



DON'T STOP MOVING: IS THE DIGITAL WORLD FRIEND OR FOE IN FIGHTING A SEDENTARY FUTURE?



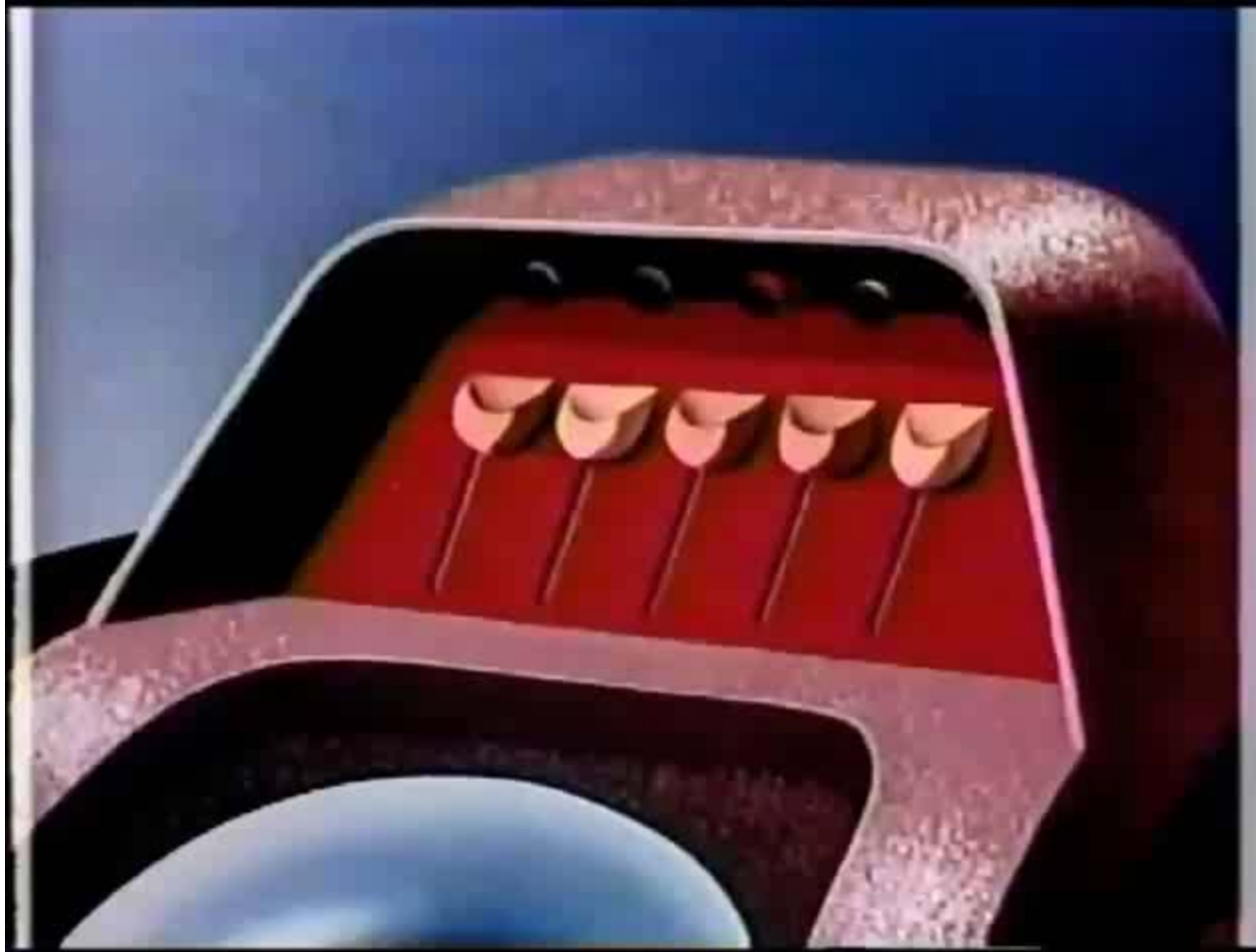




How could digital technology impact on our daily lives ?



Walt Disney Predicts the Future – the Magic Highway

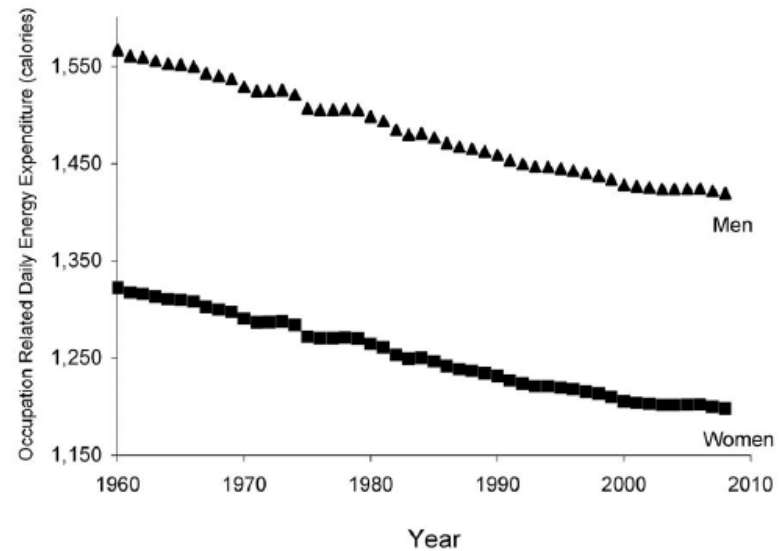
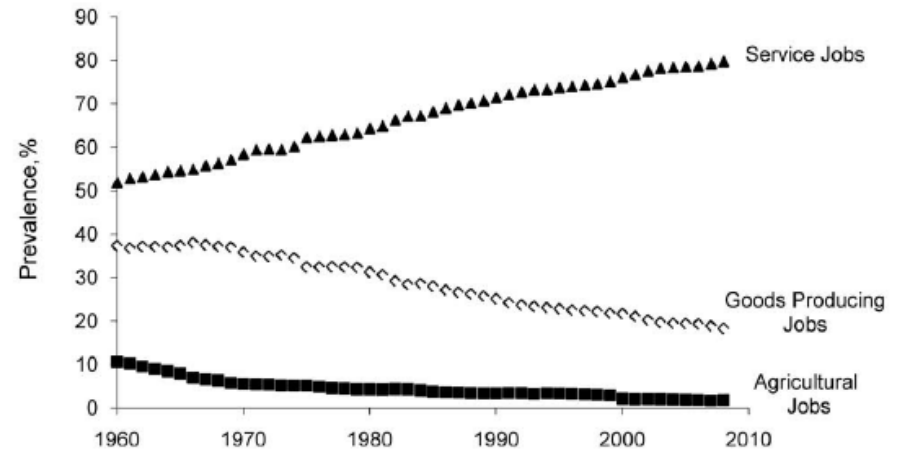


Is the digital world friend or foe ?



How has digital technology impacted on our daily lives ?

Impact of digital on changing nature of work



Impact of digital on changing nature of domestic life

125 Years Of Evolution

1886

2011

AWARDS 2011
iF product design award
? Best of the Best

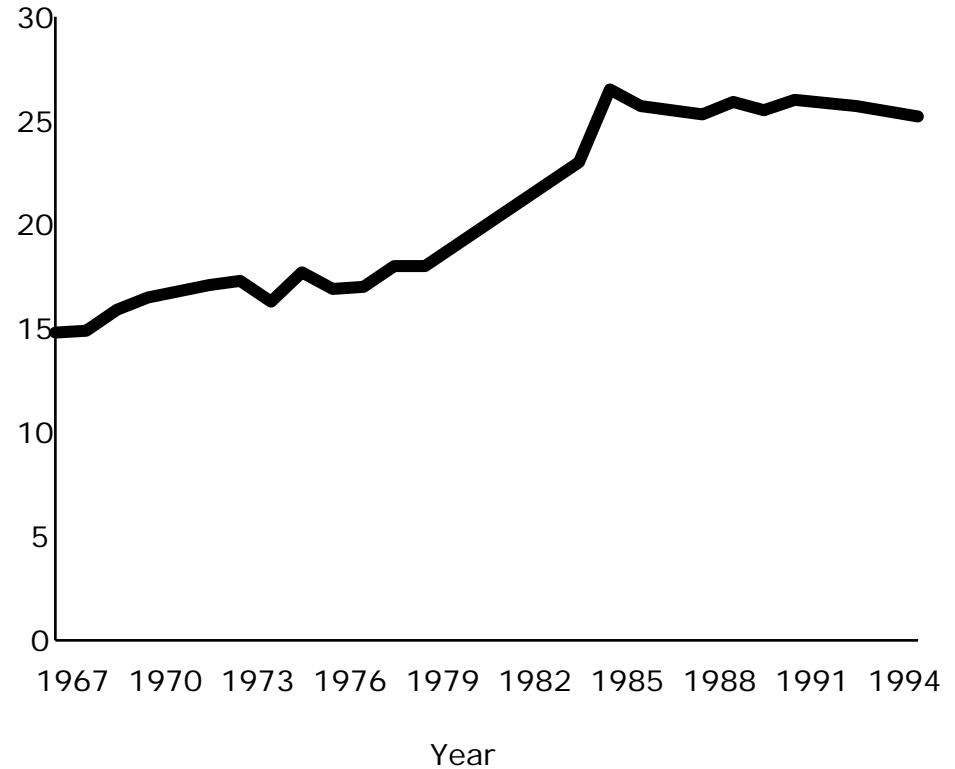
EURONICS
Your local independent electrical retailer

BOSCH
Invented for life

Impact of digital on changing nature of recreation

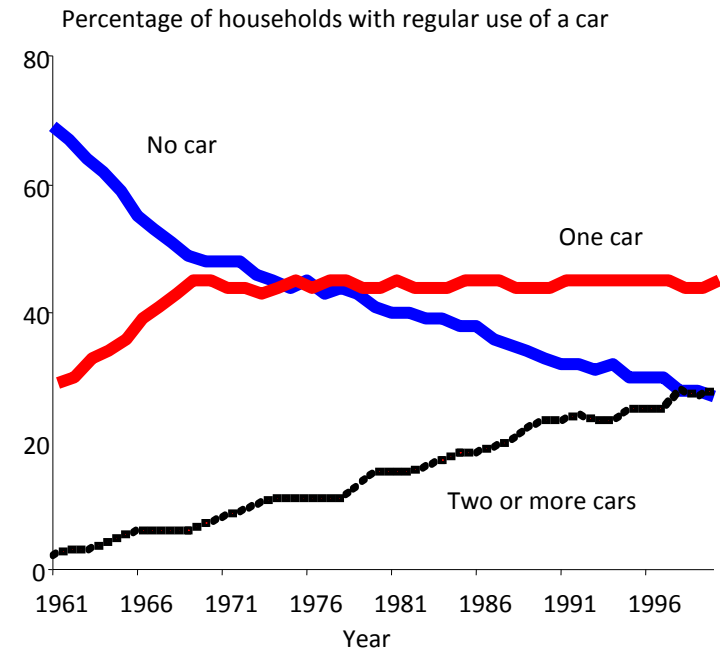


Hours per week of TV viewing in the UK

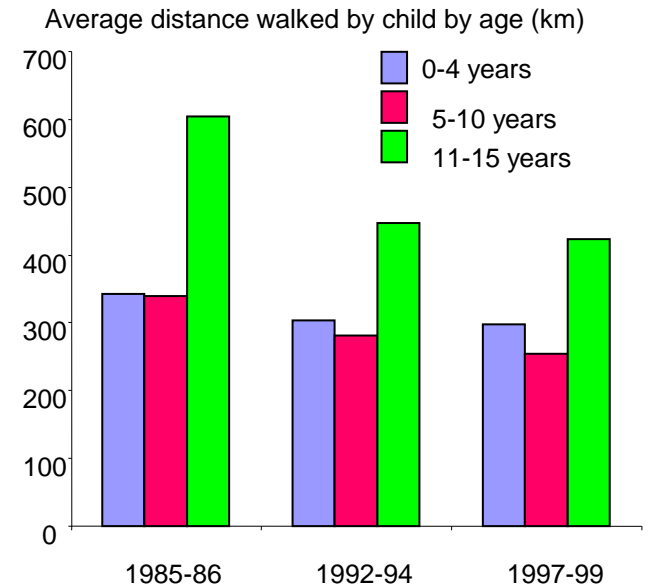


Source: Social Trends Series

Changing nature of travel



Source: National Travel Survey, Department for Transport



Source: National Travel Survey, DETR

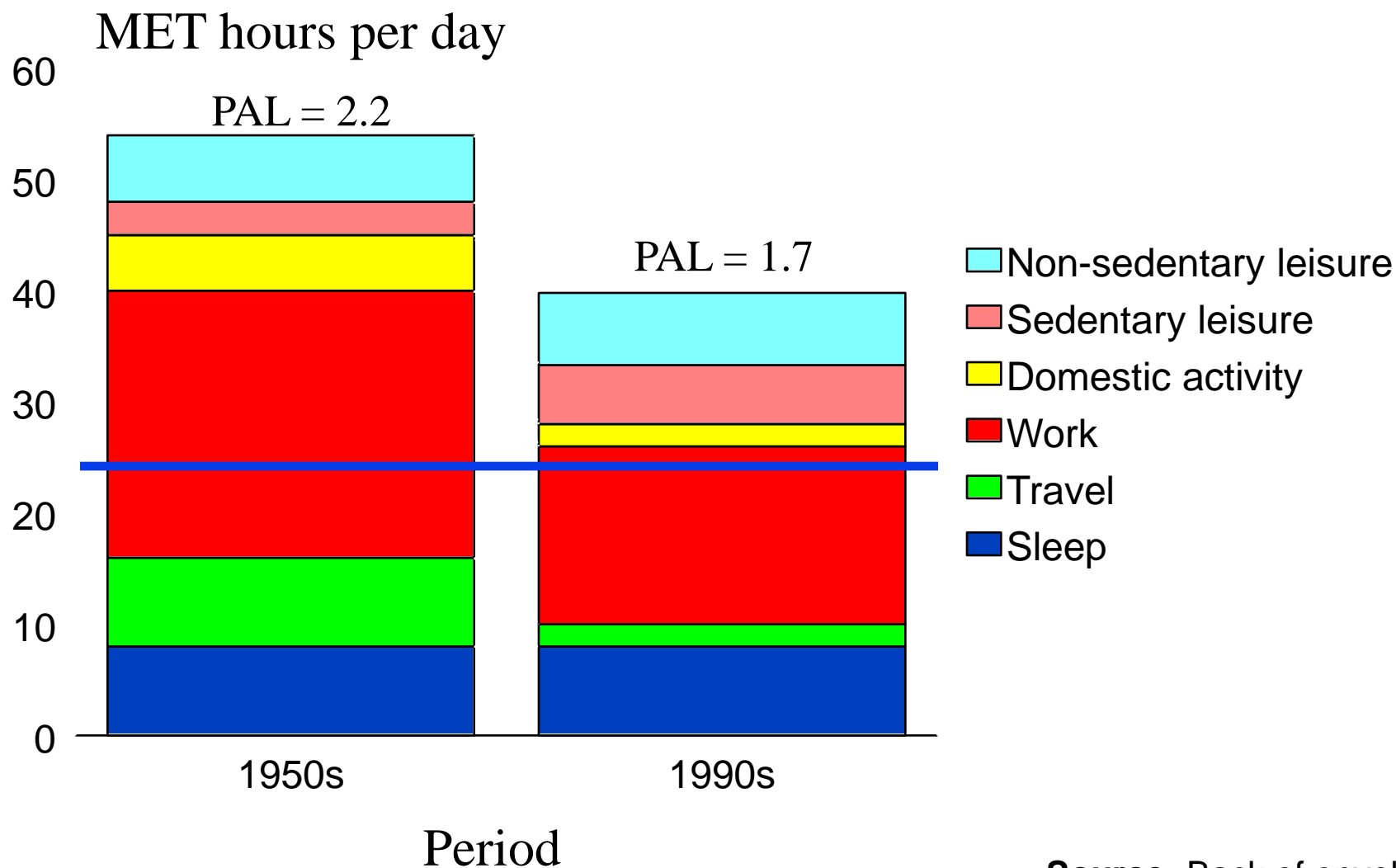
Is the digital world friend or foe ?



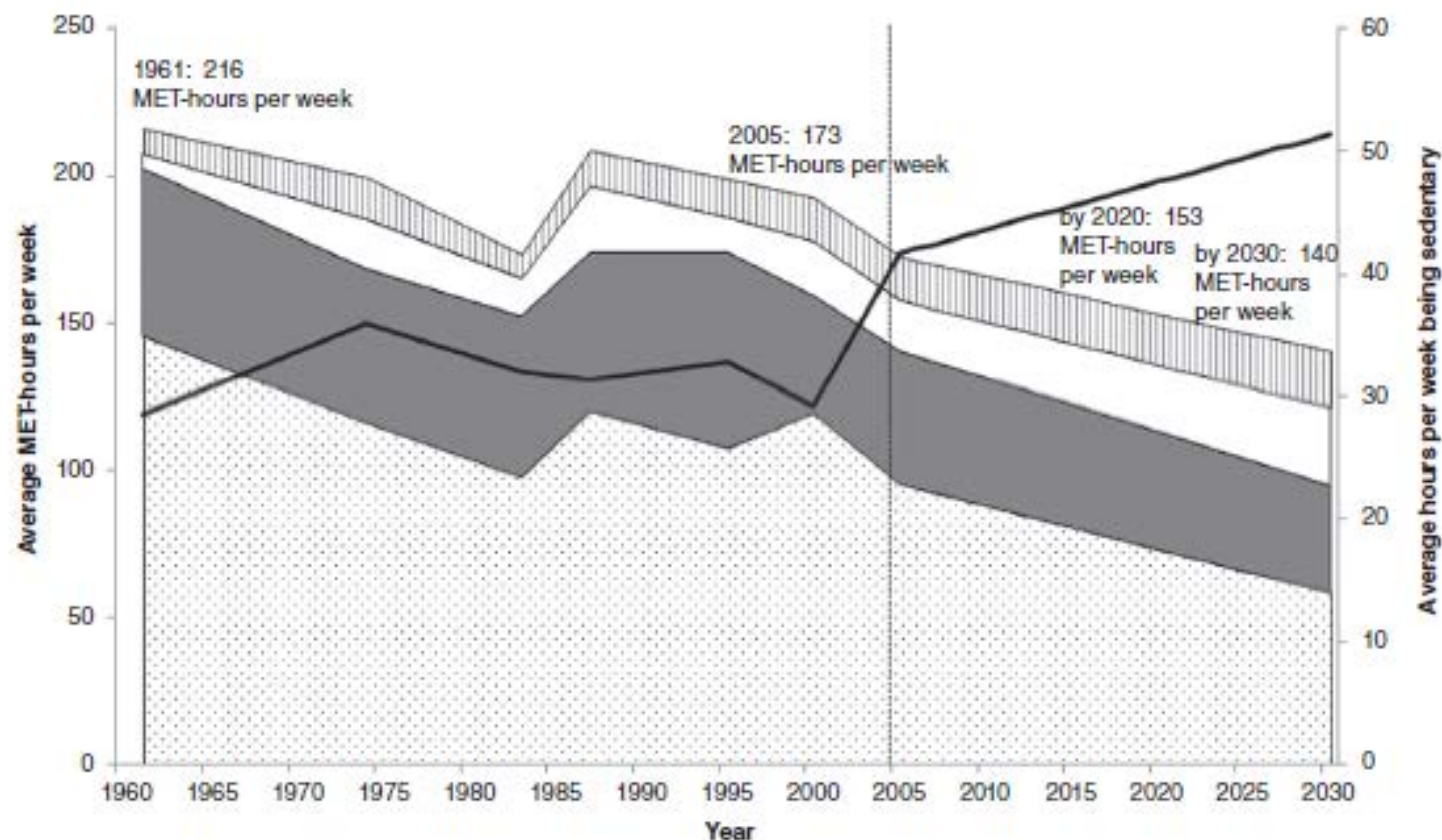
How has digital technology impacted on our daily lives ?

How has this changed total physical activity ?

Overall effect of changing distribution of activities and energy cost



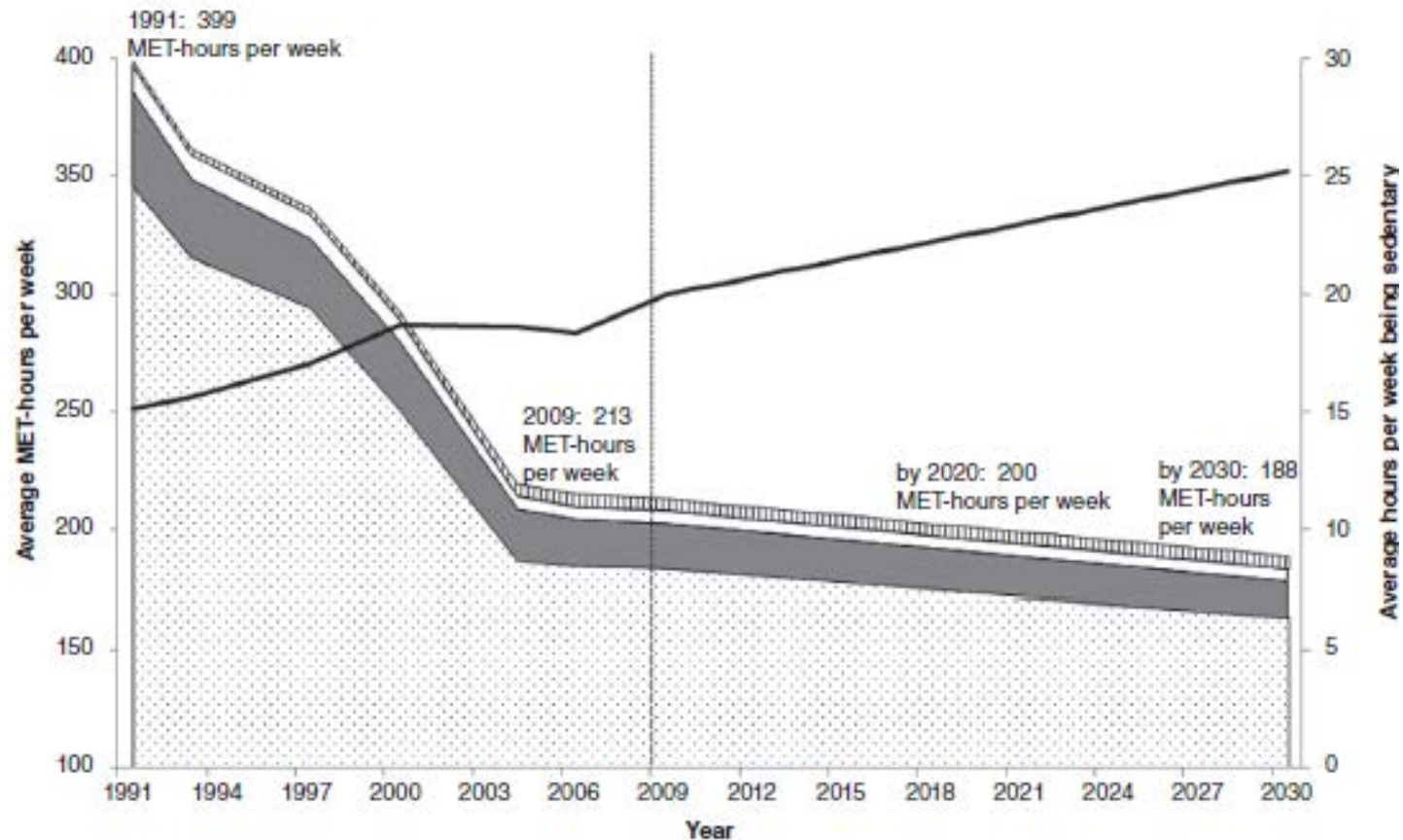
Secular decline in physical activity: UK



Global changes in physical activity



Secular decline in physical activity: China



Is the digital world friend or foe ?



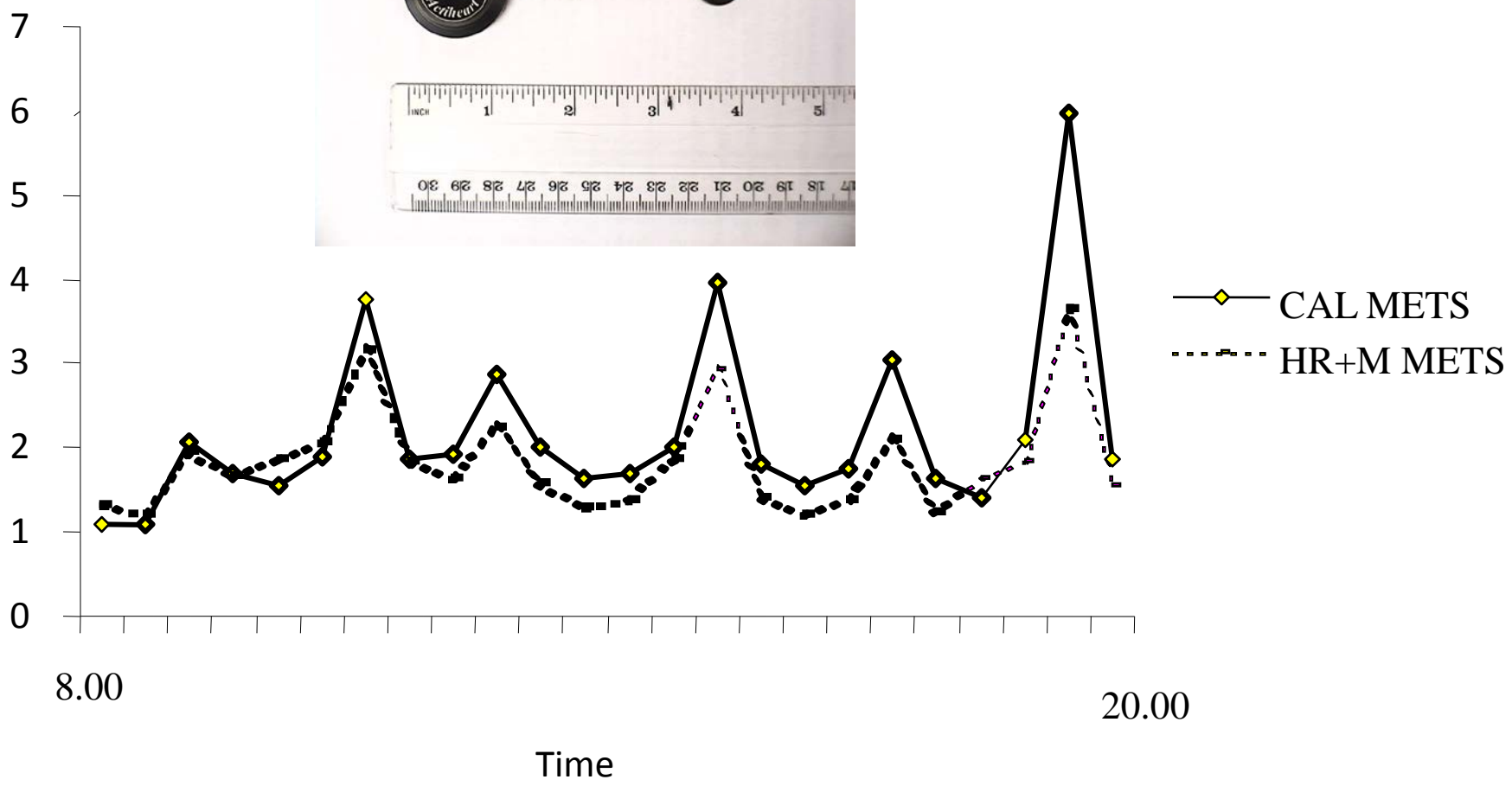
How has digital technology impacted on our daily lives ?

How has this changed total physical activity ?

Can digital technology play a role in quantifying change in physical activity ?



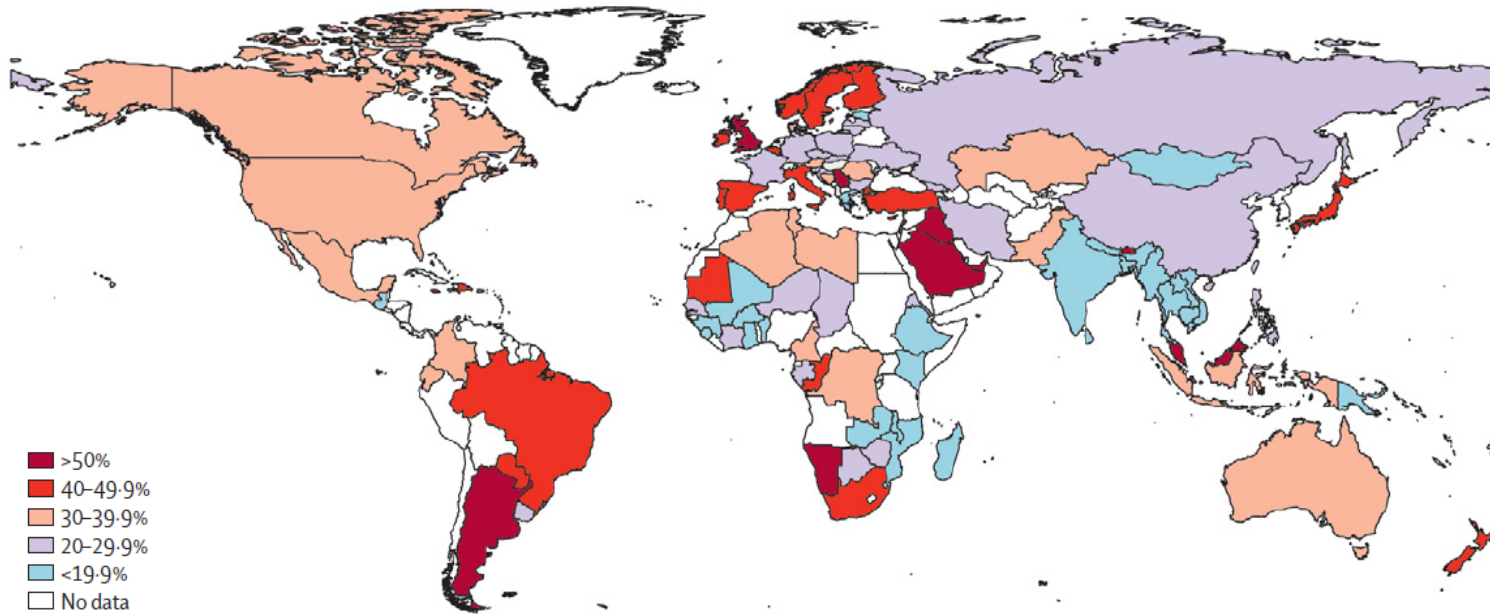
METscore



Source: Rennie et al, Eur J Clin Nutr 2000

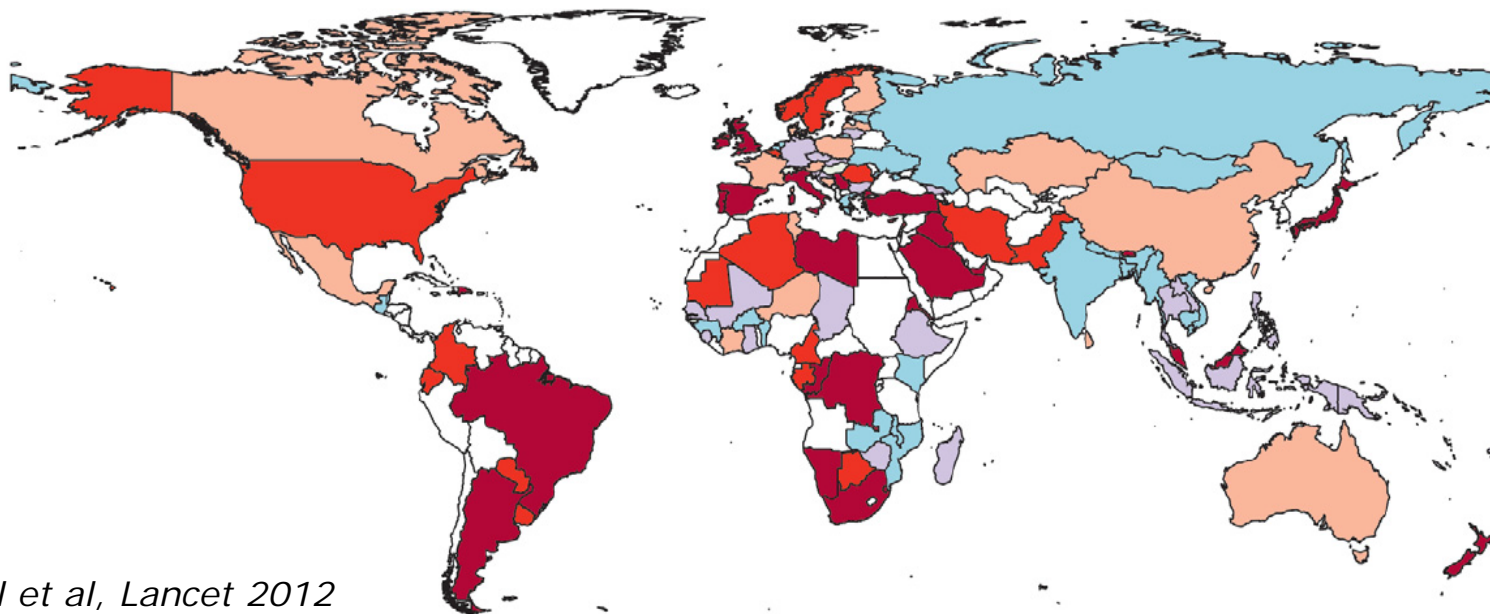
Global prevalence of insufficient physical activity

A



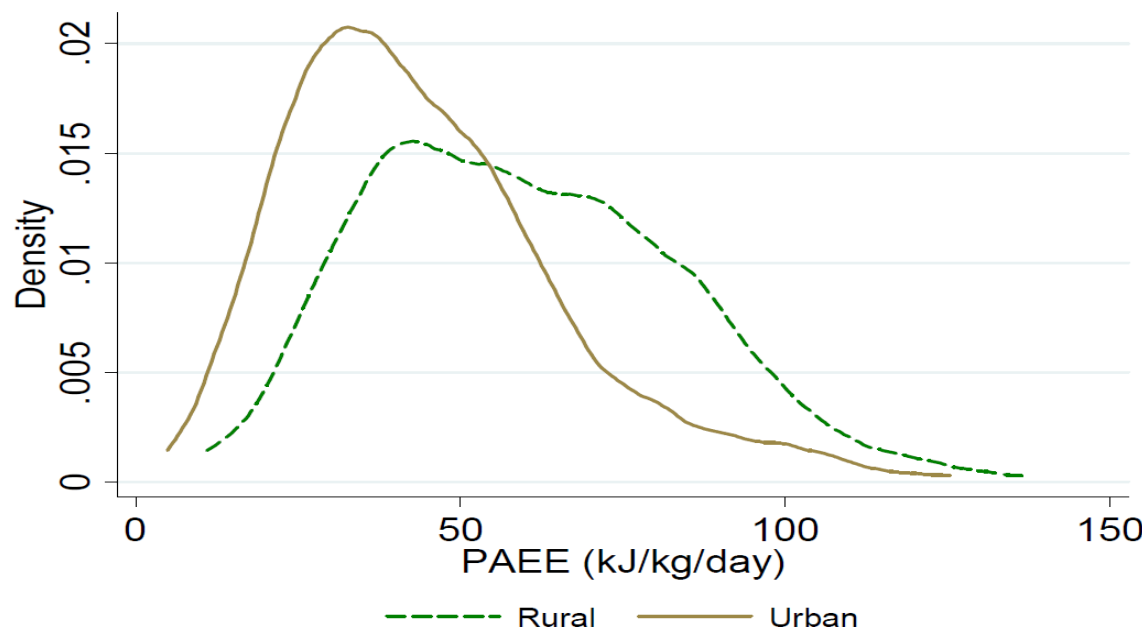
Men

B

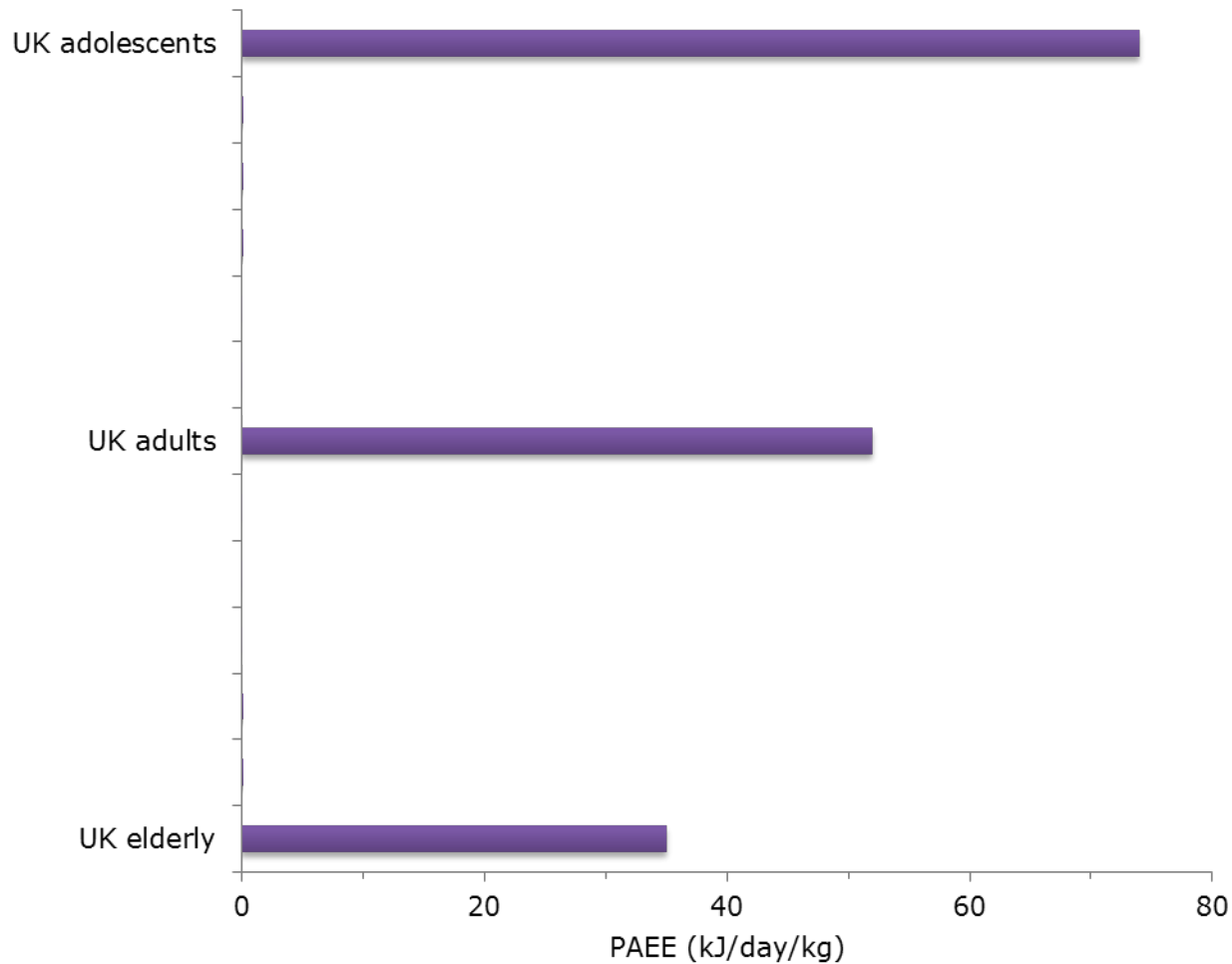


Women

Rural and urban differences in activity in Cameroon:



Global variation in activity energy expenditure



Is the digital world friend or foe ?



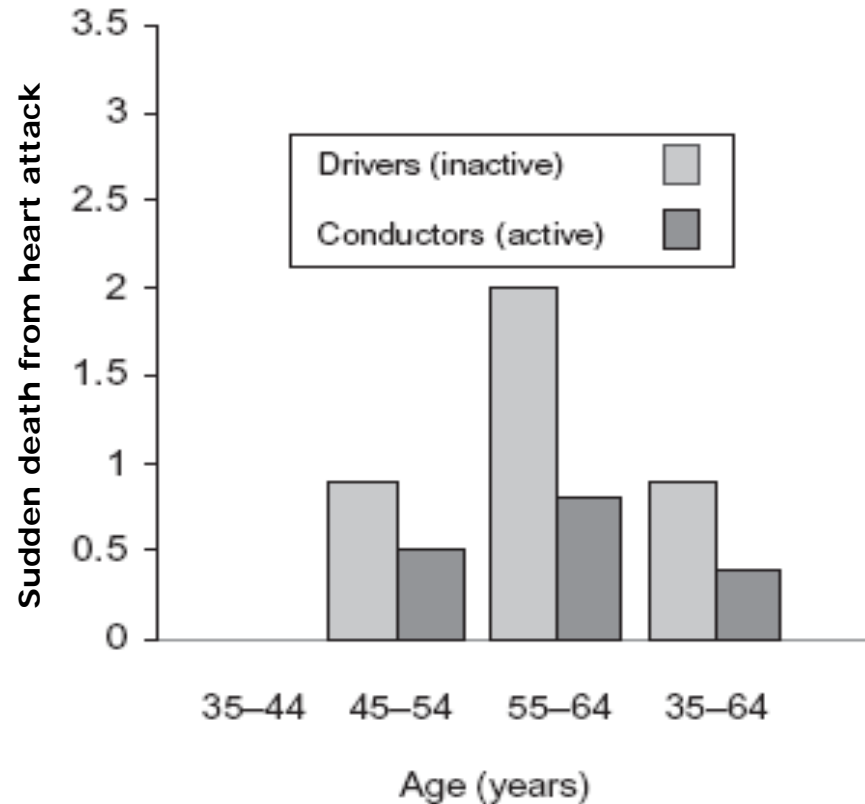
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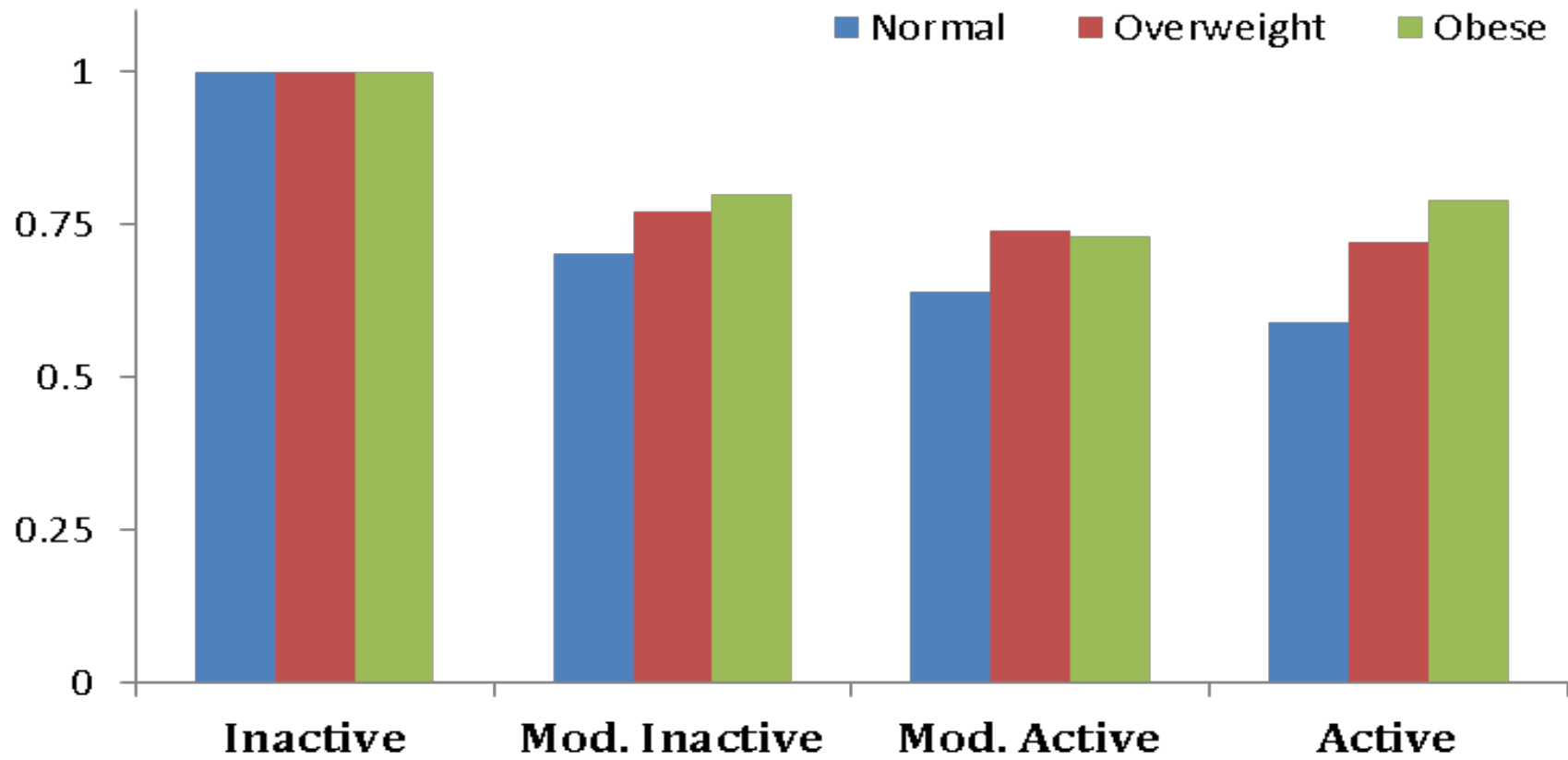
How has the change in physical activity impacted on health ?

Coronary Heart Disease and Physical Activity of Work

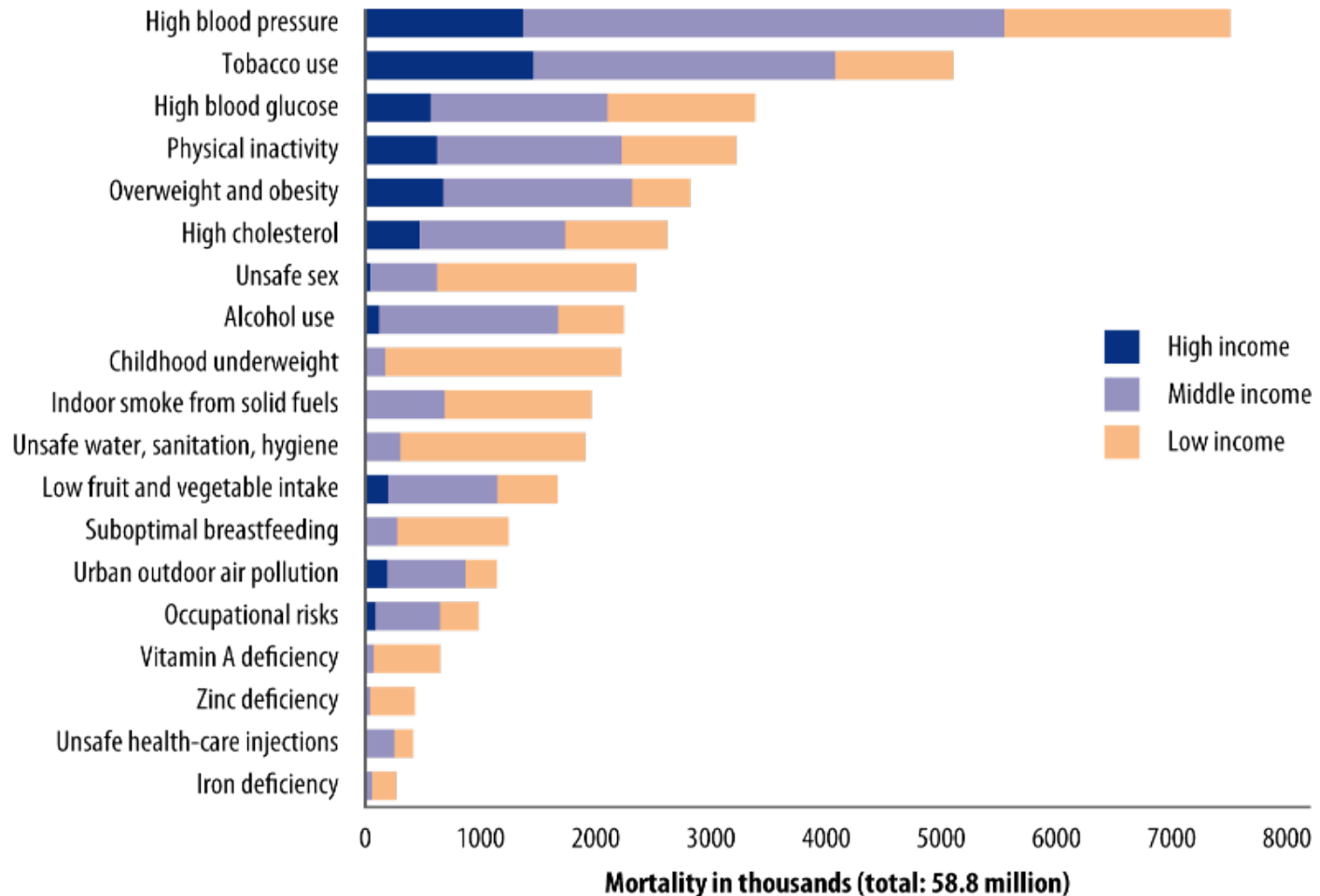


Source: Morris et al, *Lancet* 1953

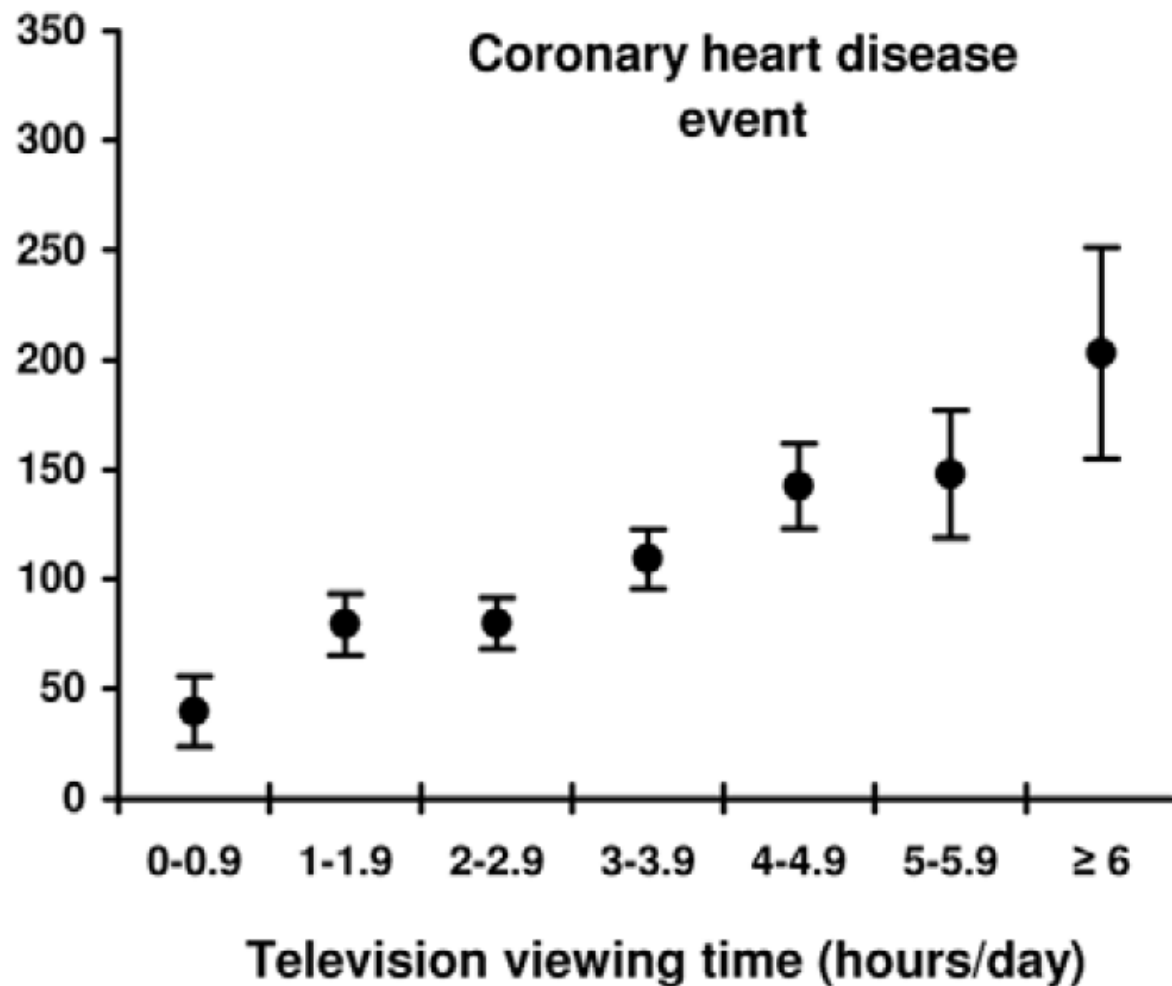
Physical activity and all-cause mortality



Ranking of risk factors for mortality



Sedentary behaviour and heart disease risk



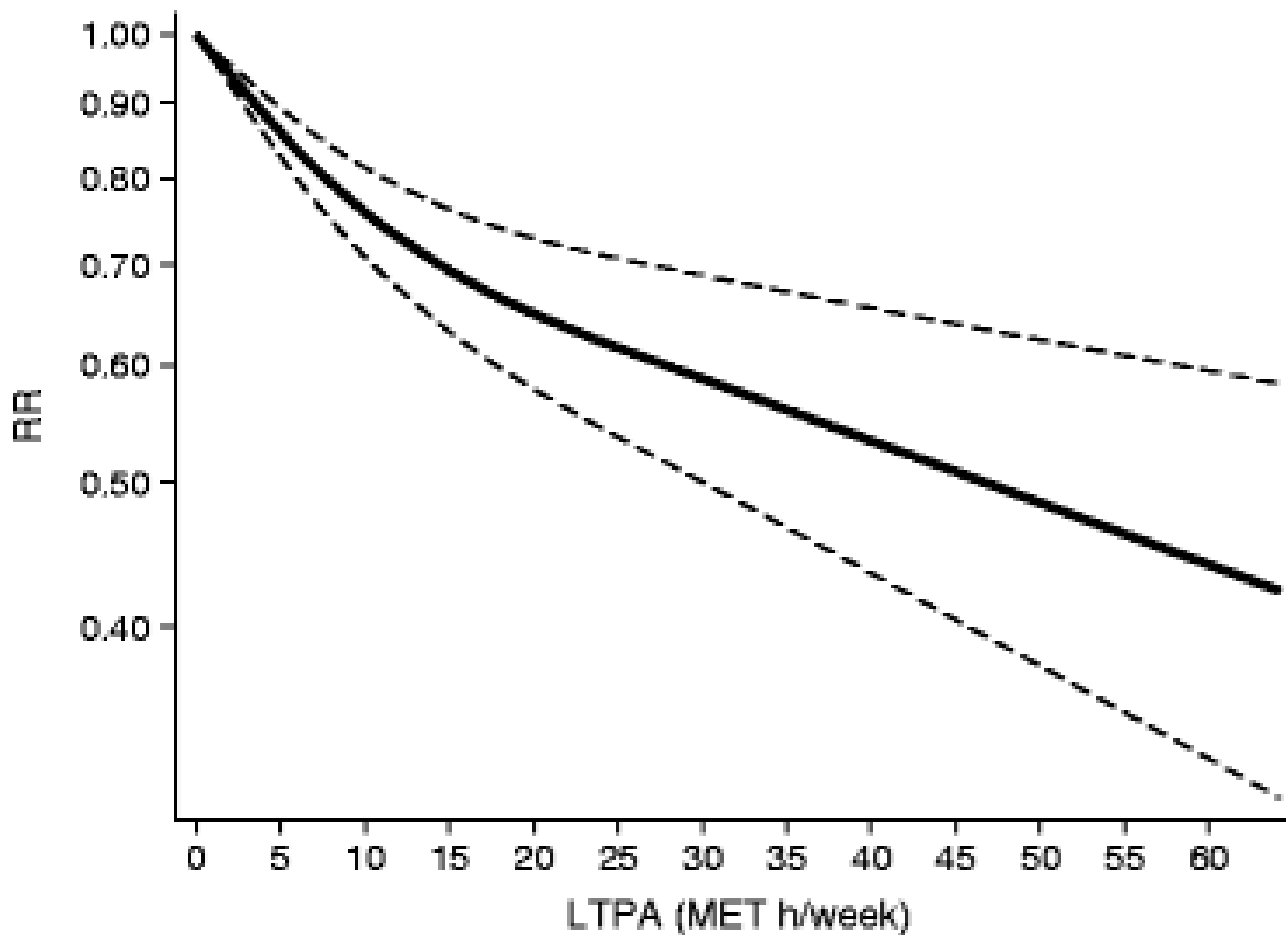
Strong evidence of reduced rates of:

- All-cause mortality
- Coronary heart disease
- High blood pressure
- Stroke
- Metabolic syndrome
- Type 2 diabetes
- Breast cancer
- Colon cancer
- Depression
- Falling

Strong evidence of:

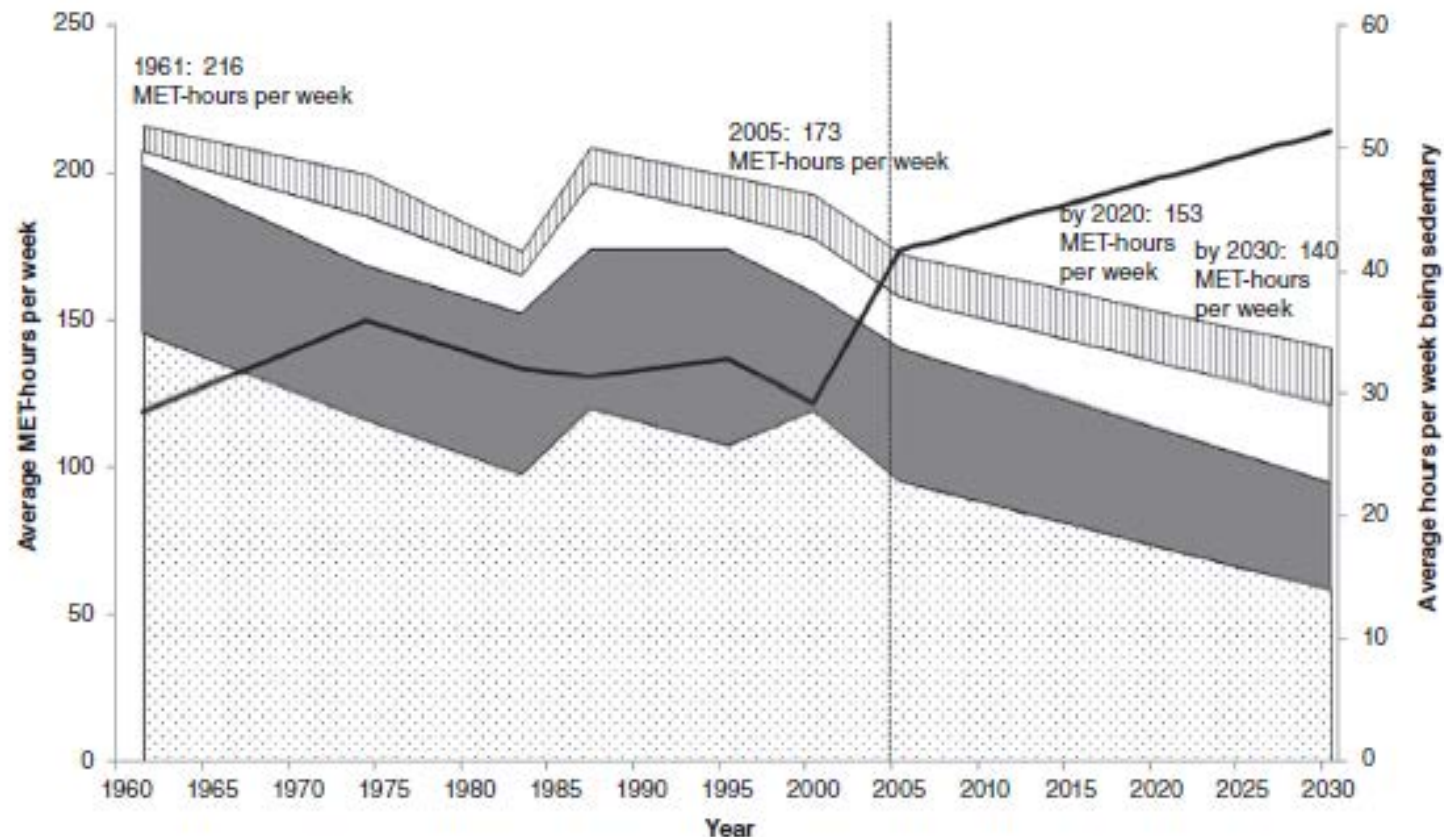
- Increased cardiorespiratory and muscular fitness
- Healthier body mass and composition
- Improved bone health
- Increased functional health
- Improved cognitive function

Physical activity and type 2 diabetes risk



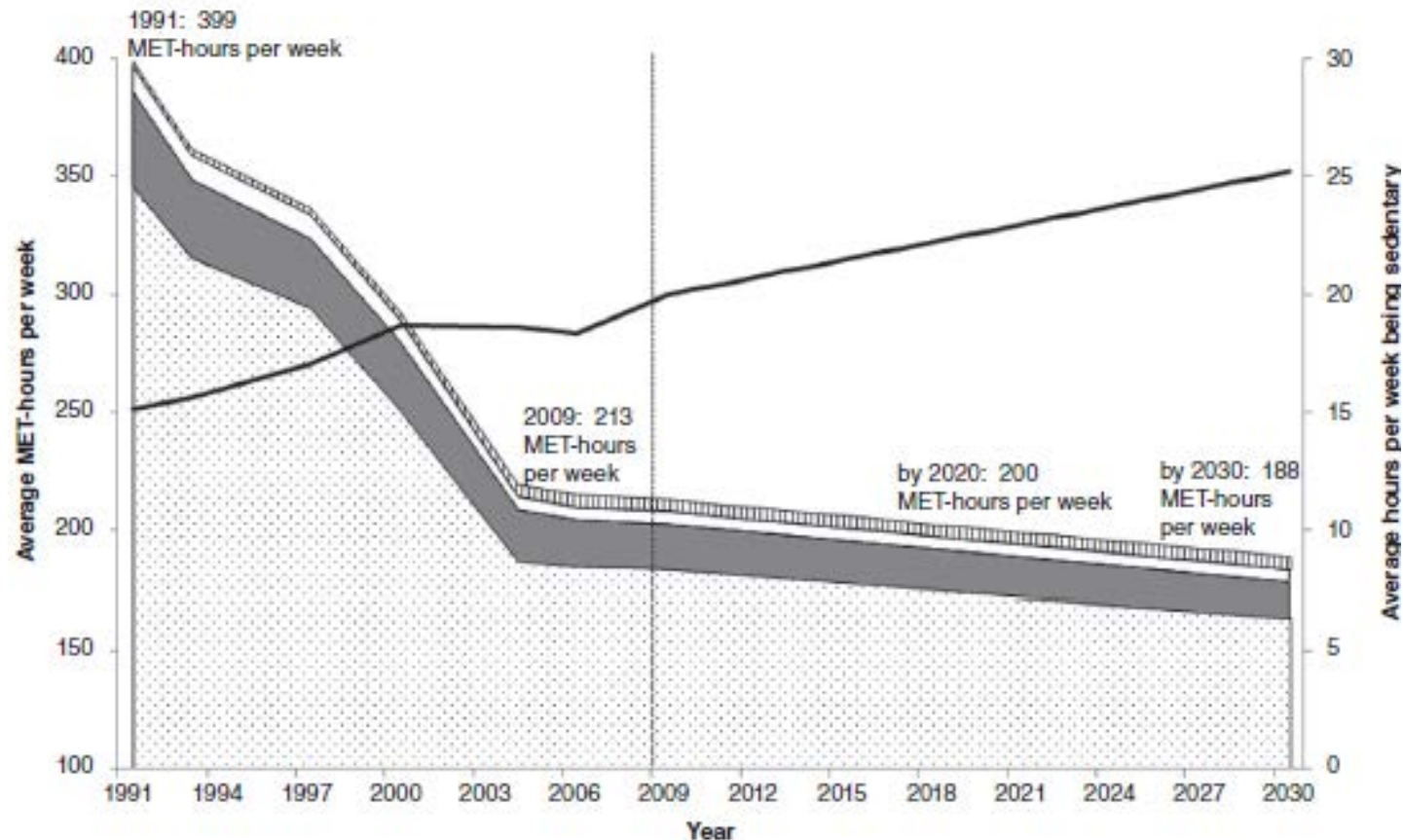
Secular decline in physical activity: UK

Predicted increase in diabetes = 46%



Secular decline in physical activity: China

Predicted increase in diabetes = 500 %



Is the digital world friend or foe ?



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Can digital technology play a role in quantifying change in physical activity ?

How has the change in physical activity impacted on health ?

Can digital measurement of physical activity bring about behaviour change ?

Provision of advice is generally not enough

© University of Cambridge

ProActive

Setting an achievable goal

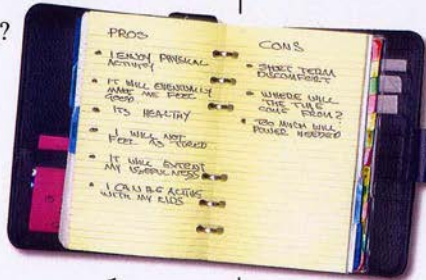
Goal:

Is it realistic?

Have you set your sights on something you stand a good chance of achieving?

Is it specific?

- What activity?
- Where?
- When?
- How often?
- How long?
- Who with?



- Do the advantages outweigh the disadvantages?
- How can you get around the disadvantages of doing the activity?

Support

- Do you have support from family, friends, colleagues, etc. for doing the activity?
- Whose support or opinion (family, friends, colleagues, etc.) matters to you for achieving your goal?

- How much do you care about what they think of your goal?
- If they are not supportive, how can you get around this?
- How can you get the support you need?

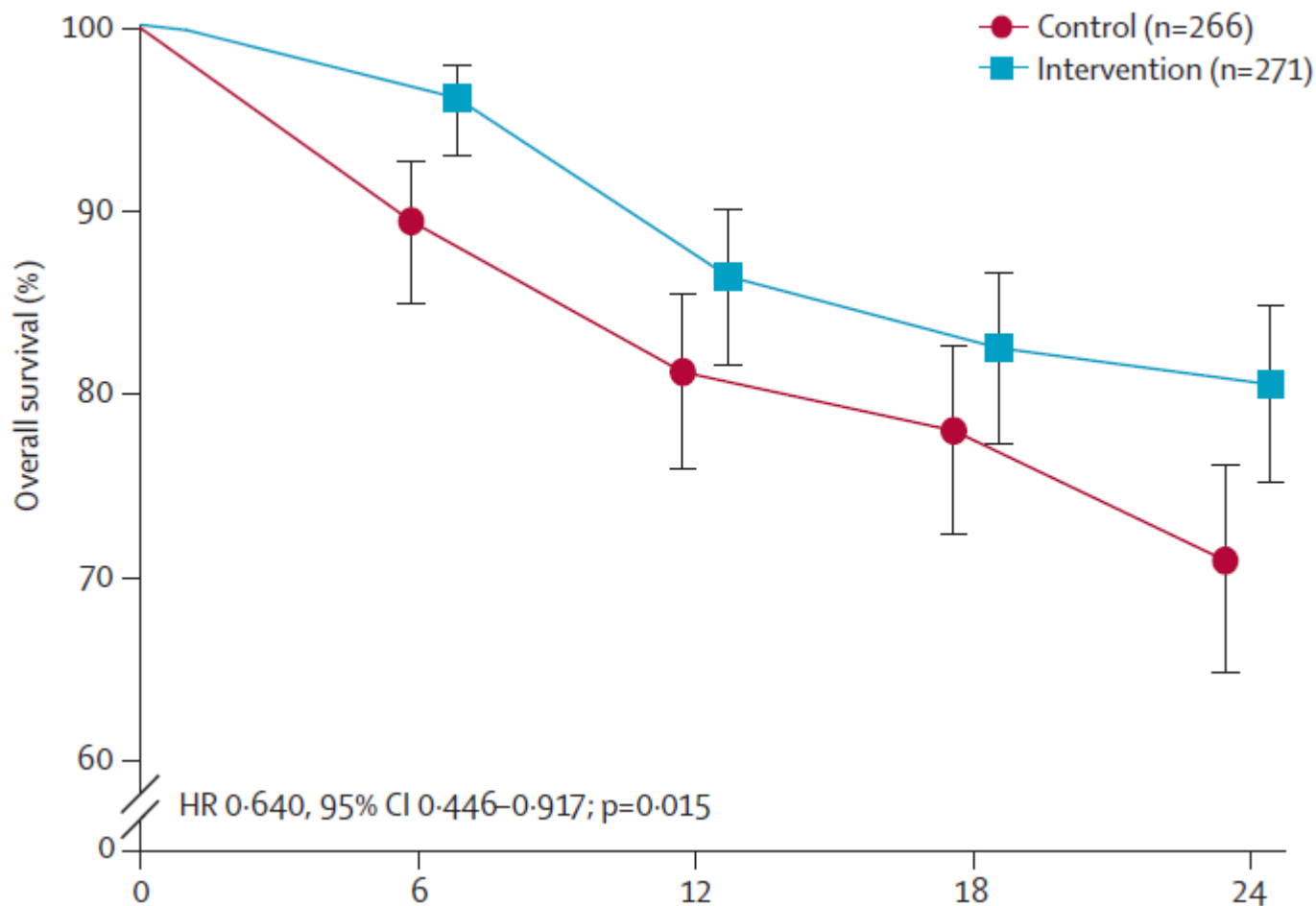


Things that make it easier or harder

- What things make it easier for you to do the activity?
- What things make it more difficult for you to do the activity?
- How can you get around the difficulties and make it easier?

Thinking about all of this, do you think you have set an achievable goal?

Provision of advice by SMS may help in some contexts







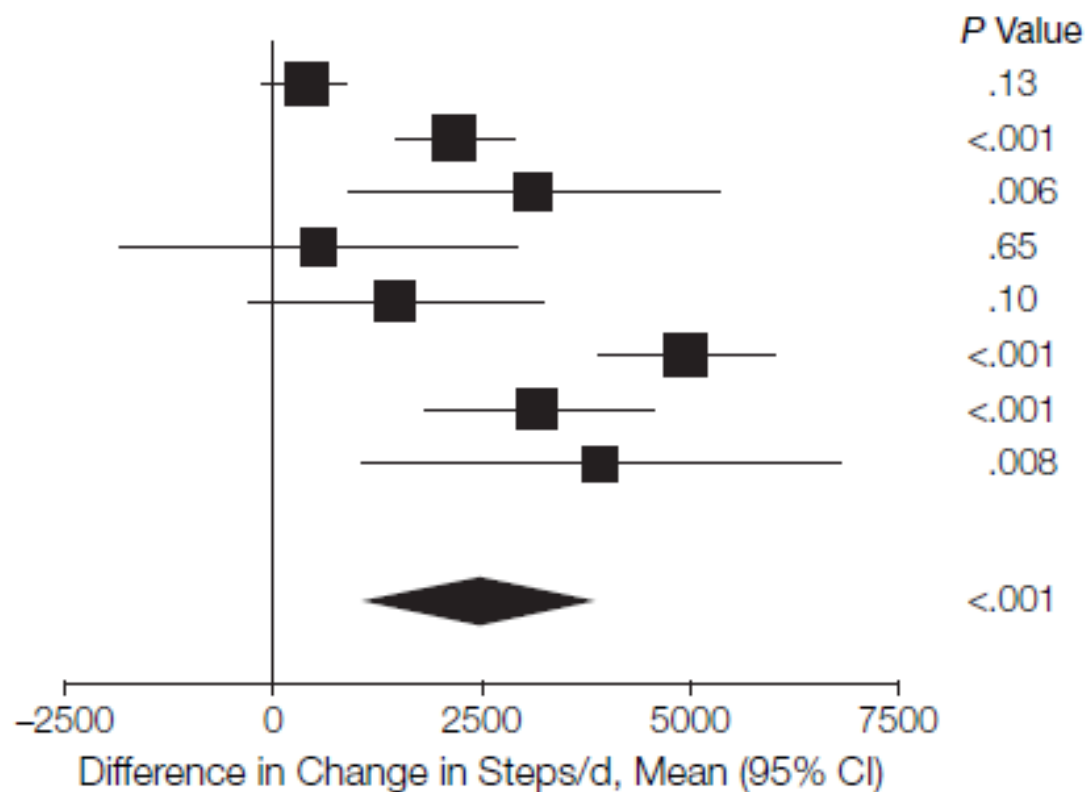
Does feedback of physical activity make a difference ?

Impact on awareness

Control (<i>n</i>=99)		Simple (<i>n</i>=97)		Visual (<i>n</i>=93)	
Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
32 (32.3)	28 (28.3)	17 (17.5)	29 (29.9)	24 (25.8)	39 (41.9)

Contextualised (<i>n</i>=92)		Adjusted Intervention Effect*
Baseline	Follow-up	Odds Ratio (95% CI)
23 (25.0)	39 (42.4)	1.76 (1.05 to 2.96)

Impact of pedometer self-monitoring on change in steps

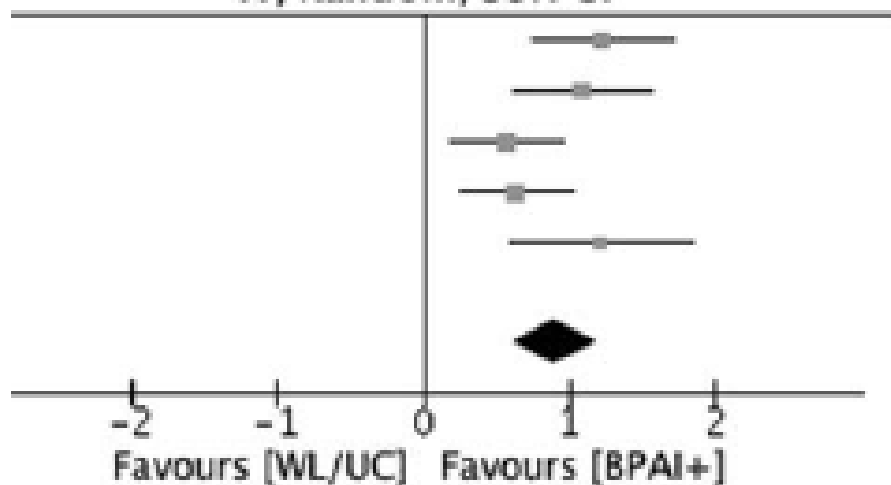


Effect of behavioural physical activity interventions with and without activity monitors

Adults with overweight and obesity

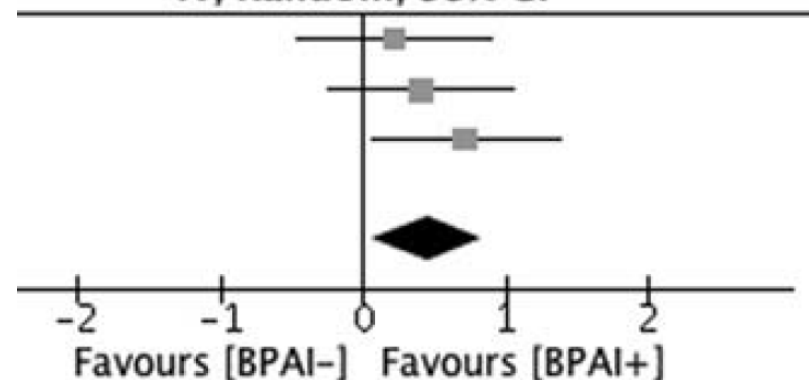
Steps

Std. Mean Difference
IV, Random, 95% CI



Physical activity time

Std. Mean Difference
IV, Random, 95% CI



Does activity monitoring help in every situation ?

Behavioural weight loss intervention +



	Standard Intervention	Enhanced Intervention
Weight, mean (95% CI), kg		
Baseline	95.2 (93.0-97.3)	96.3 (94.2-98.5)
24 mo	89.3 (87.1-91.5)	92.8 (90.6-95.0)
Estimated weight loss, mean (95% CI), kg	5.9 (5.0-6.8)	3.5 (2.6-4.5)

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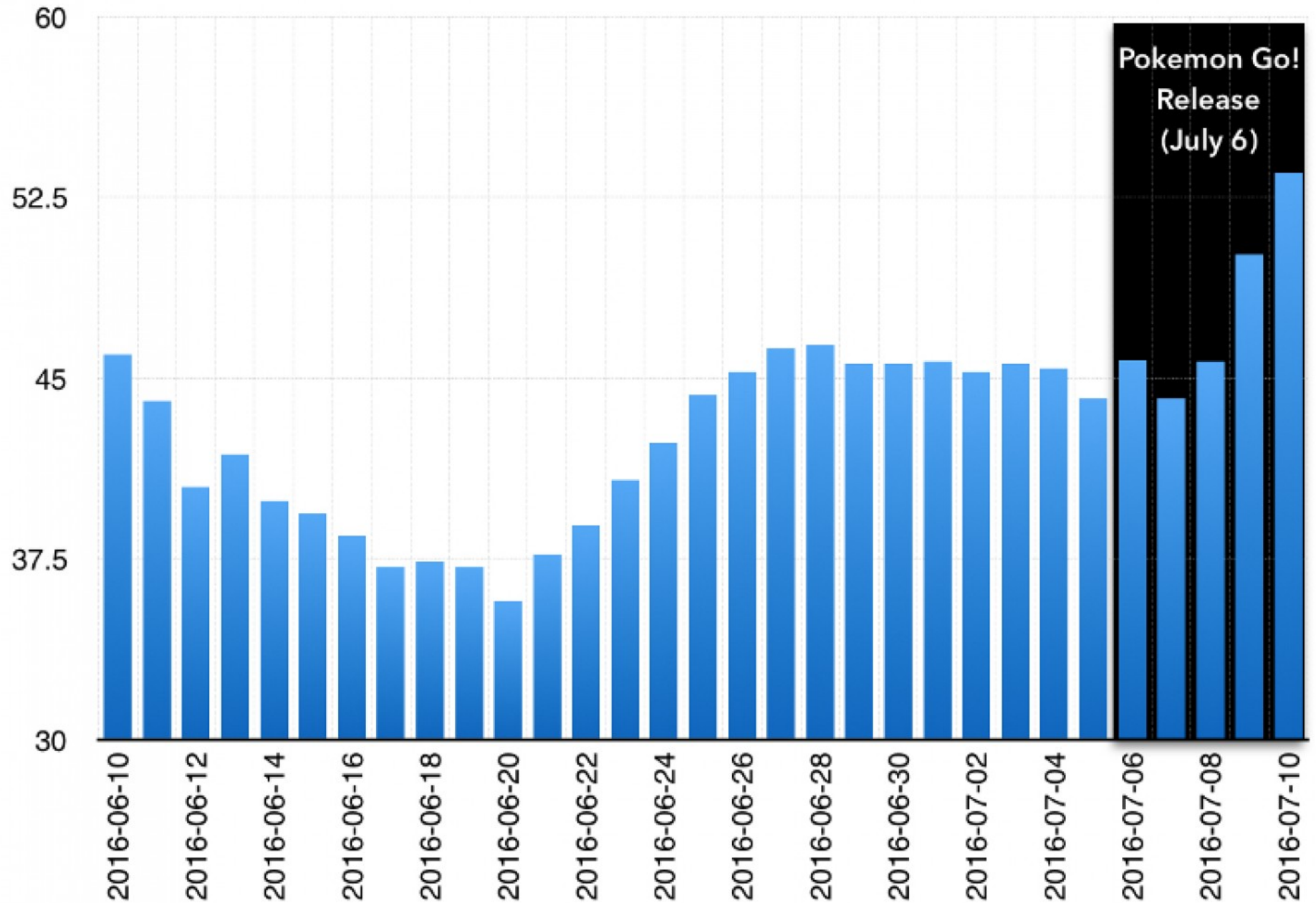
How might digital technologies play a role in possible solutions ?

Gamification – is fun an incentive ?





% Cardiogram users getting 30 or more minutes of exercise per day



Building in incentives - money

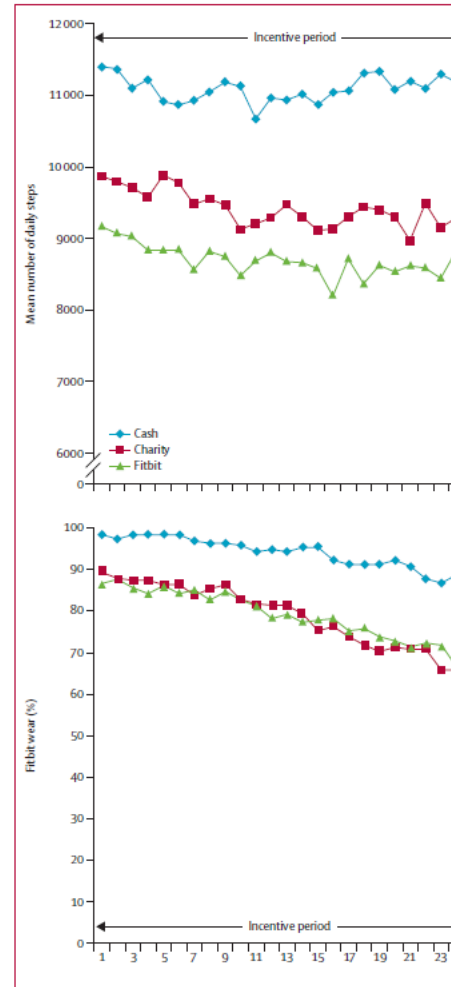
Fitbit and Cash incentive

Fitbit and Charity incentive

Fitbit

S\$ 15 – 15-70k steps/week

S\$ 30 - >70k steps/week



Linking the quantified self movement to health care

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VENTURE CAPITAL DISPATCH

The Rise of the 'Quantified Self' in Health Care

By **TIMOTHY HAY**

Aug 13, 2013 5:03 pm ET

The recession, health-care reforms and other pressures have put the squeeze on emerging companies offering traditional medical technologies like



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- **Evidence of cost-effectiveness**
- **Impact on health outcomes**
- **Impact on inequalities**

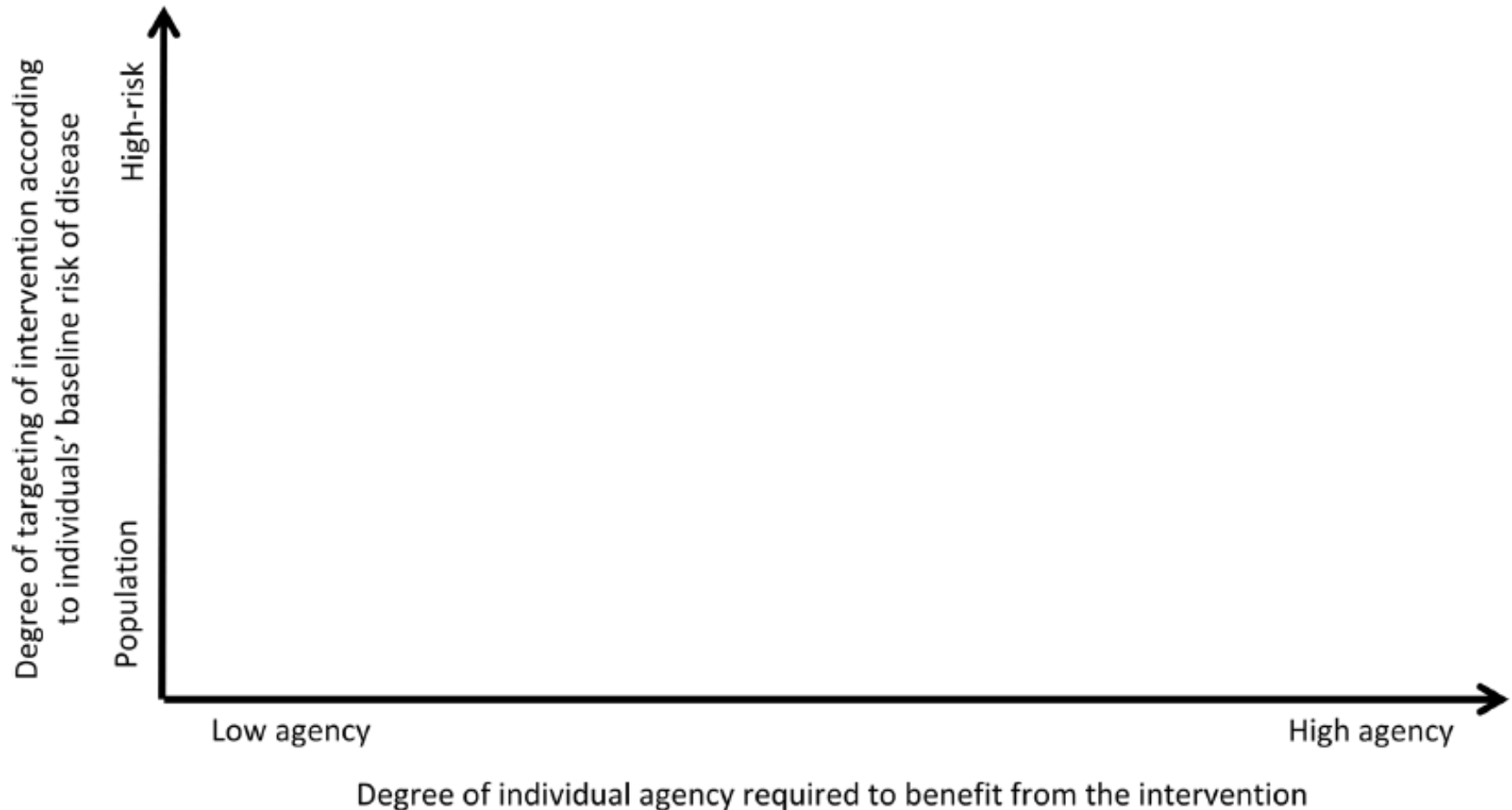
NHS

NHS to offer free devices and apps to help people manage illnesses

Health service seeks to use of technology to help patients manage conditions such as diabetes and heart disease



Is the focus on the individual likely to widen inequalities ?



Is the focus on the individual likely to be sufficient ?



SOTORVET

refuFestland

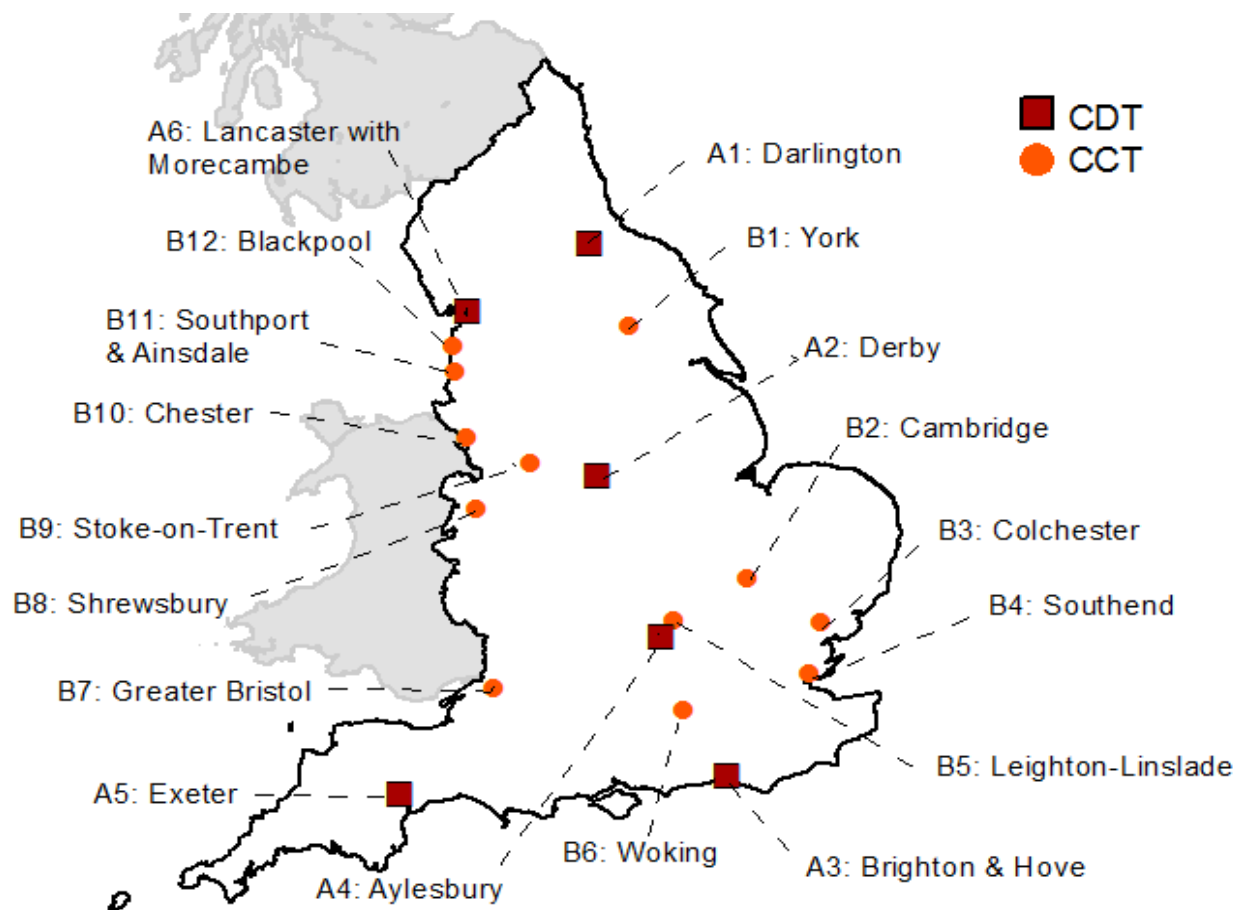
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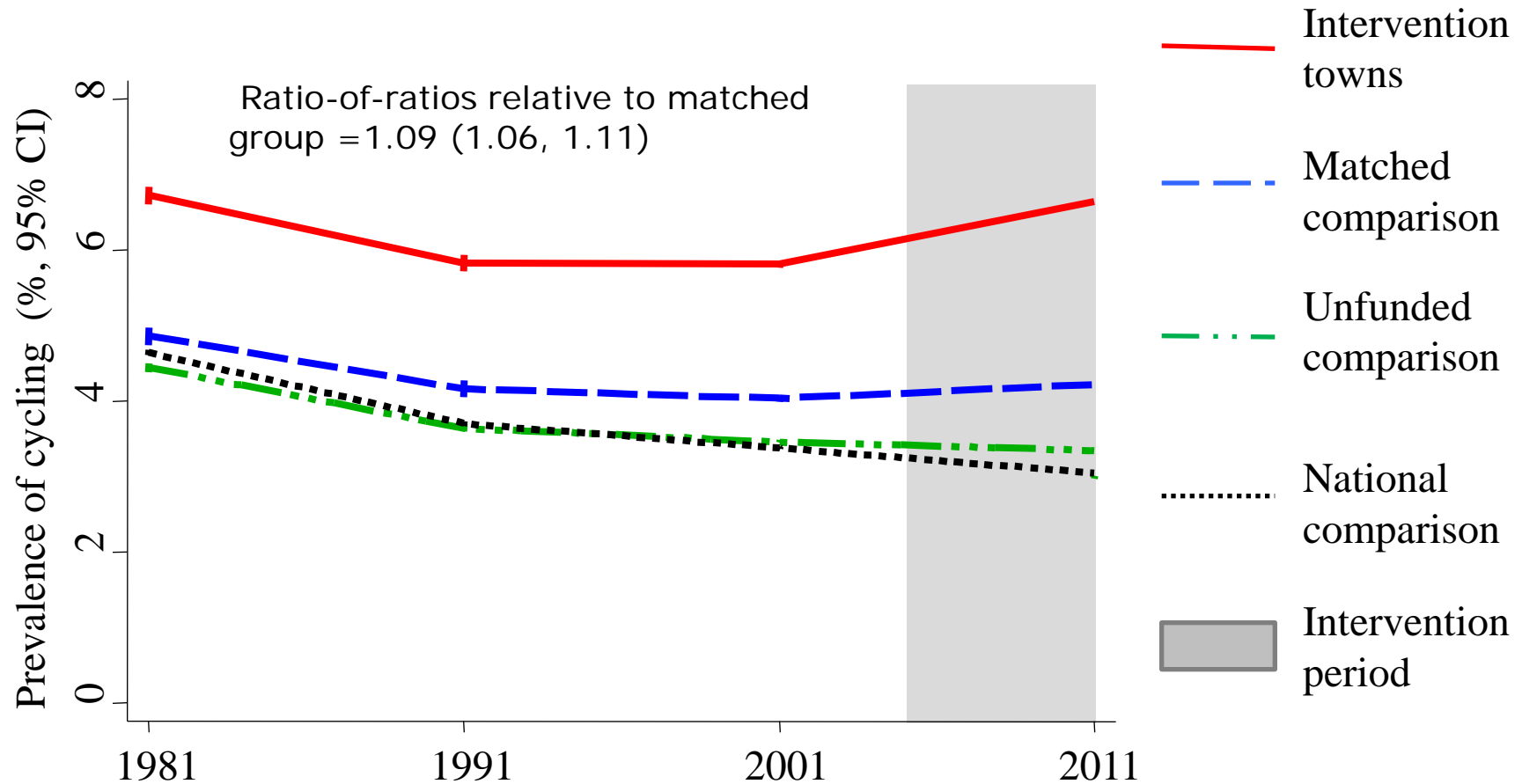
Impact of investment in cycling infrastructure



CDT = 'Cycling Demonstration Towns', funded 2005-2011

CCT = 'Cycling Cities and Towns', funded 2008-2011

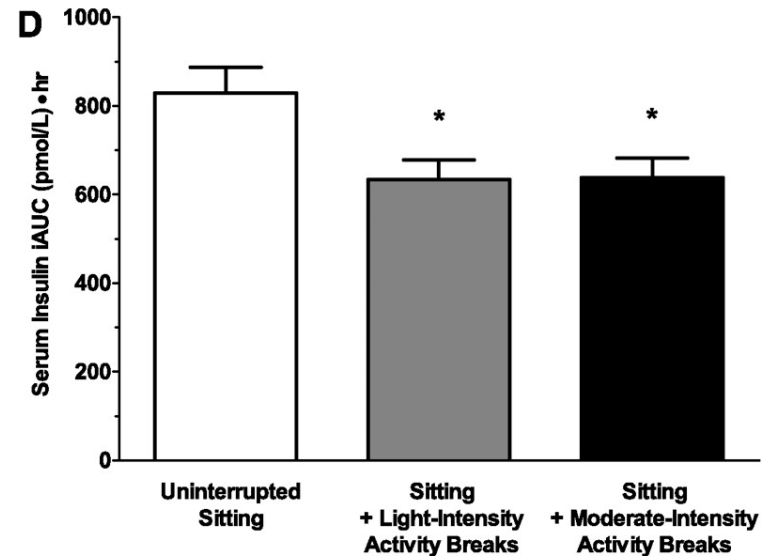
Changes in prevalence of cycling



How we interface with the environment matters: Point of decision prompts



How we interface with the environment matters: Reducing sedentary time



Does the future lie in changing the environment and increasing the effectiveness of our interface with it ?

?

