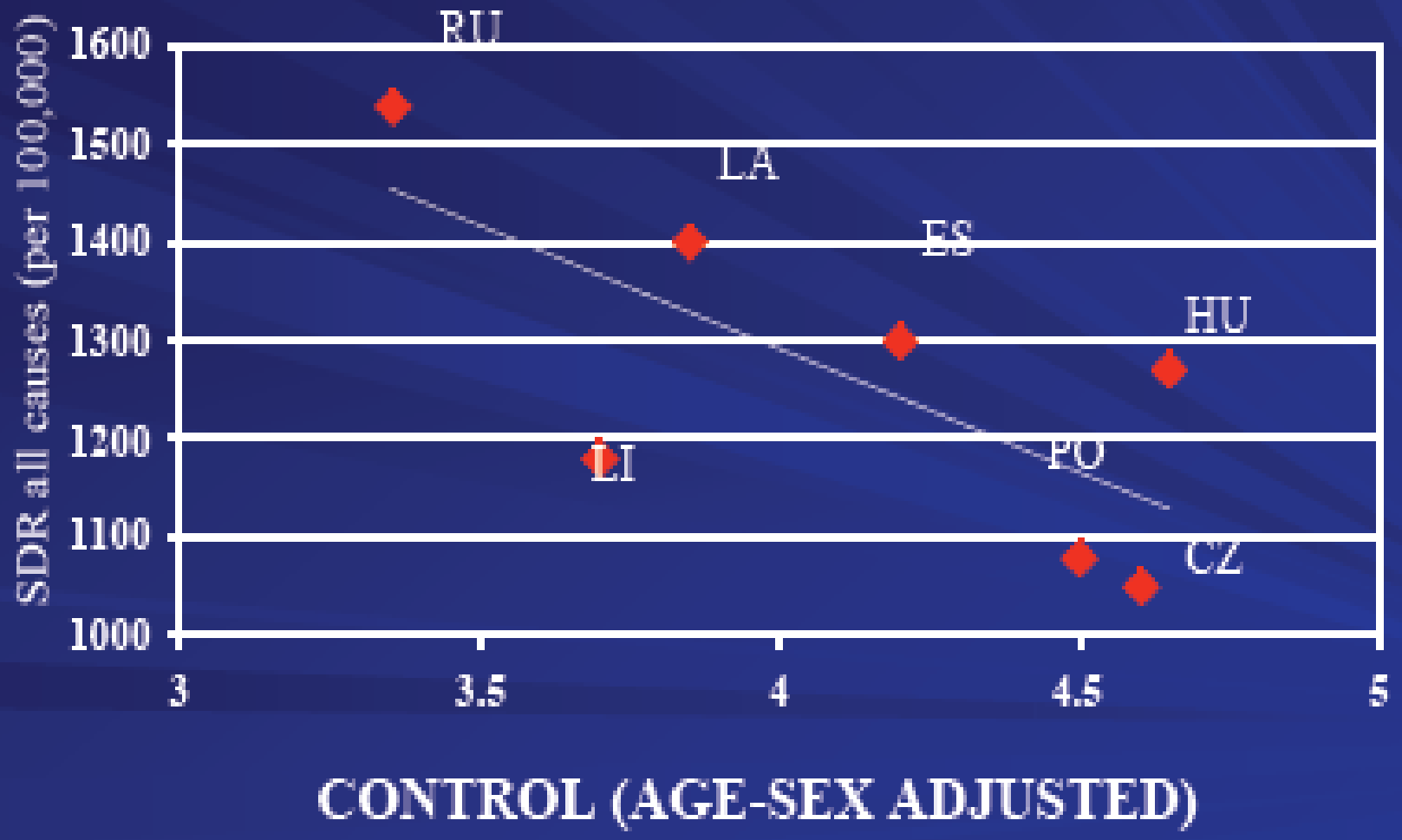
STRESS AND GRADE OF EMPLOYMENT: MEN

Salivary Cortisol



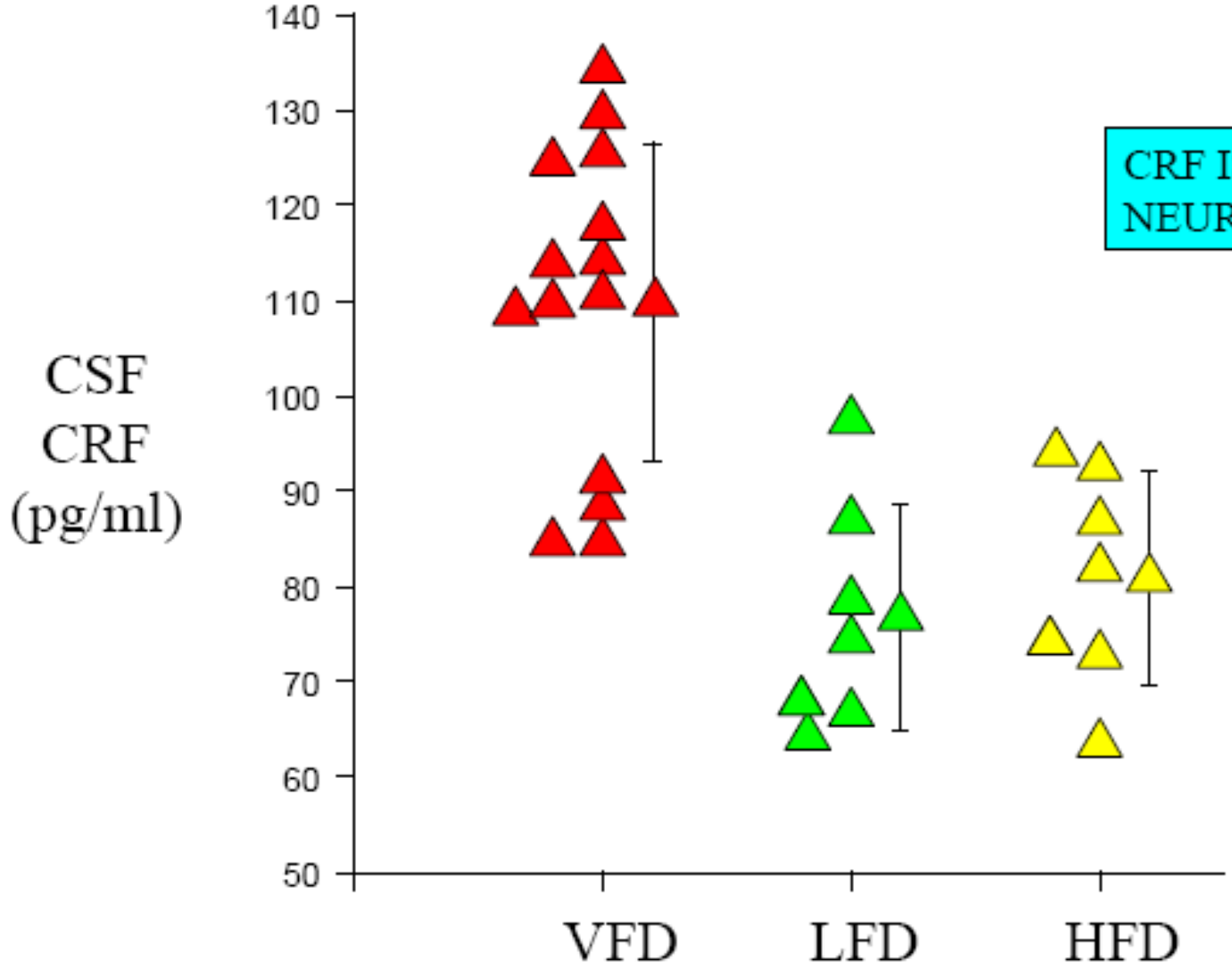
Steptoe et al. 2003, Psychosomatic Medicine, 65, 461-470

PERCEIVED CONTROL IN NATIONAL SAMPLES AND ALL CAUSE MORTALITY



Pikhart, Bobak et al 2000

CSF CRF CONCENTRATIONS IN DIFFERENTIALLY-REARED JUVENILE PRIMATES:



CRF IS A "FEAR" NEUROPEPTIDE

GROUP EFFECT; $P < .0001$

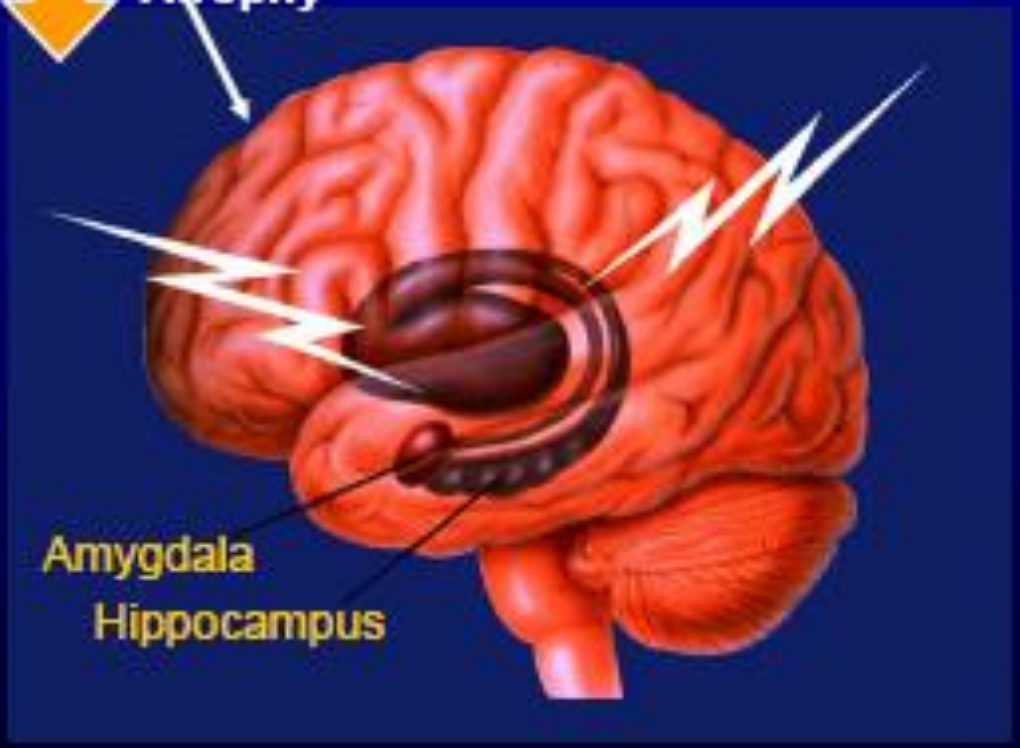
Coplan et al, 1996, PNAS, USA

The Human Brain Under Stress: key brain regions

Prefrontal cortex

Executive function, working memory

Atrophy



Hippocampus

Contextual, episodic, spatial memory

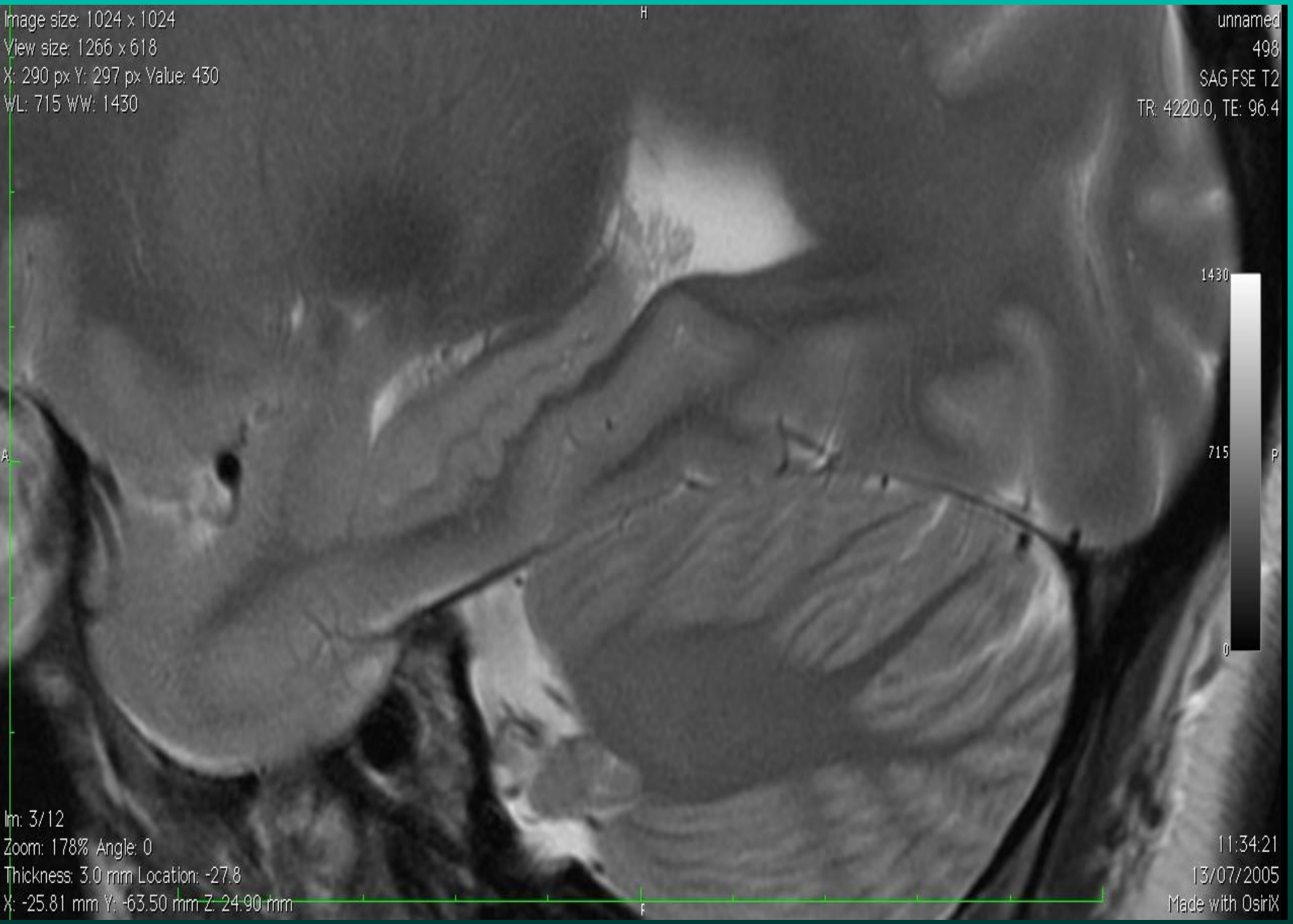
Atrophy

Amygdala

Emotion. fear, anxiety

Hypertrophy.

later atrophy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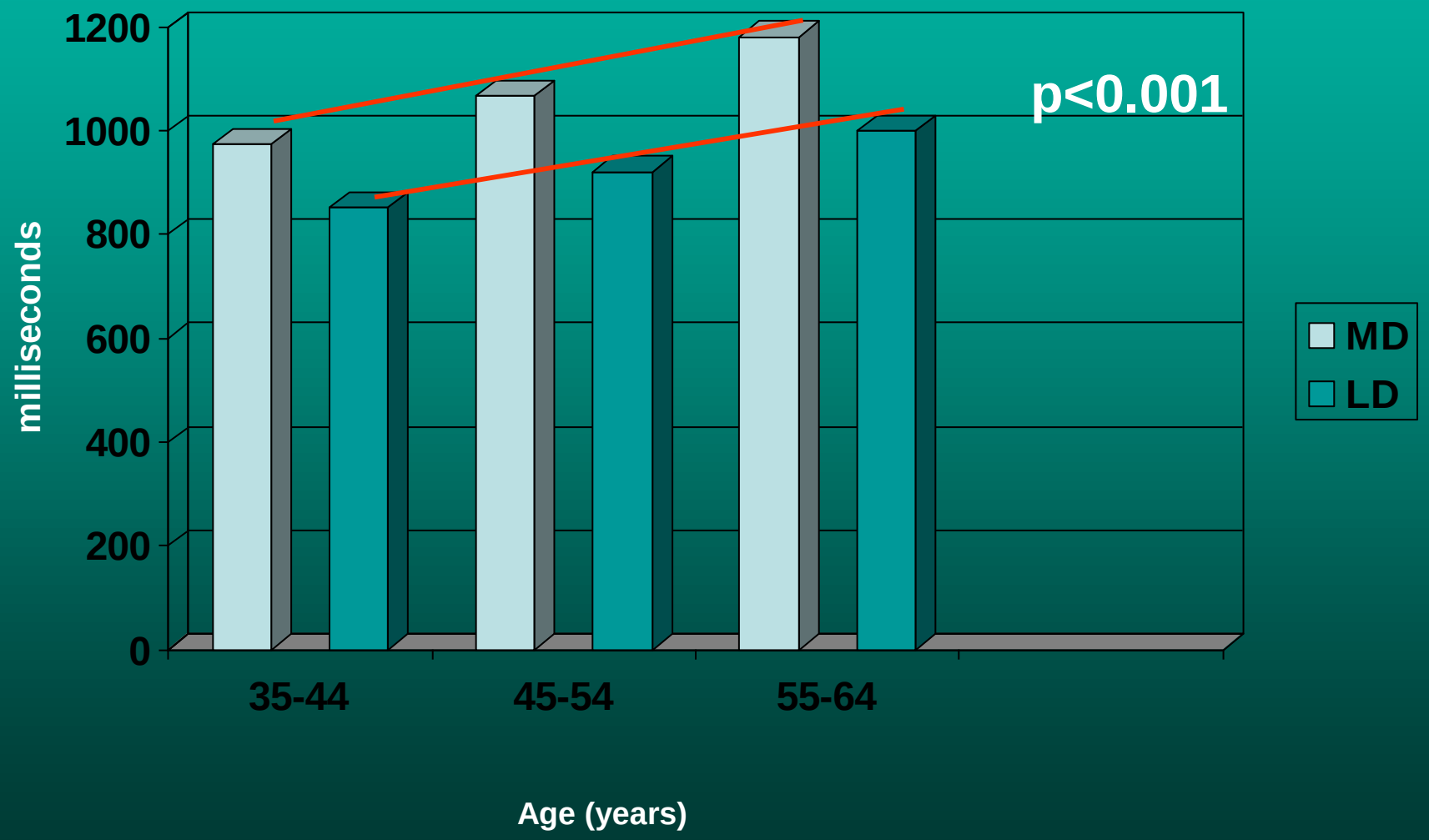
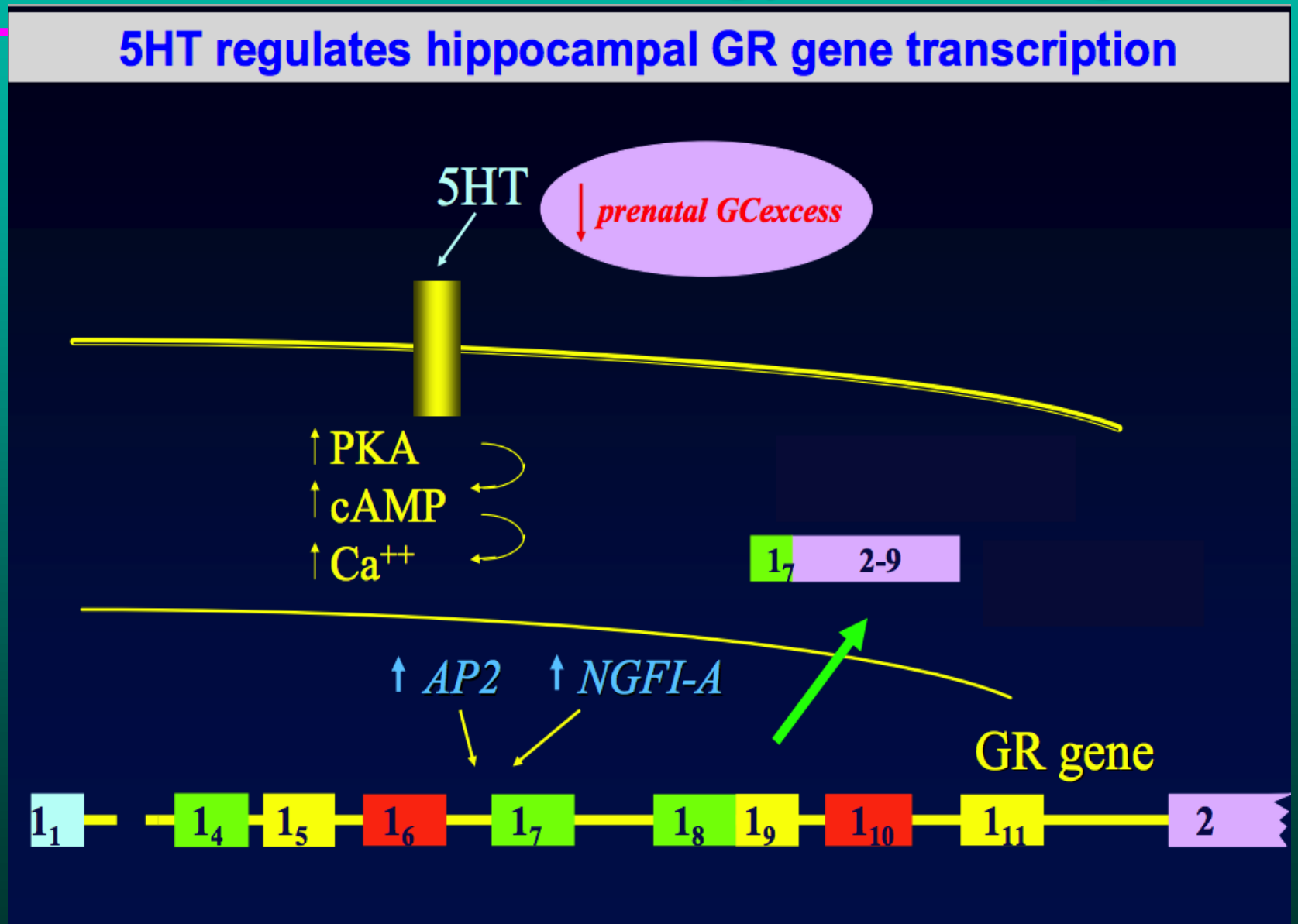
View size: 1266 x 618
X: 290 px Y: 297 px Value: 430
WL: 715 WW: 1430
H
unnamed
498
SAG FSE T2
TR: 4220.0, TE: 96.4
1430
715
0
A
P
Im: 3/12
Zoom: 178% Angle: 0
Thickness: 3.0 mm Location: -27.8
X: -25.81 mm Y: -63.50 mm Z: 24.90 mm
F
11:34:21
13/07/2005
Made with OsiriX

pSoBid: Choice reaction time



The molecular biology of a hug



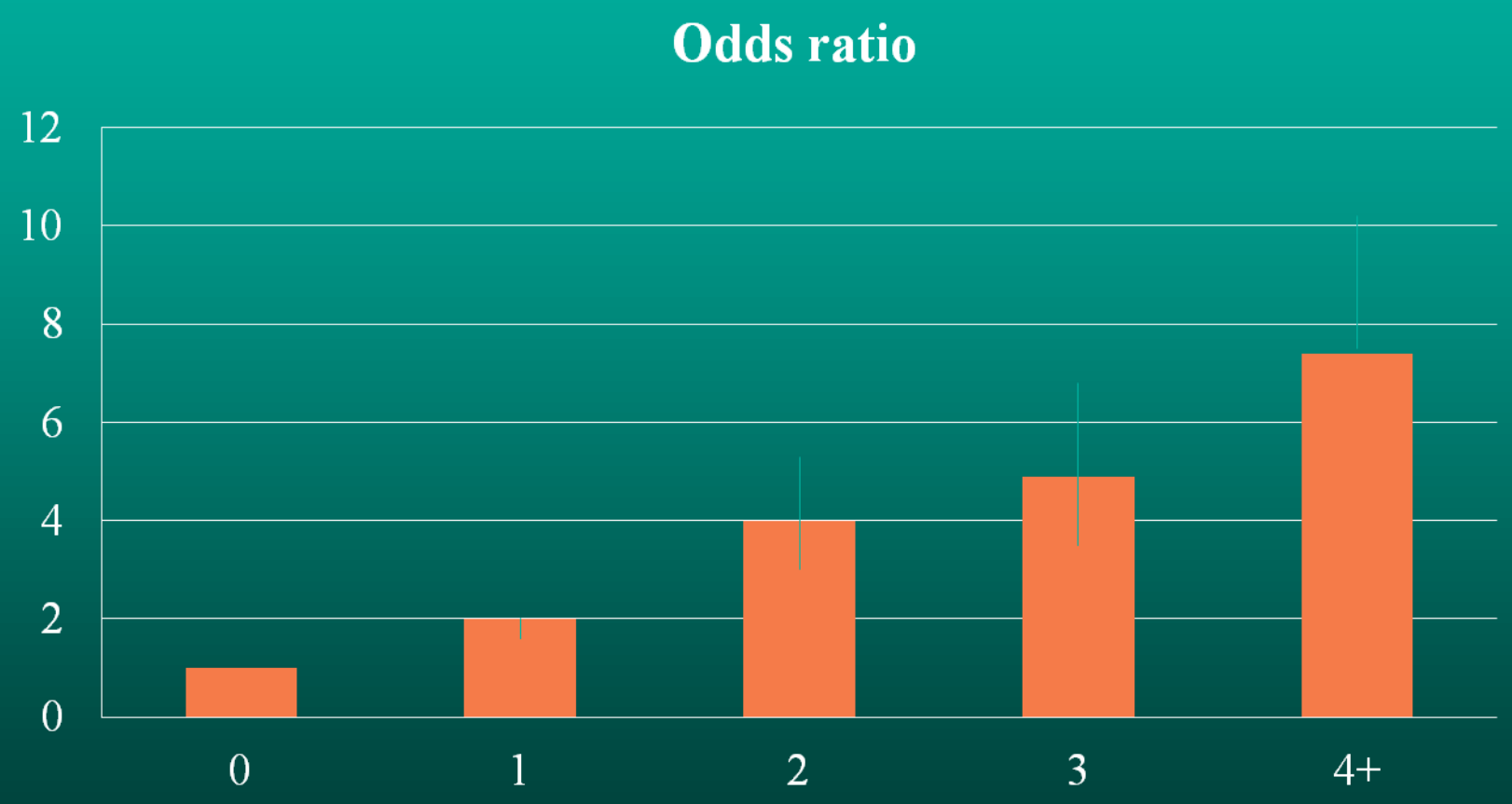
The Dunedin cohort

- 1000 children recruited in late 1972/3
- At age 3, “at risk” children identified on the basis of chaotic circumstances, emotional behaviour, negativity and poor attentiveness
- As adults, those “at risk” were more likely to :
  - be unemployed
  - have criminal convictions (especially for violence)
  - been pregnant as a teenager
  - have a substance abuse problem
  - exhibit signs of insulin resistance and metabolic syndrome

Adverse childhood events study

- Physical/sexual/emotional abuse
- Neglect (physical/emotional)
- Domestic substance abuse
- Domestic violence
- Parental mental illness
- Parental criminality

Adverse childhood events risk of alcoholism

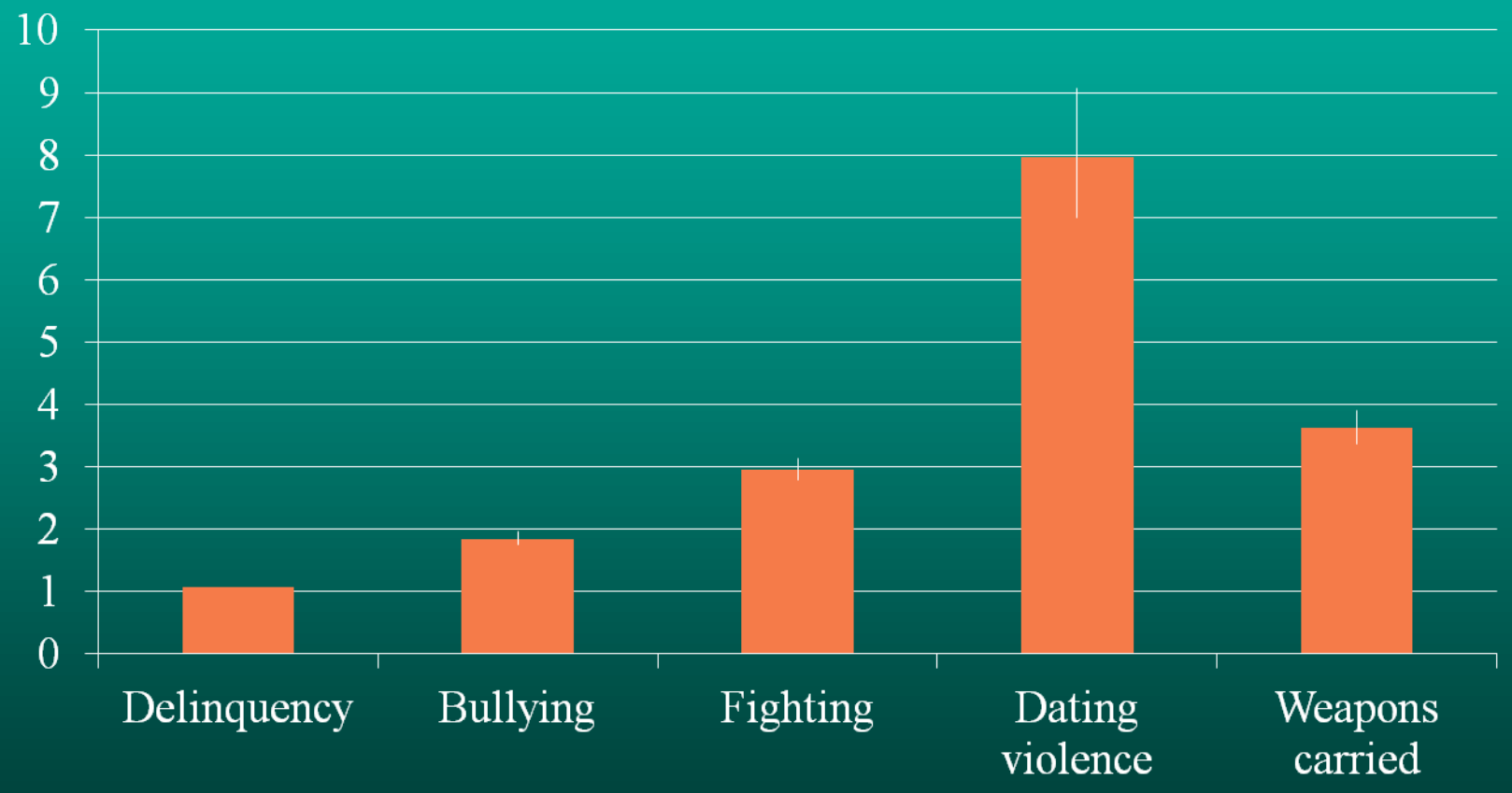


Hillis et al 2011

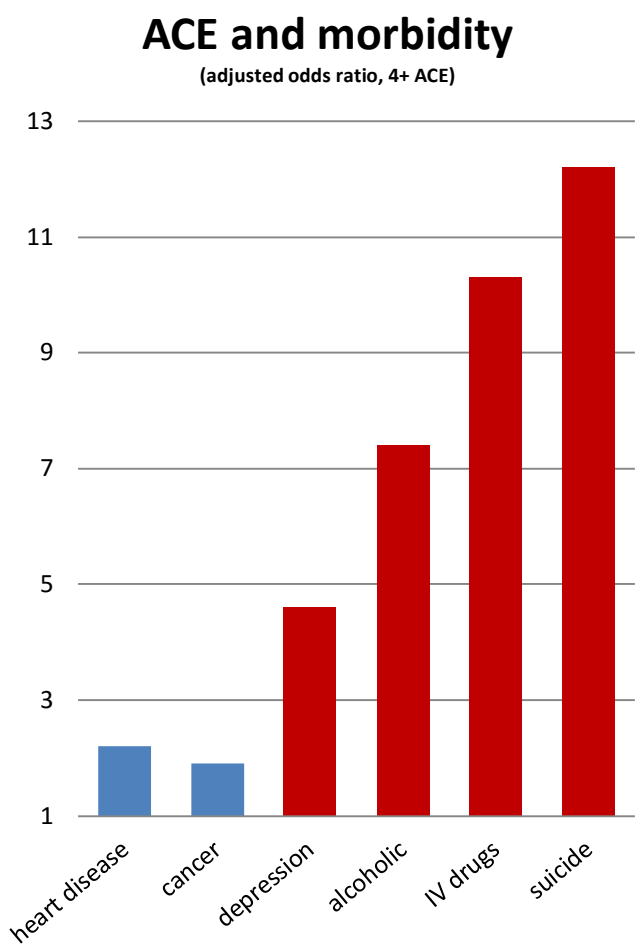
Adverse childhood events

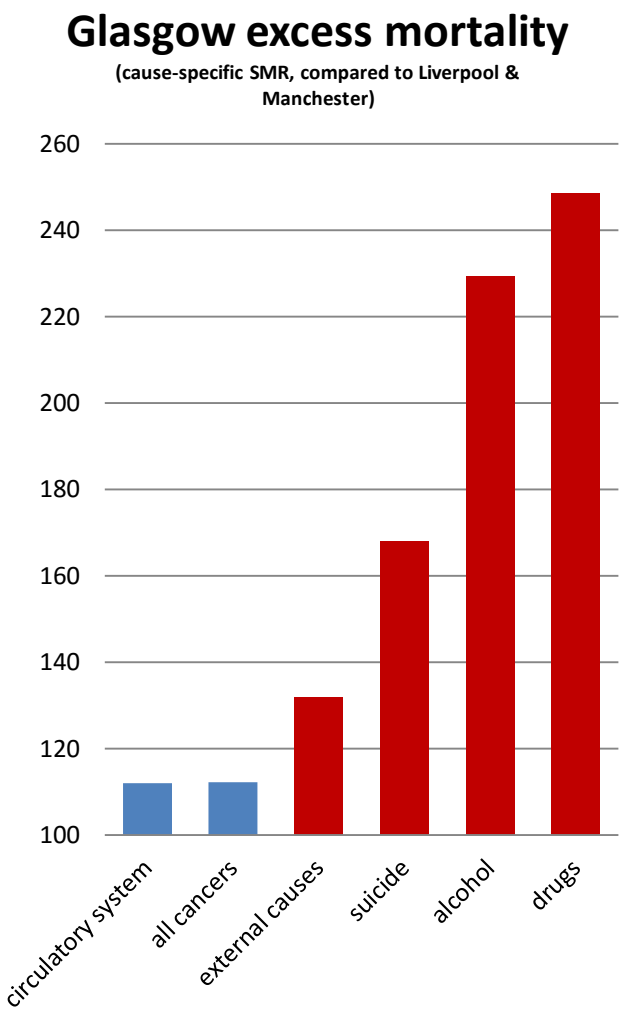
risk of perpetrating violence

Boys experiencing physical abuse



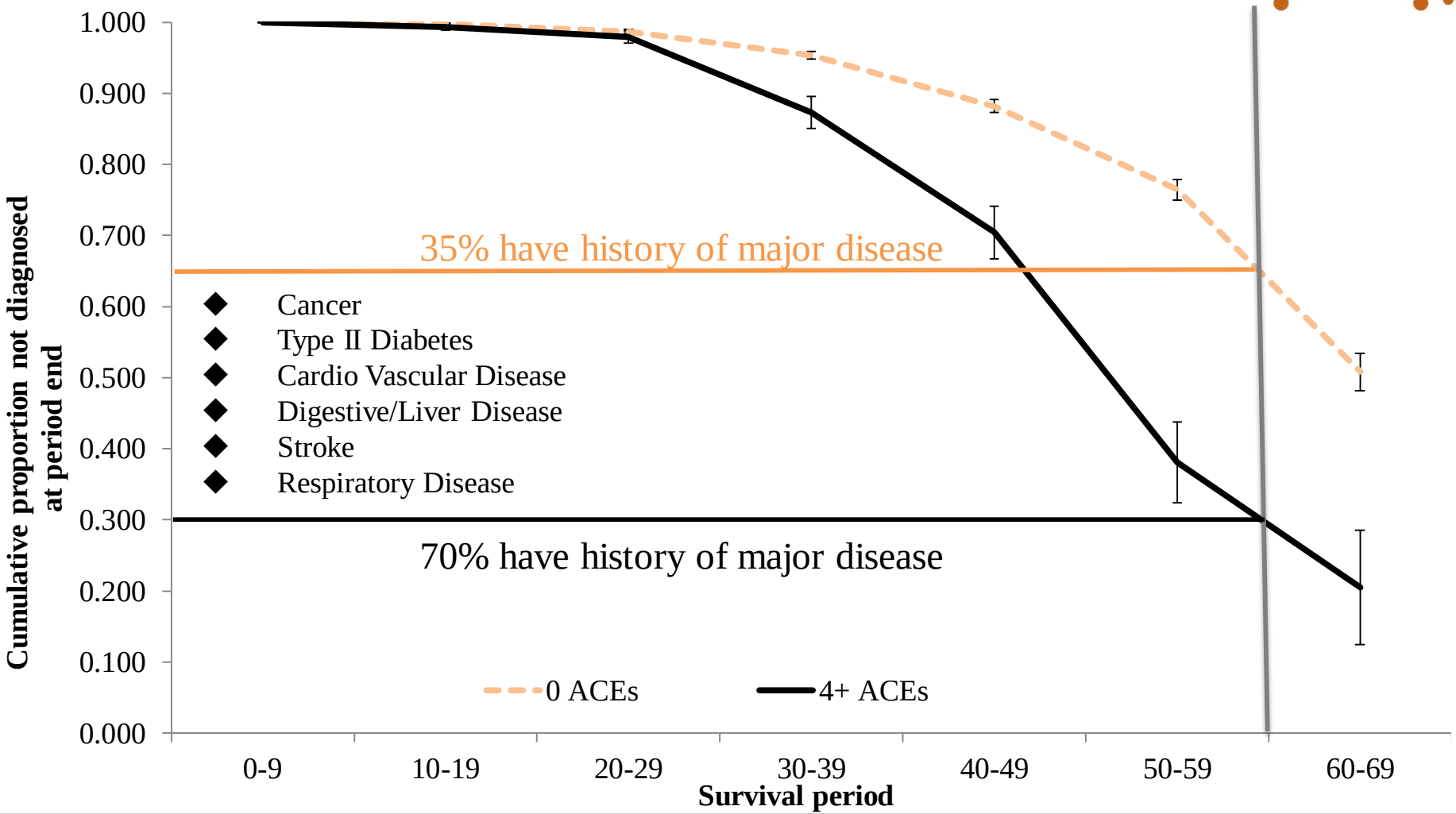
Duke et al 2010


ACE and morbidity
(adjusted odds ratio, 4+ ACE)
13
11
9
7
5
3
1
heart disease
cancer
depression
alcoholic
IV drugs
suicide


Glasgow excess mortality
(cause-specific SMR, compared to Liverpool & Manchester)
260
240
220
200
180
160
140
120
100
circulatory system
all cancers
external causes
suicide
alcohol
drugs

Cumulative Proportion of Individuals **not diagnosed** with a Major Disease with Age

Aged 18 to 69 (n = 3,885) Bellis et al, Journal of Public Health, 2014

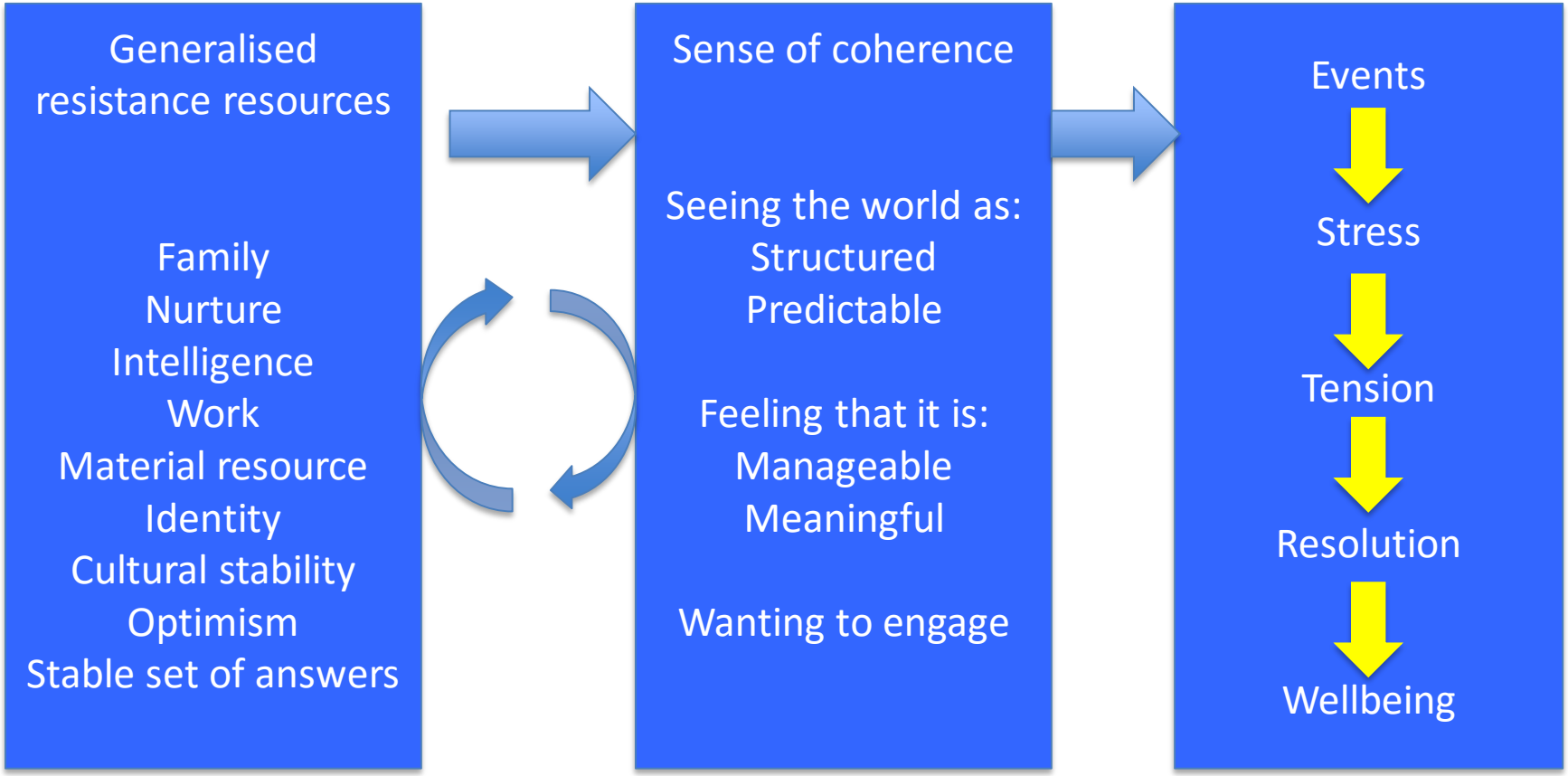


Differences are independent of Deprivation

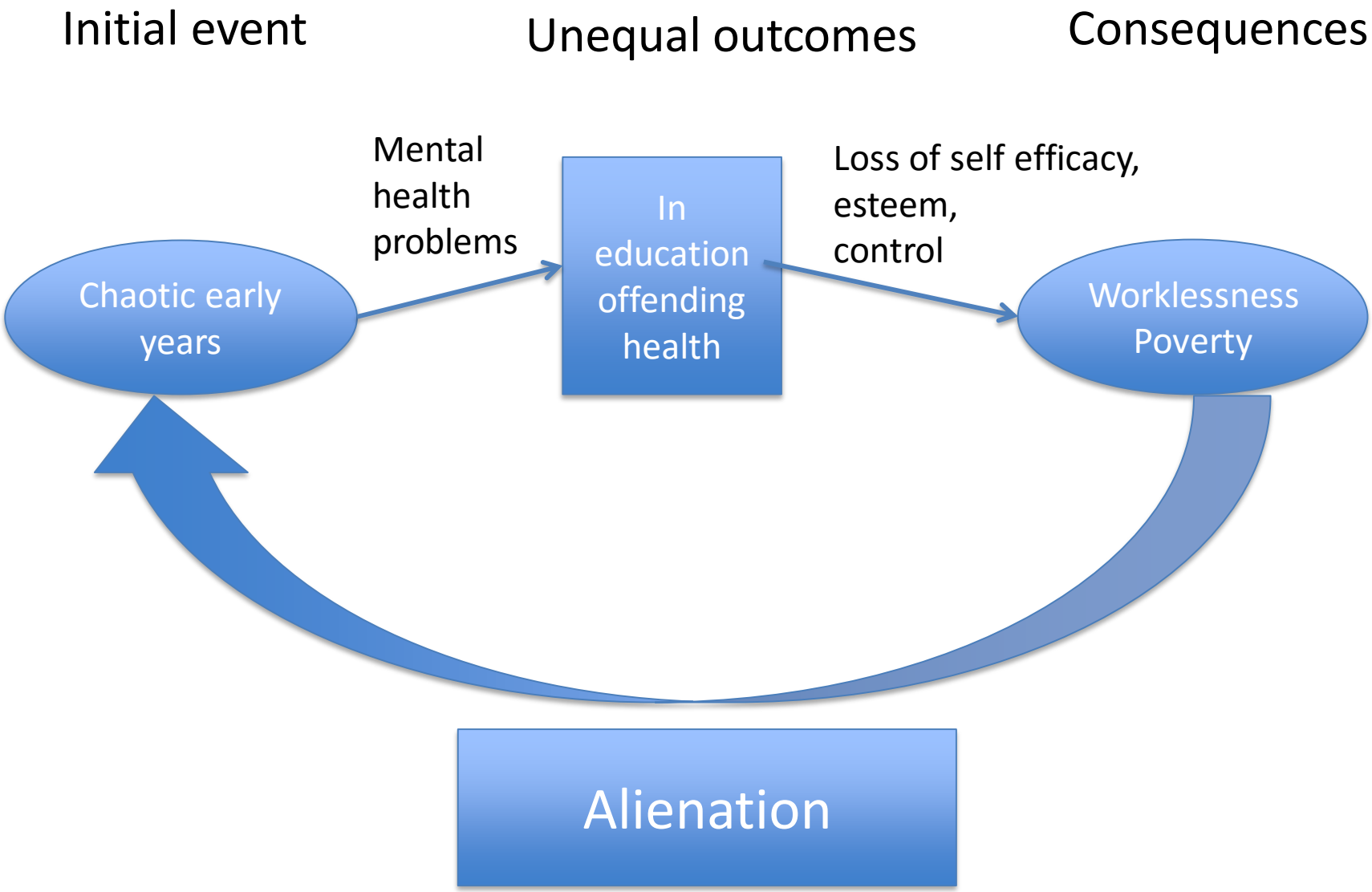
Economic cost of child maltreatment

- “The total lifetime economic burden resulting from new cases of fatal and nonfatal child maltreatment in the United States in 2008 is approximately $124 billion in 2010 dollars. This economic burden rivals the cost of other high profile public health problems, such as stroke and Type 2 diabetes (Fang et al., 2012).”

Creating wellbeing



The cycle of alienation



Big gains from many small changes

The Typical Approach…

Conference Room

DESIGN → DESIGN → DESIGN → DESIGN → APPROVE

Real World

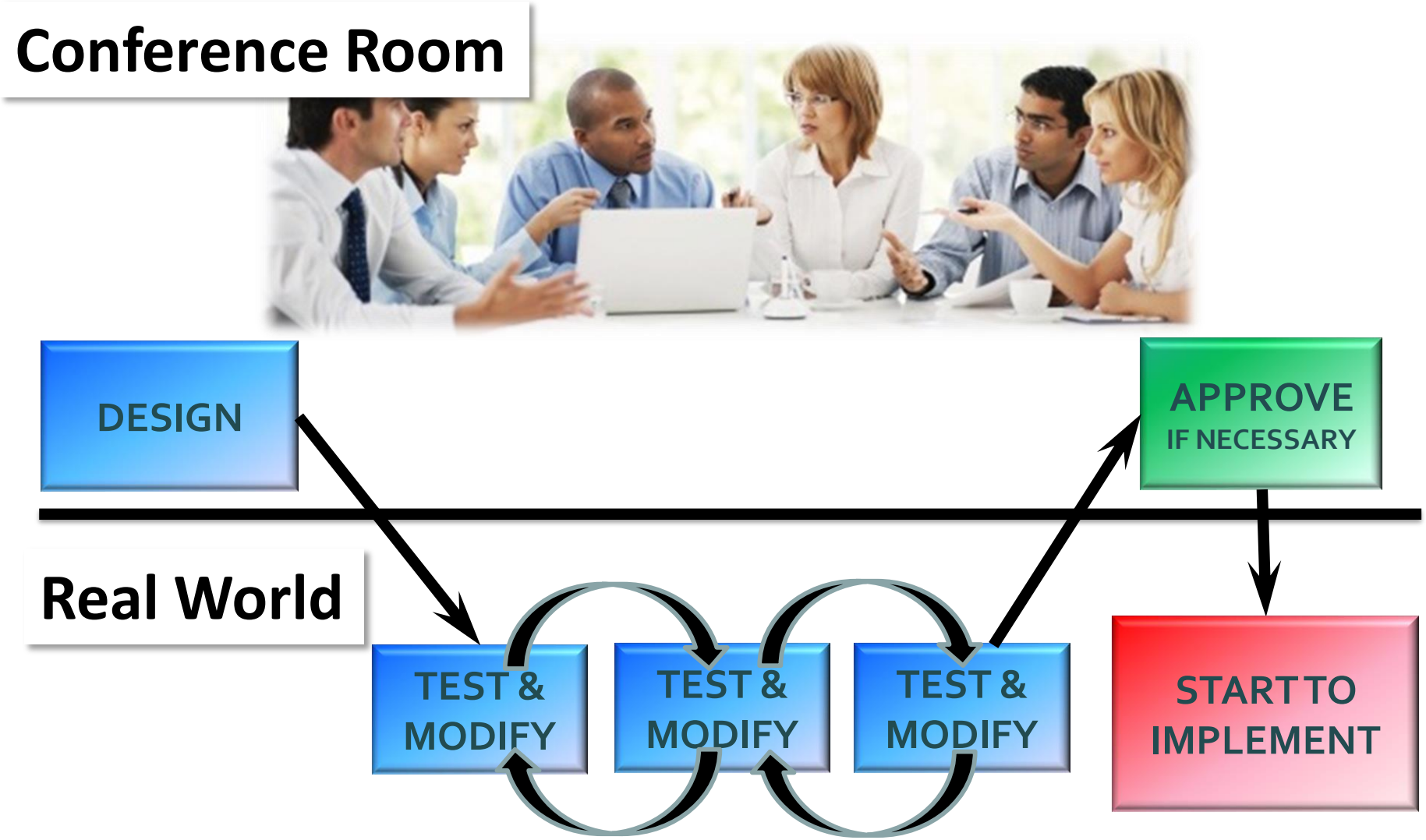
IMPLEMENT

“You can’t impose anything on anyone and expect them to be committed to it”

Edgar Schein, Professor Emeritus

MIT Sloan School

The Quality Improvement Approach



Large scale change….. developing our thinking over time

In the social era - **connecting**

Complex system change

- Make sure you understand the problem
- Make sure the system knows it must change
- Agree outcomes which act as order generating rules
- Be ready for unexpected solutions to emerge

NHS SCOTLAND

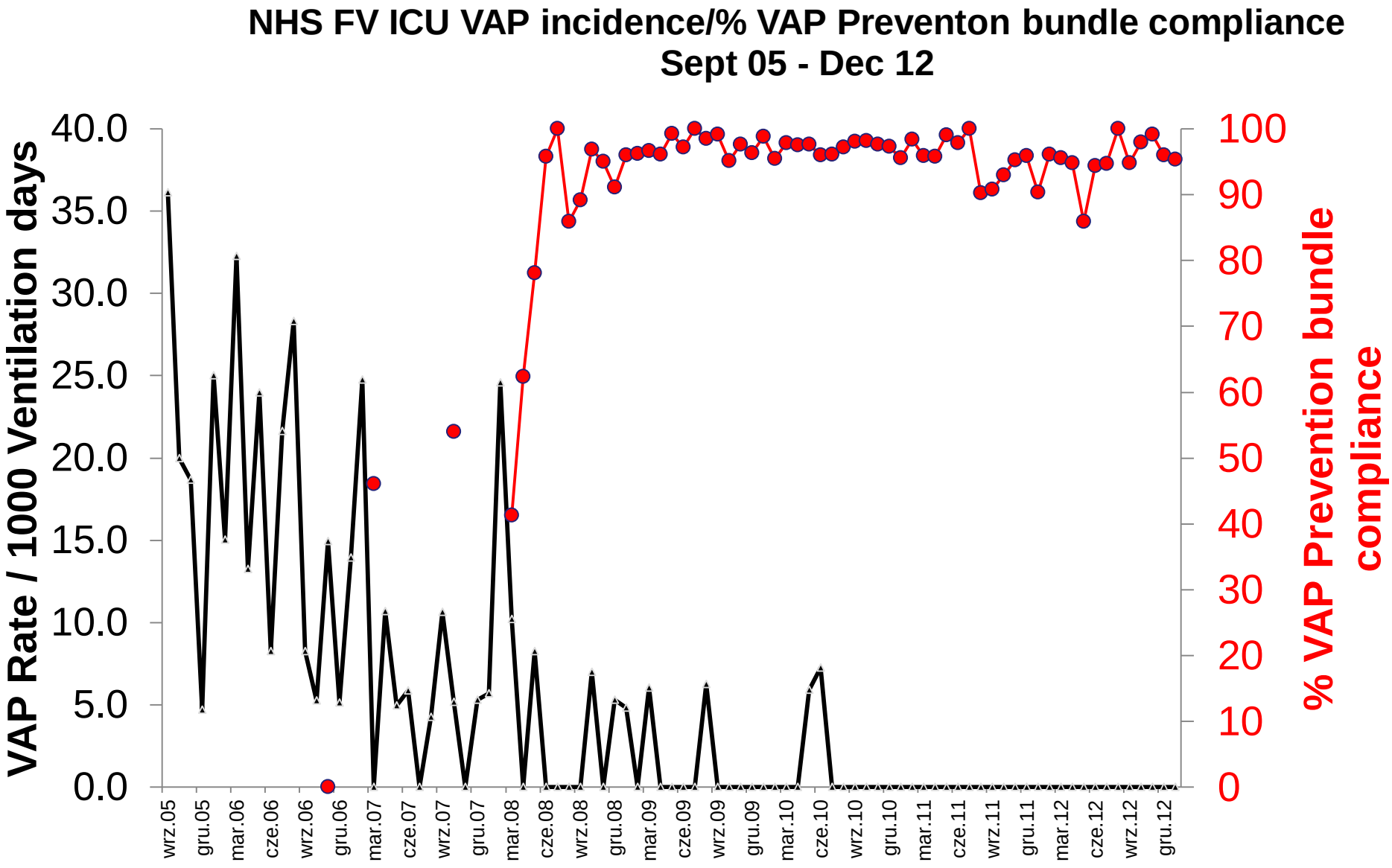
SCOTTISH PATIENT SAFETY PROGRAMME

NHS Quality Improvement Scotland

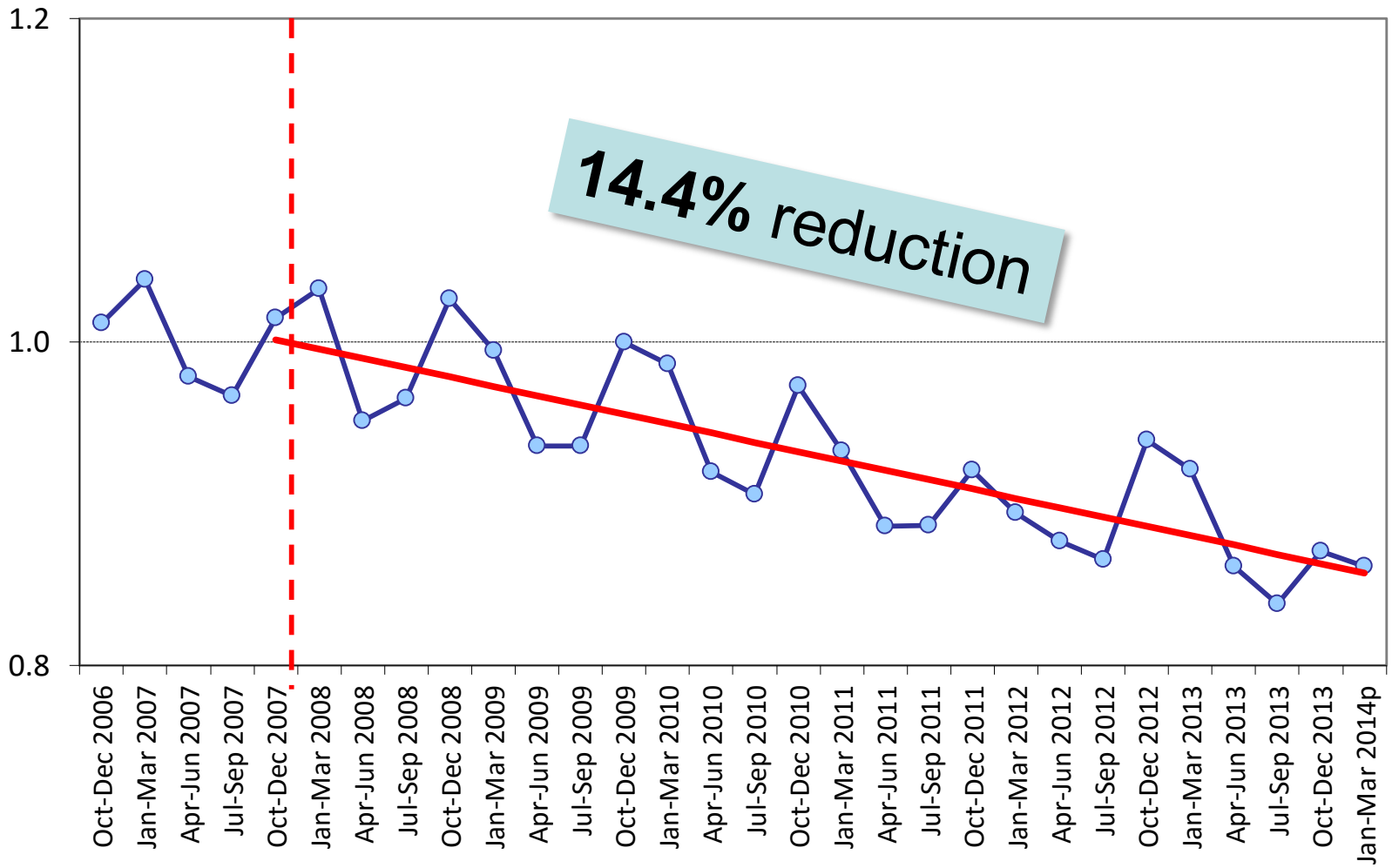
Outcome Aims

- **Mortality: 15% reduction**
- **Adverse Events: 30% reduction**
- Ventilator Associated Pneumonia: 0 or 300 days between
- Central Line Bloodstream Infection: 0 or 300 days between
- Blood Sugars w/in Range (ITU/HDU): 80% or > w/in range
- MRSA Bloodstream Infection: 30% reduction
- Crash Calls: 30% reduction

The Scottish Government


NHS FV ICU VAP incidence/% VAP Preventon bundle compliance
Sept 05 - Dec 12
VAP Rate / 1000 Ventilation days
% VAP Prevention bundle compliance
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
100
90
80
70
60
50
40
30
20
10
0
wrz.05
gru.05
mar.06
cze.06
wrz.06
gru.06
mar.07
cze.07
wrz.07
gru.07
mar.08
cze.08
wrz.08
gru.08
mar.09
cze.09
wrz.09
gru.09
mar.10
cze.10
wrz.10
gru.10
mar.11
cze.11
wrz.11
gru.11
mar.12
cze.12
wrz.12
gru.12

Hospital Standardised Mortality Ratio Scotland: October 2006 to March 2014



Early
Years
Collaborative

- *To make Scotland the best place in the world to grow up in by improving outcomes, and reducing inequalities, for all babies, children, mothers, fathers and families across Scotland to ensure that all children have the best start in life and are ready to succeed.*

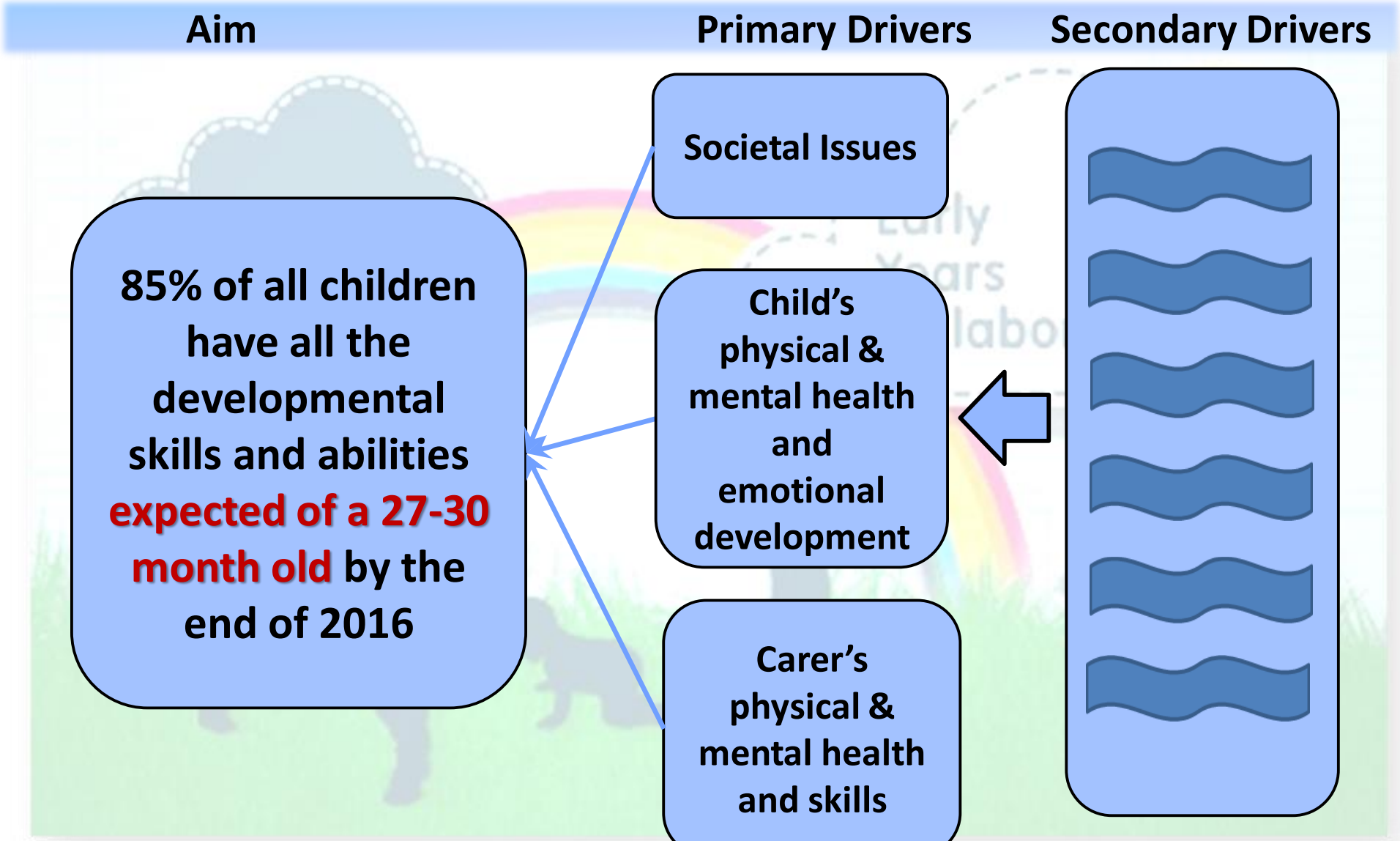
The Early Years Collaborative - Aims

1. To ensure that women experience positive pregnancies which result in the birth of more healthy babies as evidenced by a reduction of 15% in stillbirths (from 4.9 per 1,000 births in 2010 to 4.3 per 1,000 births in 2015) and infant mortality (from 3.7 per 1,000 live births in 2010 to 3.1 per 1,000 live births in 2015).

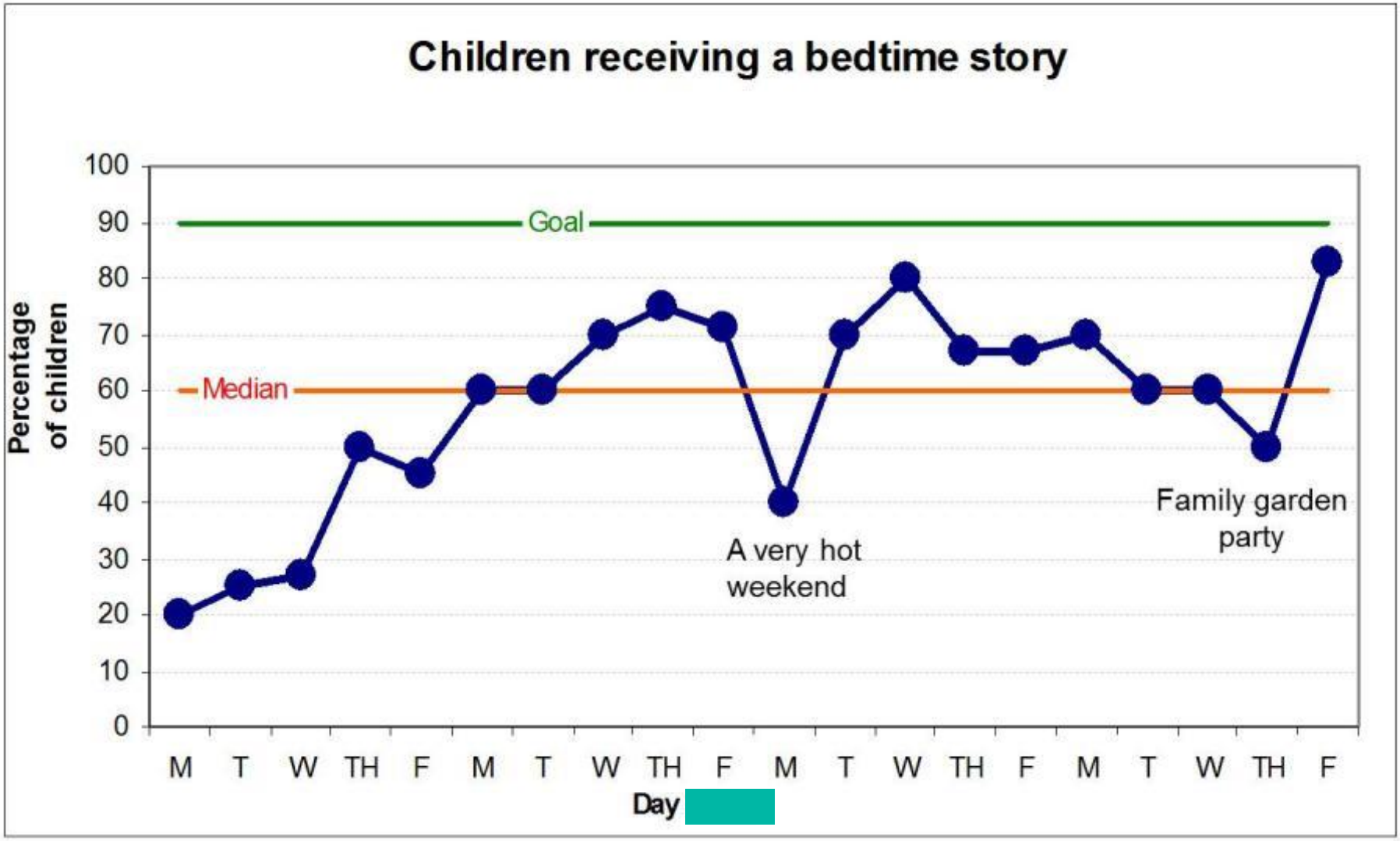
2. To ensure that 85% of all children have reached all of the expected developmental milestones at the time of the child's 27-30 month child health review, by end-2016.

3. To ensure that 90% of all children have reached all of the expected developmental milestones at the time the child starts primary school, by end-2017.

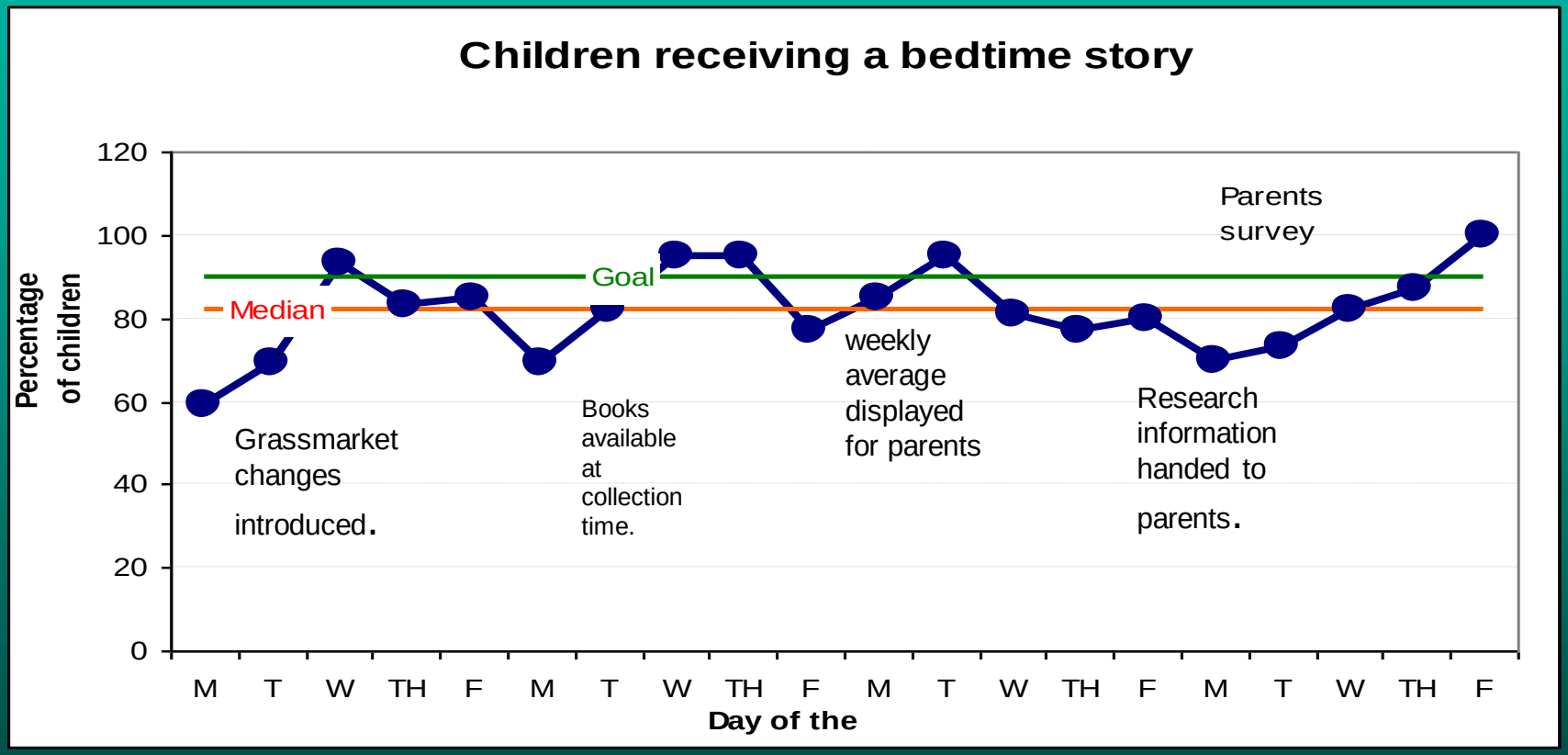
Workstream 2



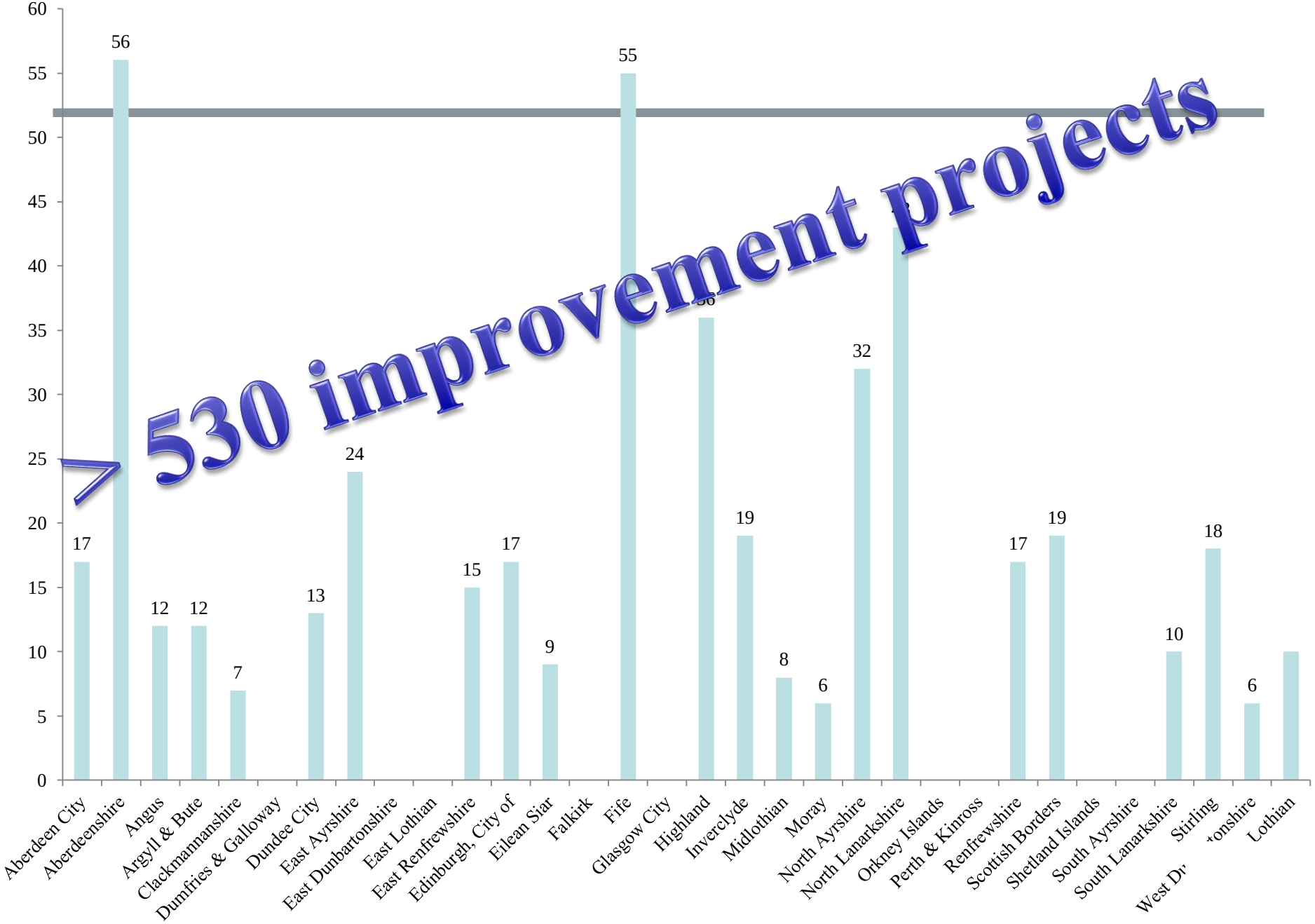
90% of children at Grassmarket nursery school will receive a bedtime story



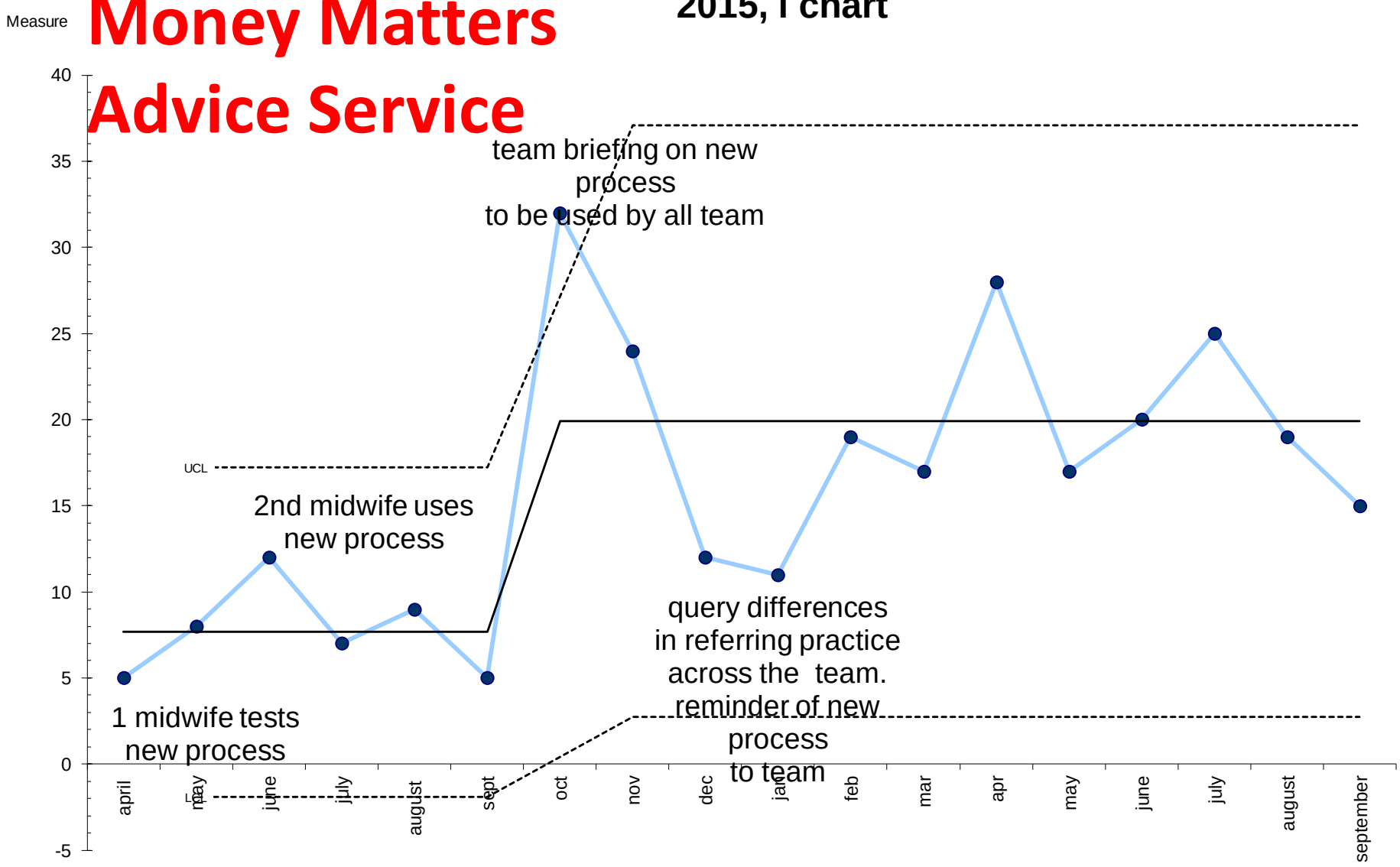
Lochrin Nursery



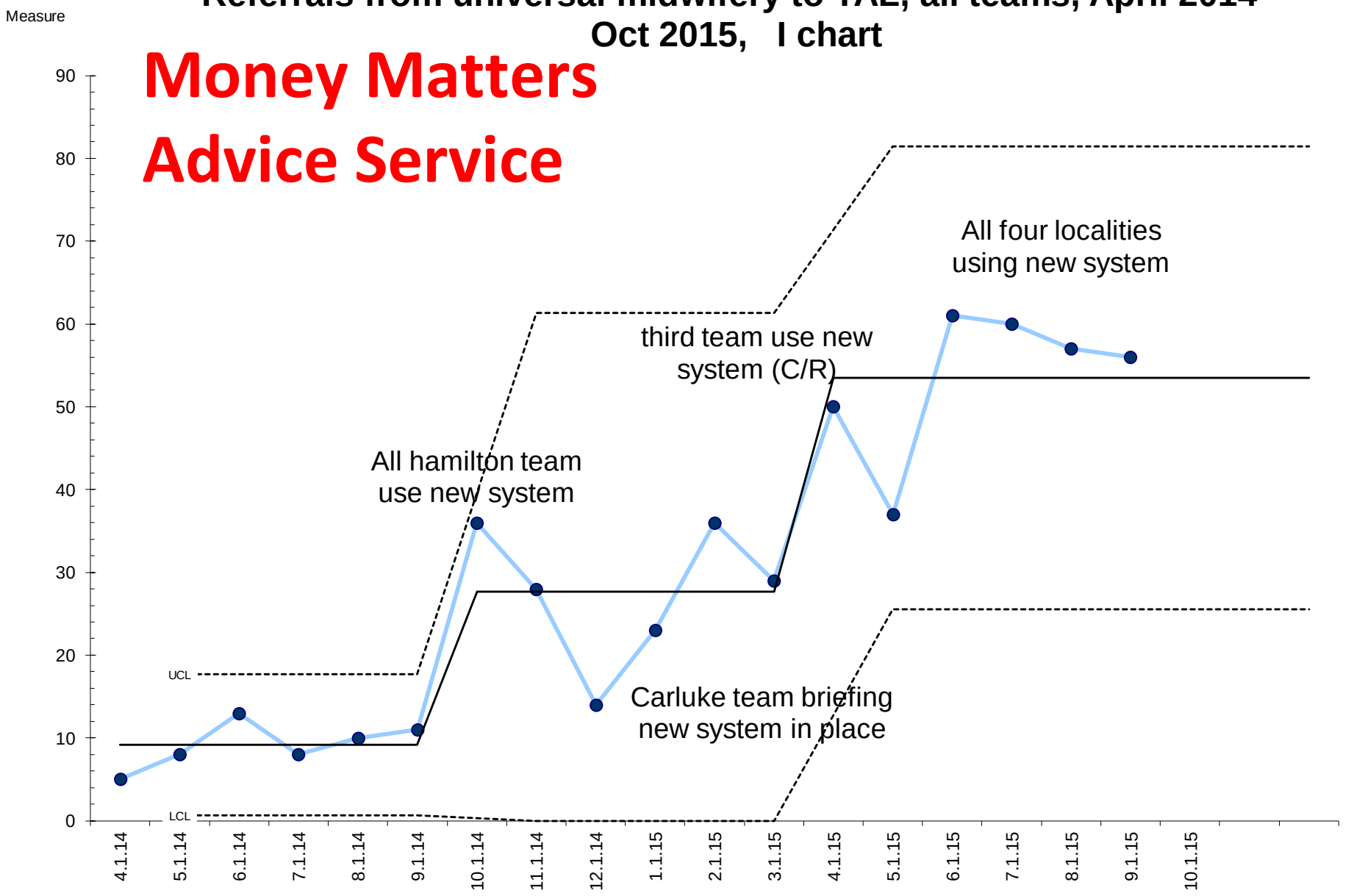
Number of Improvement Projects for each CPP



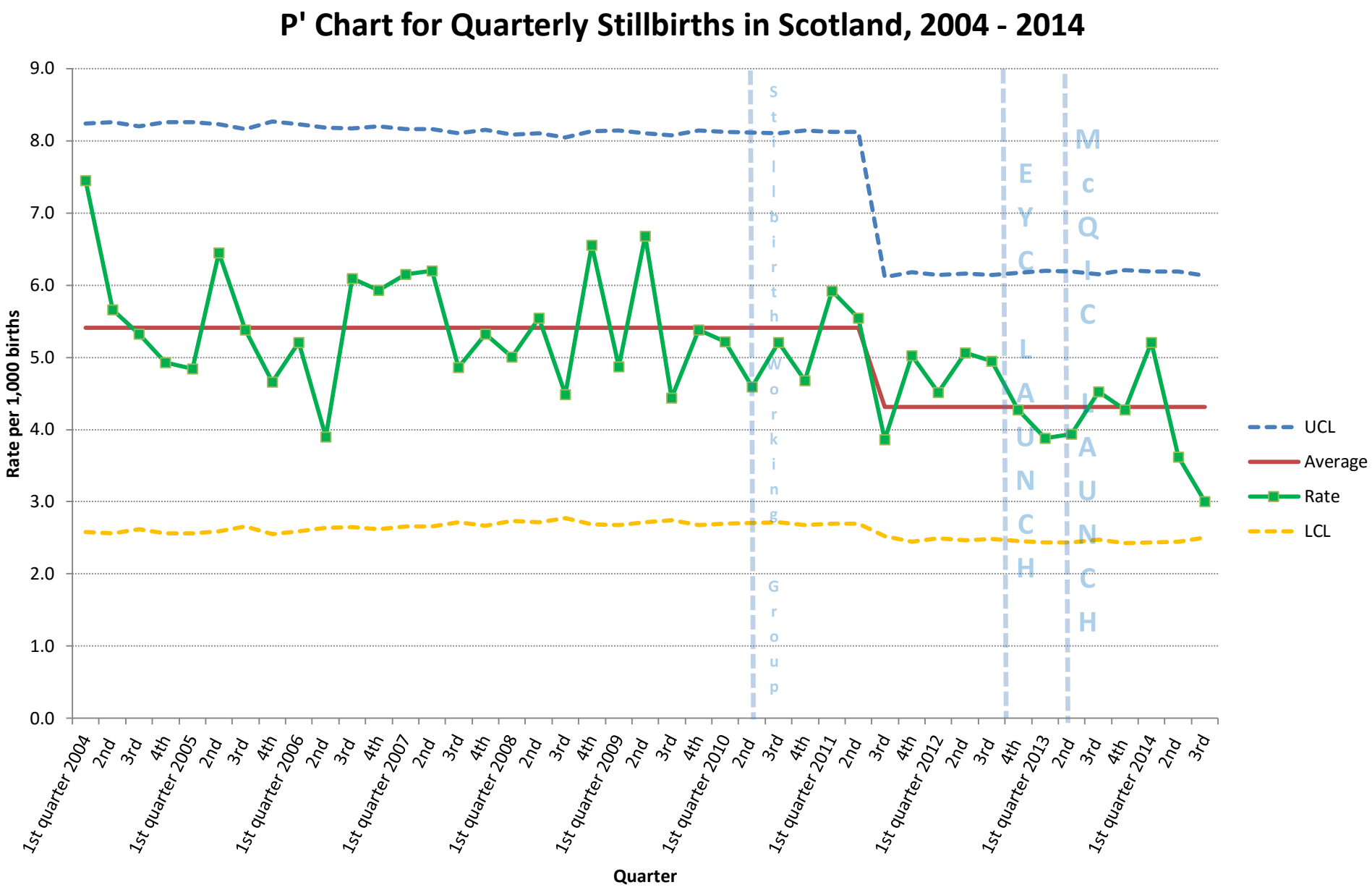
Referrals from universal midwifery, Hamilton team, Apr 2014- Sept 2015, i chart



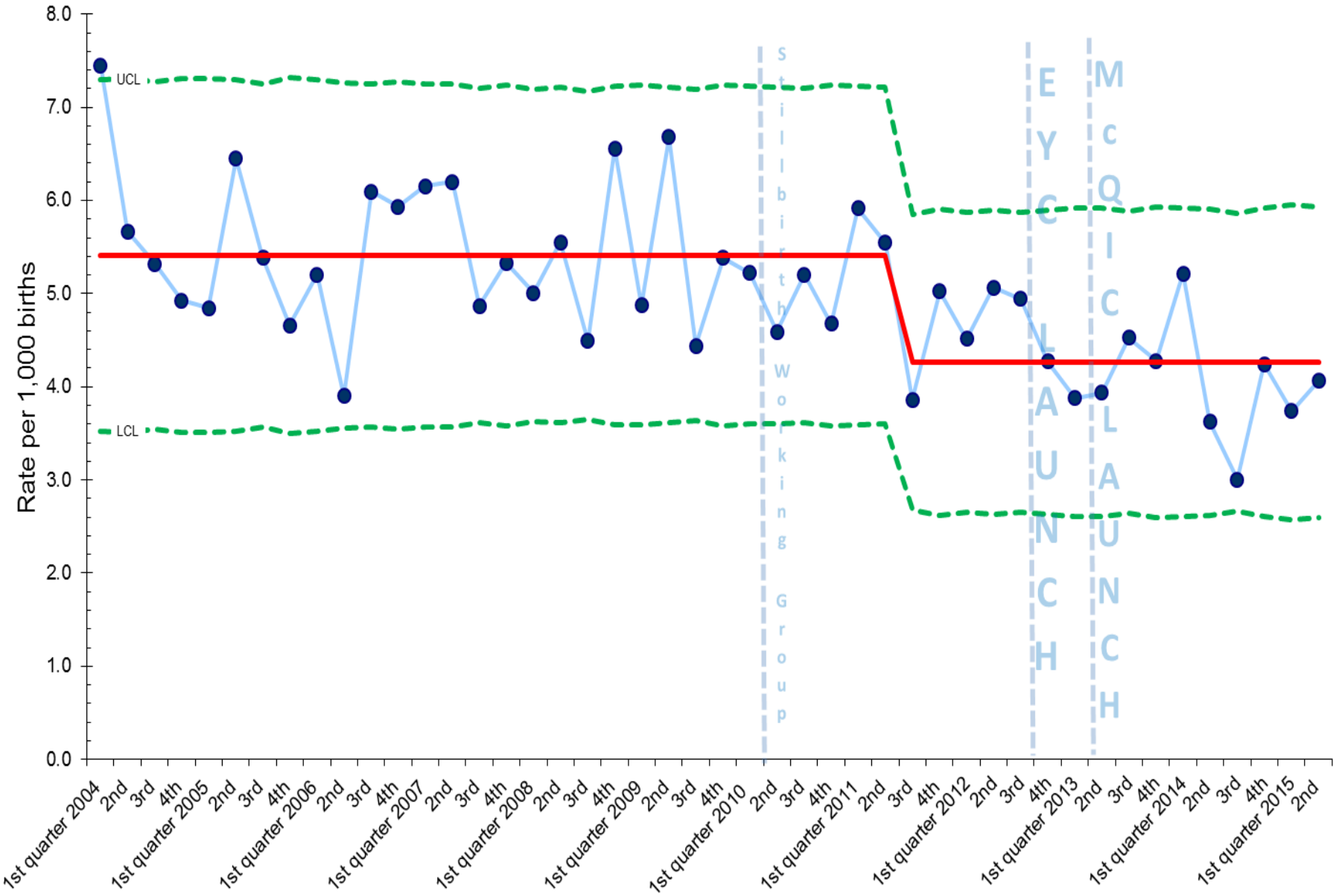
Referrals from universal midwifery to TAL, all teams, April 2014-Oct 2015, I chart



Key change theme
Early support pregnancy and beyond
Attachment and child development
Continuity of care in transitions
27-30/12 child health review
Developing parenting skills combined with Family engagement to support learning
Addressing Child Poverty


P' Chart for Quarterly Stillbirths in Scotland, 2004 - 2014
Rate per 1,000 births
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
Stillbirth Working Group
EYCLAUNCH
McQUICLAUNCH
UCL
Average
Rate
LCL
1st quarter 2004
2nd
3rd
4th
1st quarter 2005
2nd
3rd
4th
1st quarter 2006
2nd
3rd
4th
1st quarter 2007
2nd
3rd
4th
1st quarter 2008
2nd
3rd
4th
1st quarter 2009
2nd
3rd
4th
1st quarter 2010
2nd
3rd
4th
1st quarter 2011
2nd
3rd
4th
1st quarter 2012
2nd
3rd
4th
1st quarter 2013
2nd
3rd
4th
1st quarter 2014
2nd
3rd
Quarter

P Chart for Stillbirth Rate in Scotland, 2004 - 2015Q2



A network for method research

- Cities or countries interested in methods for change
- Horizon 2020 - 2016 call for projects
- harry.burns@strath.ac.uk
- @harryburns16

Jimmy Reid 1971

Rectorial Address

- “Let me right at the outset define what I mean by alienation. It is the cry of men who feel themselves the victims of blind economic forces beyond their control. It's the frustration of ordinary people excluded from the processes of decision making. The feeling of despair and hopelessness that pervades people who feel with justification that they have no real say in shaping or determining their own destinies....”
-

Fr Greg Boyle

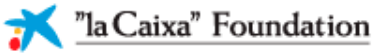
"Here is what we seek: a compassion that can stand in awe at what the poor have to carry rather than stand in judgment at how they carry it."
— Gregory Boyle

What do you mean, “it’s a bit muddy”?

City Health 2015

5 - 6 November

"Ensuring urban health and well-being in the face of the global financial crisis"

"Garantizando la salud urbana y el bienestar en el contexto de la crisis económica mundial"

"Garantint la salut urbana i el benestar en el context de la crisi econòmica mundial"