

The healthy virtuous cycle: Active travel reducing pollution, ill-health and cost

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I have no conflicts of interest

- Part-time NHS surgeon



- ½ day Deputy Director



- I donate £ from my column



to charity:



- £0



Also past/present me!



The Royal College of Surgeons - Council April 2012

For millennia we've known that prevention is better than cure. An excellent new report, *A Covenant for Health*, with input from across the political spectrum and the King's Fund, defines where to act to improve health: nutrition, exercise, pollution, smoking, alcohol, and mental health promotion.

This worthy attempt at prevention is well intentioned, but I predict it will fail because it mainly concentrates on primary prevention—reducing the risk of ever getting a condition. We need a radical shift to incorporate tertiary prevention: once someone has a medical condition we should focus on interventions that might reduce complications from it.

For example, exercise has been described as the "miracle cure" as part of treatment for most common conditions. Research has even suggested it can reduce the risk of recurrence of cancer. The UK's chief medical officers recommend increasing physical activity in frail older people to reduce falls. In the UK's ageing population 19% of people are over 65, of whom 65% have multiple comorbidities, so exercise could benefit millions.

Ironically, decades of medical training in communication skills encouraging empathy may make clinicians wary of discussing lifestyle changes for fear of blaming a patient. But we must learn to empower patients to make healthier choices. Some will change their behaviour at a "touchable moment": in my case, my GP told me to go for a walk every day when I was deemed too unwell for a stem cell transplant. I built up my fitness with an electric bike and became eligible. But action requires knowledge and resources.

prevention at the most intense interventional part of healthcare: surgery. The Centre for Perioperative Care has amassed evidence that preoperative preparation can reduce complications by 30-80%, reduce bed stay by one to two days, dramatically cut the need for postoperative intensive care, and increase the number of people treated as day patients.

Seven interventions are key to preoperative preparation: smoking cessation, exercise, nutrition, alcohol moderation, senior medical review with medication review, psychological preparation, and practical preparation. Many of the same interventions can improve health and tackle inequalities more generally.

We should empower and educate the millions of people on NHS waiting lists to better prepare for surgery. To support this, let's improve our environment and infrastructure to encourage people of all ages to stay active. It would act as primary prevention for people in good health and as tertiary prevention for those with medical conditions. (For completeness, secondary prevention, involving screening and care, can be beneficial but introduces the risk of overdiagnosis.)

Patients should expect clear messages on tertiary prevention in every consultation, using simple motivational interviewing skills to galvanise patients into action.

Even modest prevention of ill health would tangibly improve patients' lives and avoid unwarranted NHS pharmacy and care costs.

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We should empower and educate the millions of people on NHS waiting lists to better prepare for surgery



Exercise:

The miracle cure and
the role of the doctor
in promoting it

February 2015

- I was lead author.
- Academy of Medical Royal Colleges = ALL specialties & GP & Public Health
- www.scarlettmcnally.co.uk

Reduction in risk with DOSE = 150 minutes/week		Treats?	UK lifetime risk
Dementia	30%	✓	15%
Stroke	30%	✓	20%
Bowel cancer	40%	✓	6%
Breast cancer	25%	✓	12% women
Type 2 Diabetes	30-80%	✓	6%
Heart disease	30-80%	✓	40%
High Blood Pressure	up to 50%	✓	50%
Lung diseases	30%	✓	20%
Depression	30%	✓	15%
Osteoporosis	up to 50%	✓	50%
Falls	30-50%	✓	30%

If slides aren't your thing, maybe:

- TWO ORGANISATIONS I ATTEND – great stuff:
 - PLEASE LOOK AT: <https://www.transportandhealth.org.uk/>
 - AND: Public Health (I am an honorary member of the Faculty): <https://www.fph.org.uk/policy-advocacy/special-interest-groups/transport-special-interest-group/> EG Position statements
- Browse: www.cpoc.org.uk Sign up for FREE newsletters!!
- Podcast (with me): <https://www.bbc.co.uk/programmes/m001w171>
- BBC world service (also with me): <https://www.bbc.co.uk/sounds/play/p08250zd>
- A video on YouTube <https://www.youtube.com/channel/UCJzpkqBkXDGuGhFygSg2PCg>
- Nice website: <https://movingmedicine.ac.uk/>
- My website: www.scarlettmcnally.co.uk
- Twitter: @scarlettmcnally
- Articles on how to fix the NHS: <https://www.bmj.com/search/advanced/mcnally>

Thanks, Scarlett!

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S3. Ep 1 - The Miracle Cure
Series 3: Exercise

Drs Chris and Xand Van Tulleken investigate the science of exercise and the dangers of inactivity. Available now
🕒 29 minutes

Is modern exercise a wellness cult? Or is it a vital cure for a world that's struggling with ill health and stuck on the sofa? Most of us might like to get a bit fitter, but how easy is it to actually start exercising and give up sedentary habits?

In this series Drs Chris and Xand Van Tulleken examine exercise and how best to do it. How much should we be doing? How does it help our bodies? And how does our surrounding environment stand in the way of us getting fitter? Chris is challenged to examine his scepticism towards exercise. Similarly, Xand is asked to look at his new-found exercise evangelism and see what he is really running from.

Recently Xand has discovered the joys of physical activity. He's running, cycling, heading to the gym and playing ping pong like never before. It's been a real transformation and a way to keep on top of things after years of unhealthy living.

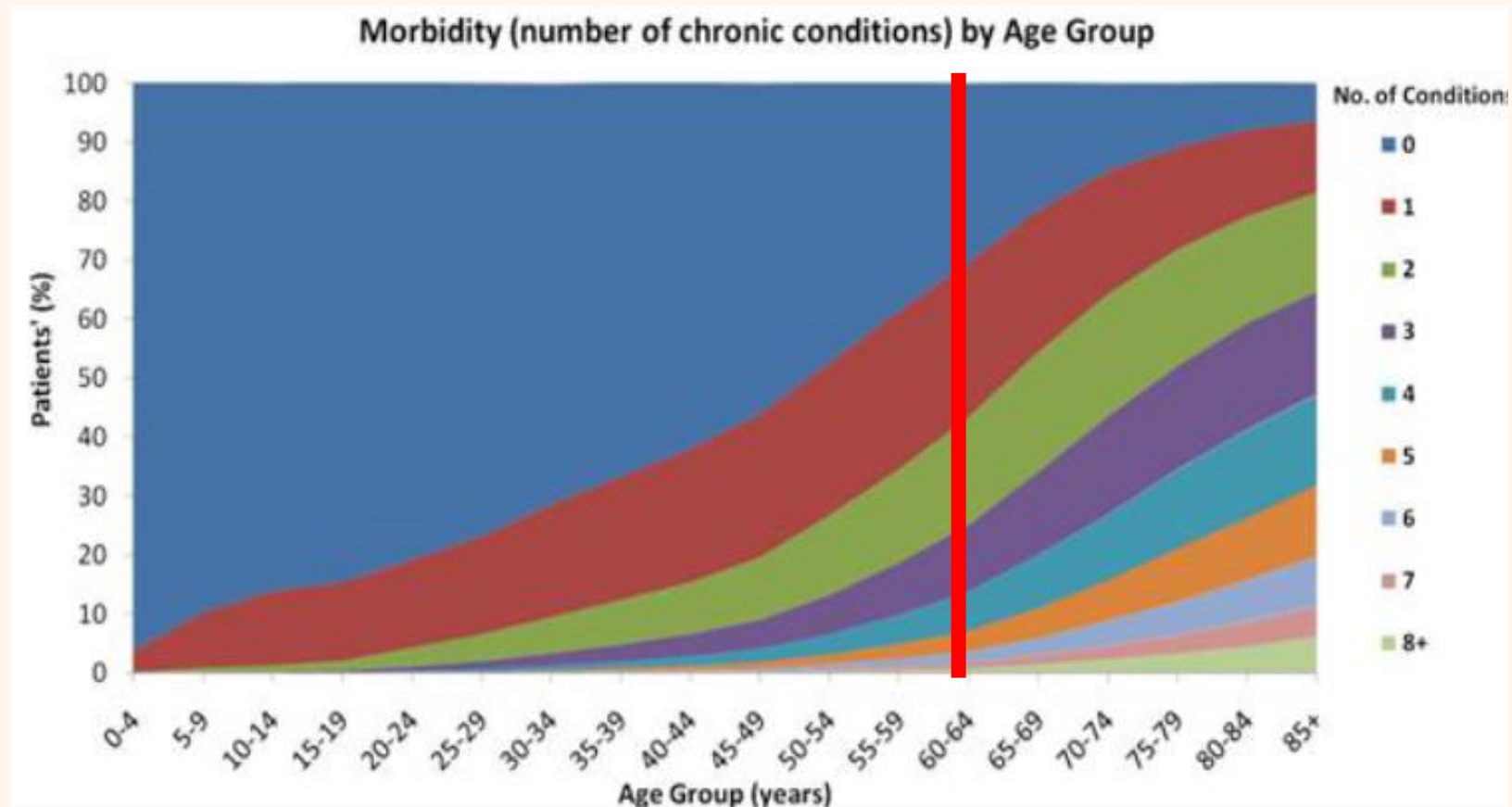
His twin brother Chris, on the other hand, is really feeling the aches and pains of middle age. With a busy job and a young family, he has precious little spare time for exercise. After a very active period in his 20s and 30s, Chris is now embracing his 'Dad bod' and sliding into a creaky middle age. Xand wants to help him turn things around. Can he do it?

In Episode 1 - The Miracle Cure - the twins meet Dr Scarlett McNally, a consultant orthopedic surgeon with a special interest in the benefits of exercise. She explains just how beneficial even moderate exercise can be for our bodies and for the NHS as a whole. Meanwhile, Chris is getting nervous. He has signed up to run a half marathon, but is struggling to do even the most basic training.

What is health?

- 70% of NHS spending is on long-term conditions
- Social deprivation is the biggest predictor of ill-health
- 24% of UK adults have multiple co-morbidities
- Not genetics:
 - Only 20% of ill-health is genetic Rappaport (2016) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4841510/>
 - Only 10% of cancers are genetic WCRF (2018) <https://www.wcrf-uk.org/uk/latest/press-releases/more-public-awareness-around-preventing-cancer>

Multiple conditions (line = age 60)



Barnett et al Lancet May 2012

Chief Medical Officer's Annual Report 2023 Health in an Ageing Society

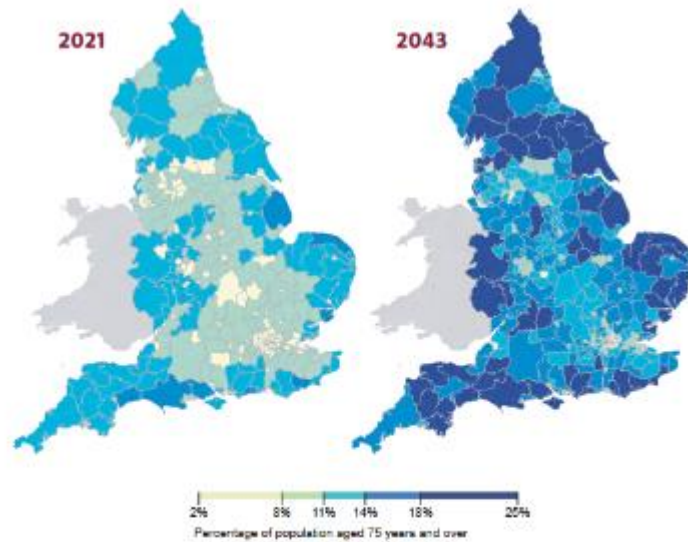
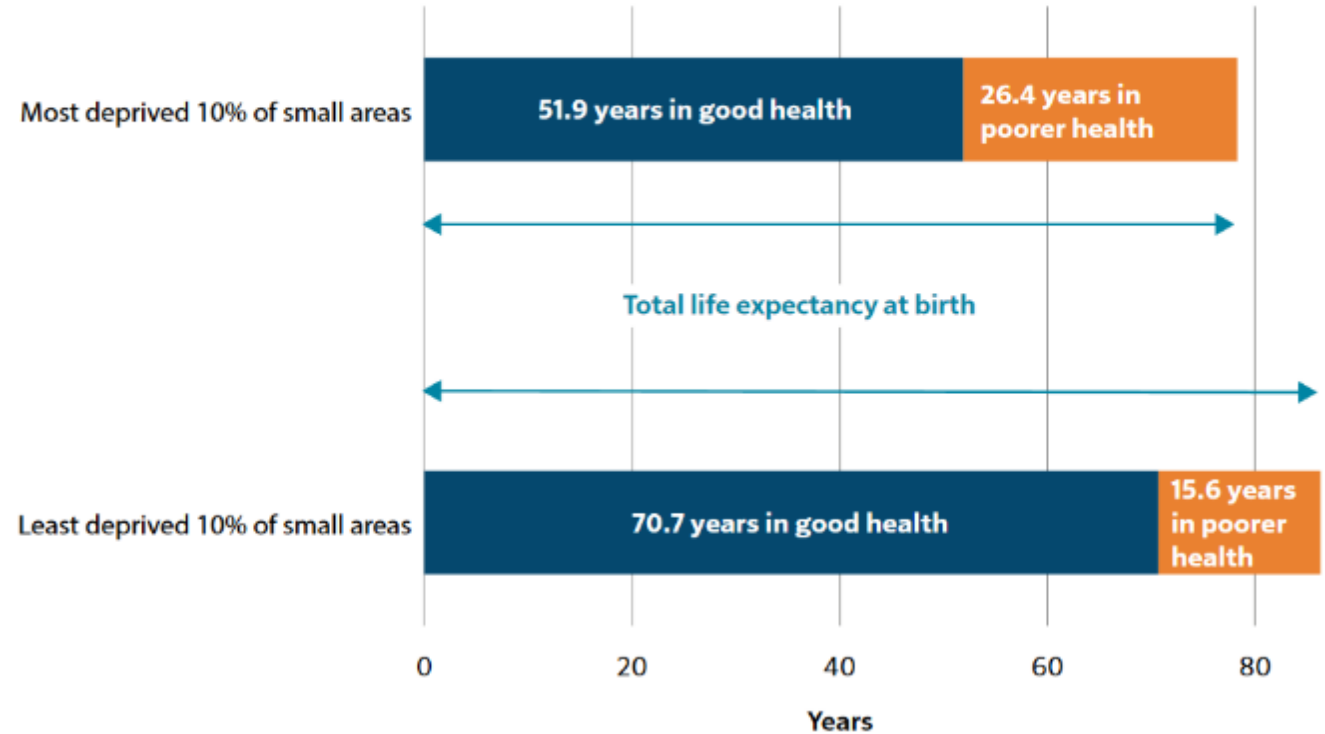
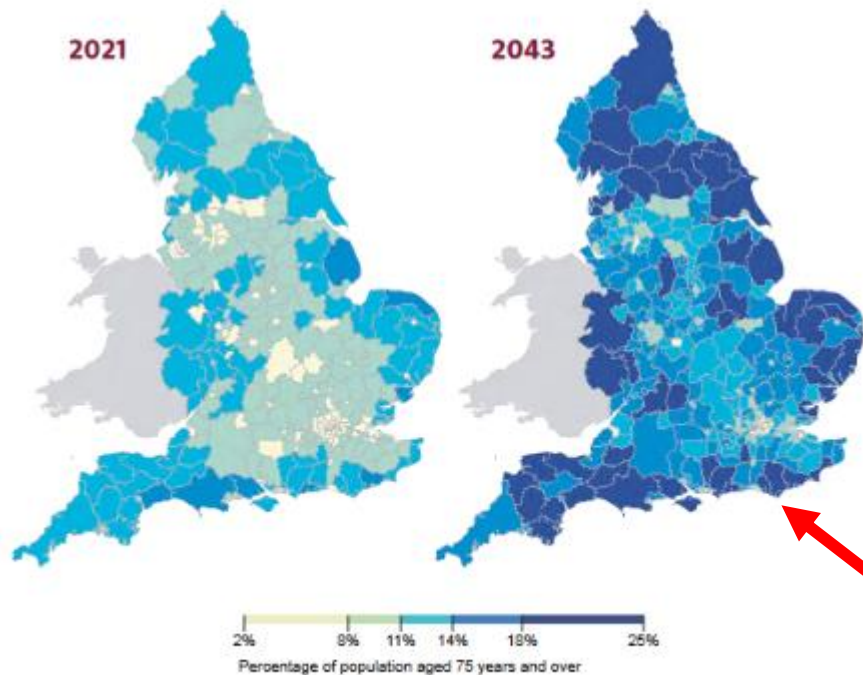


Figure 3: Inequality in life expectancy and healthy life expectancy at birth for females in the most and least deprived areas in England, 2018 to 2020



Chief Medical Officer's Annual Report 2023

Health in an Ageing Society



Chris Whitty. Nov 2023

- Active travel enables older adults etc to embed physical activity into everyday routine and gain health benefits.
- Consider accessibility for older adults
 - terrain of walking paths
 - active travel routes connected to amenities.
- Being physically active throughout the life course:
 - maintaining good health
 - improve muscle strength - for functional independence
 - delay onset of ill health.

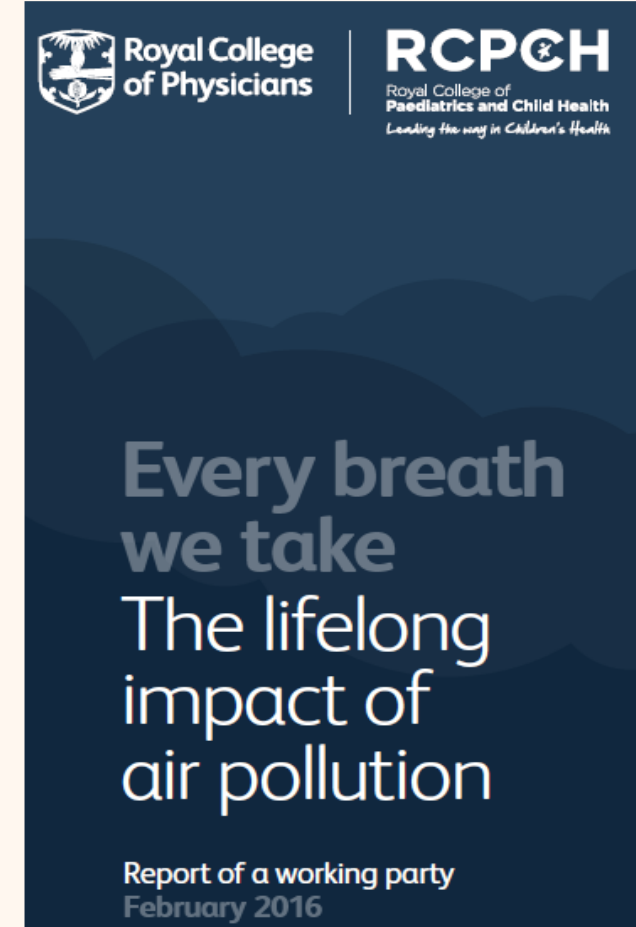
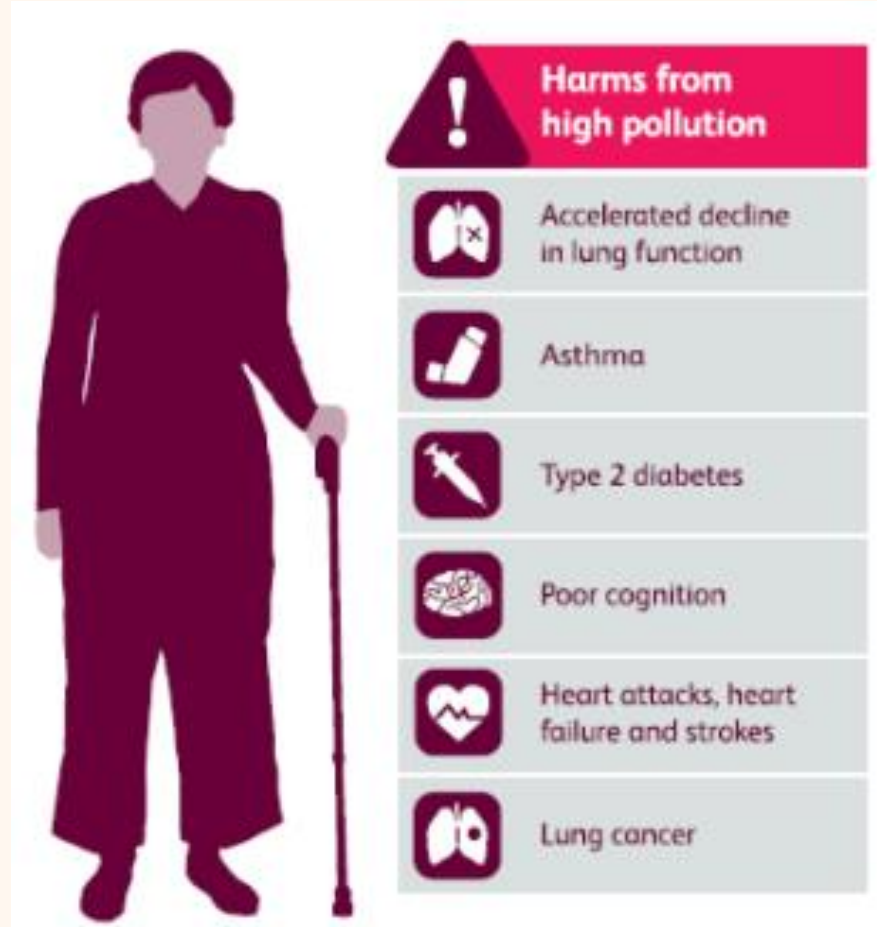
How does bad transport worsen health?

- Physical inactivity
 - 26% UK adults do no physical activity at all
 - Physical inactivity is 4th leading cause of ill-health
- Pollution is a potent cause of disease:
 - Exhausts
 - Particulates
- Collisions: 27,450 people Killed or Seriously Injured - would be the 5th biggest cancer
- Loneliness
- Economic inactivity, access to education

Pollution

1. Exhausts
2. Fine particulate pollution from tyre, brake and road wear... even electric cars (by weight). **Don't just change to electric vehicles!**

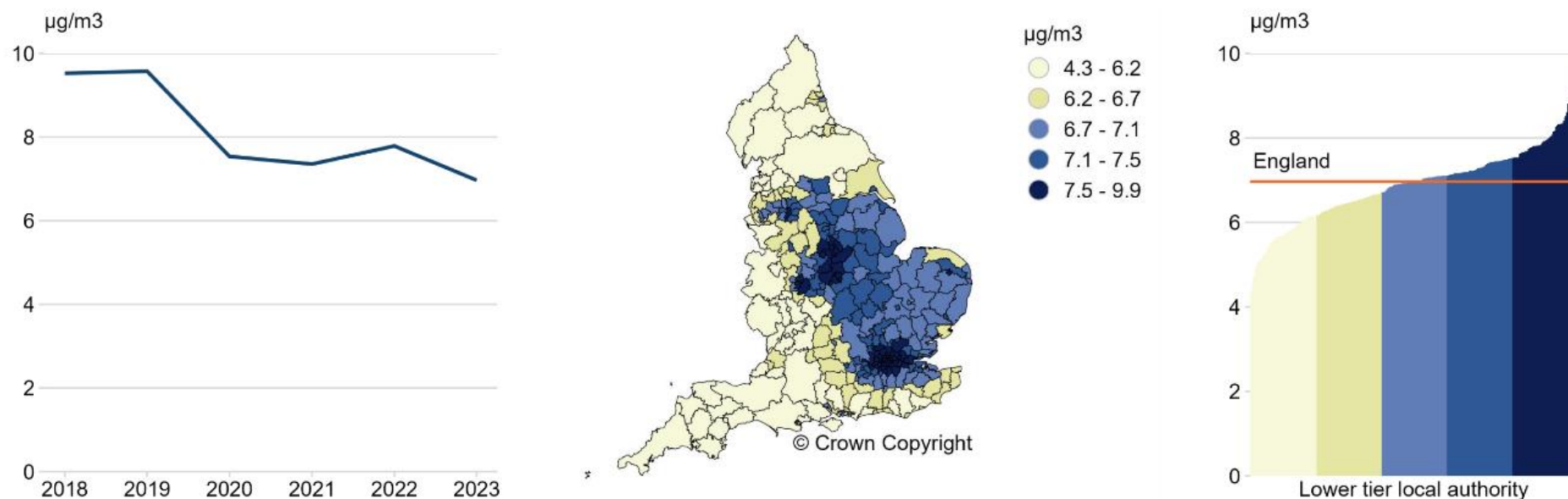
Chief Medical Officer's
Annual Report 2022
Air pollution



<https://www.rcplondon.ac.uk/projects/outputs/every-breath-we-take-lifelong-impact-air-pollution>

Air pollution from fine particulate matter is greatest in urban areas.

Figure 4.27 Air pollution - fine particulate matter (PM2.5)

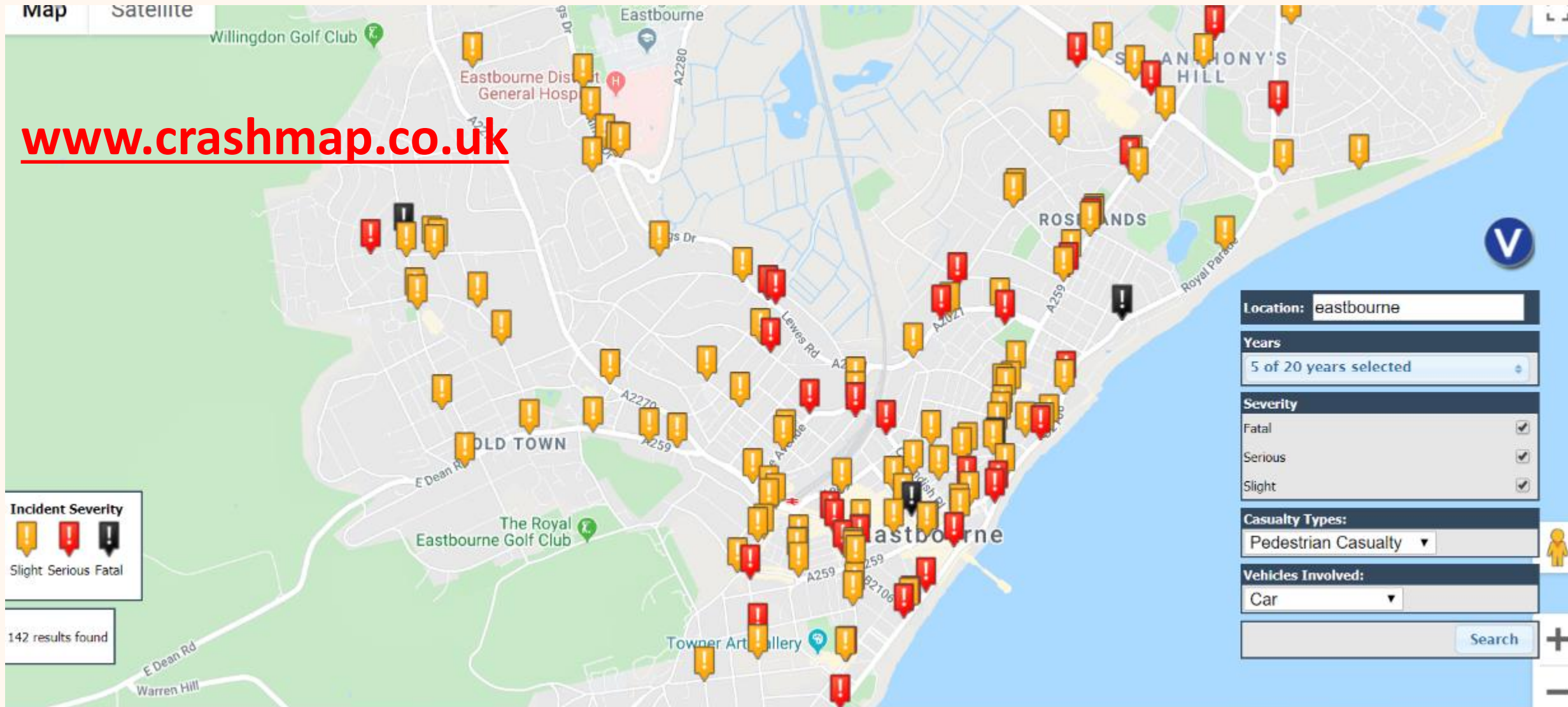


Air pollution: annual concentration of fine particulate matter (PM2.5) in micrograms per cubic metre (µg/m³) adjusted to account for population exposure, for England, 2018 to 2023 (left) and for lower tier local authorities, 2023 (centre and right). PM2.5, also known as fine particulate matter, refers to individual particles with an aerodynamic diameter generally less than 2.5 micrometers.

<https://assets.publishing.service.gov.uk/media/68d3ee72b6c608ff9421b293/health-trends-and-variation-in-England-25-september-2025.pdf>

142 Pedestrian casualties hit by car in 5 years

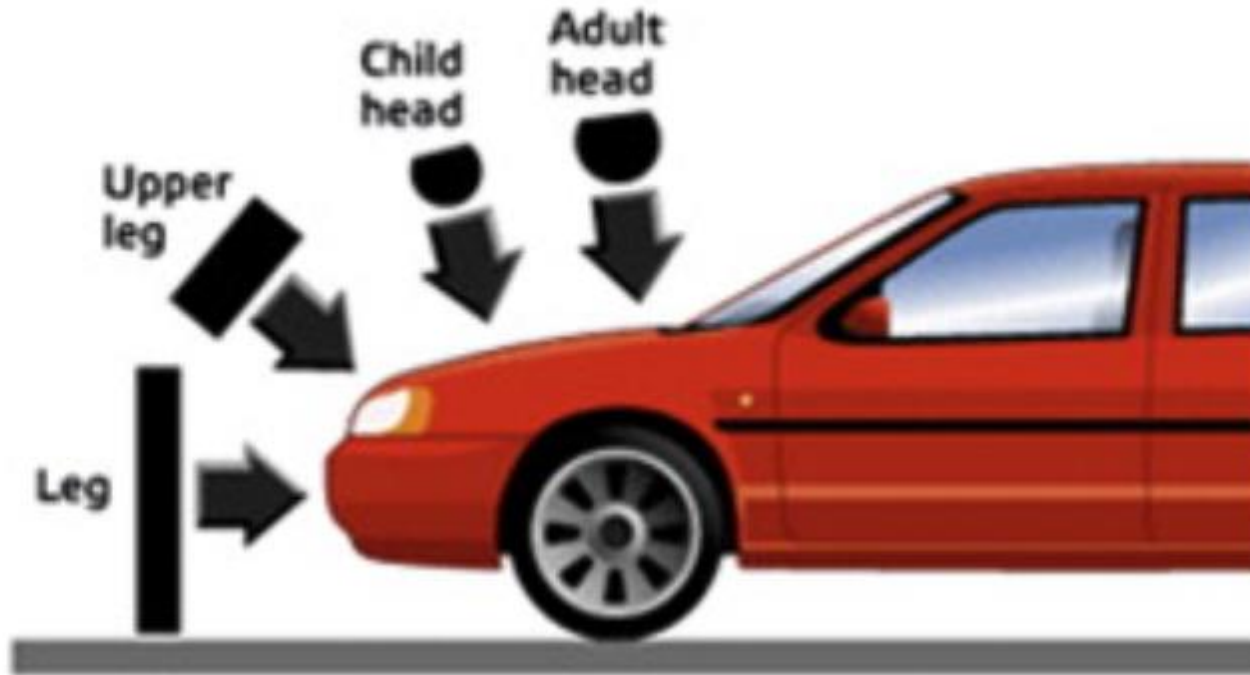
More active travel & fewer motor vehicles would reduce collisions / injuries



Injury patterns

Damian Carrington
Environment editor

Wed 11 Jun 2025 10.00 CEST



Ever-rising height of car bonnets a 'clear threat' to children, report says

High-fronted SUVs are more likely to kill and are on the rise in Europe, with the UK an extreme example



The report found that the average bonnet height of new cars sold in Europe rose from 77cm in 2010 to 84cm in 2024. Photograph: Crispin Hughes/Clean Cities Campaign/Climate Visuals

The bonnet height of new cars in the UK and elsewhere in Europe is rising relentlessly, a report has found, bringing a “clear and growing threat to public safety, especially for children”.

Higher fronts on cars significantly increase the death rate when pedestrians are struck. The analysis also found that drivers in the tallest cars could not see children as old as nine at all when they were directly in front of the

The Centre for Perioperative Care

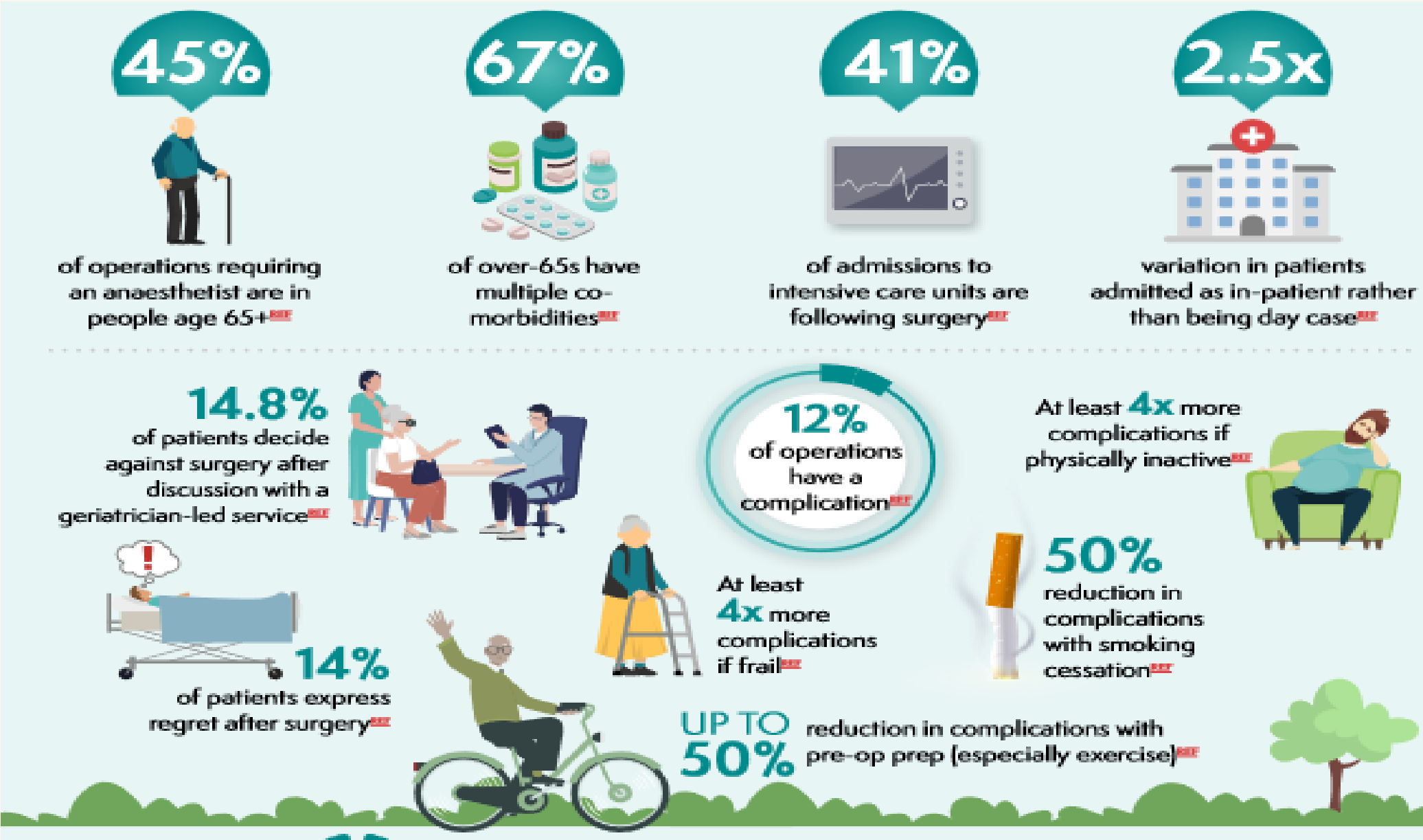


- CPOC since 2019
- Hosted and largely funded by RCoA
- 11 major board partners

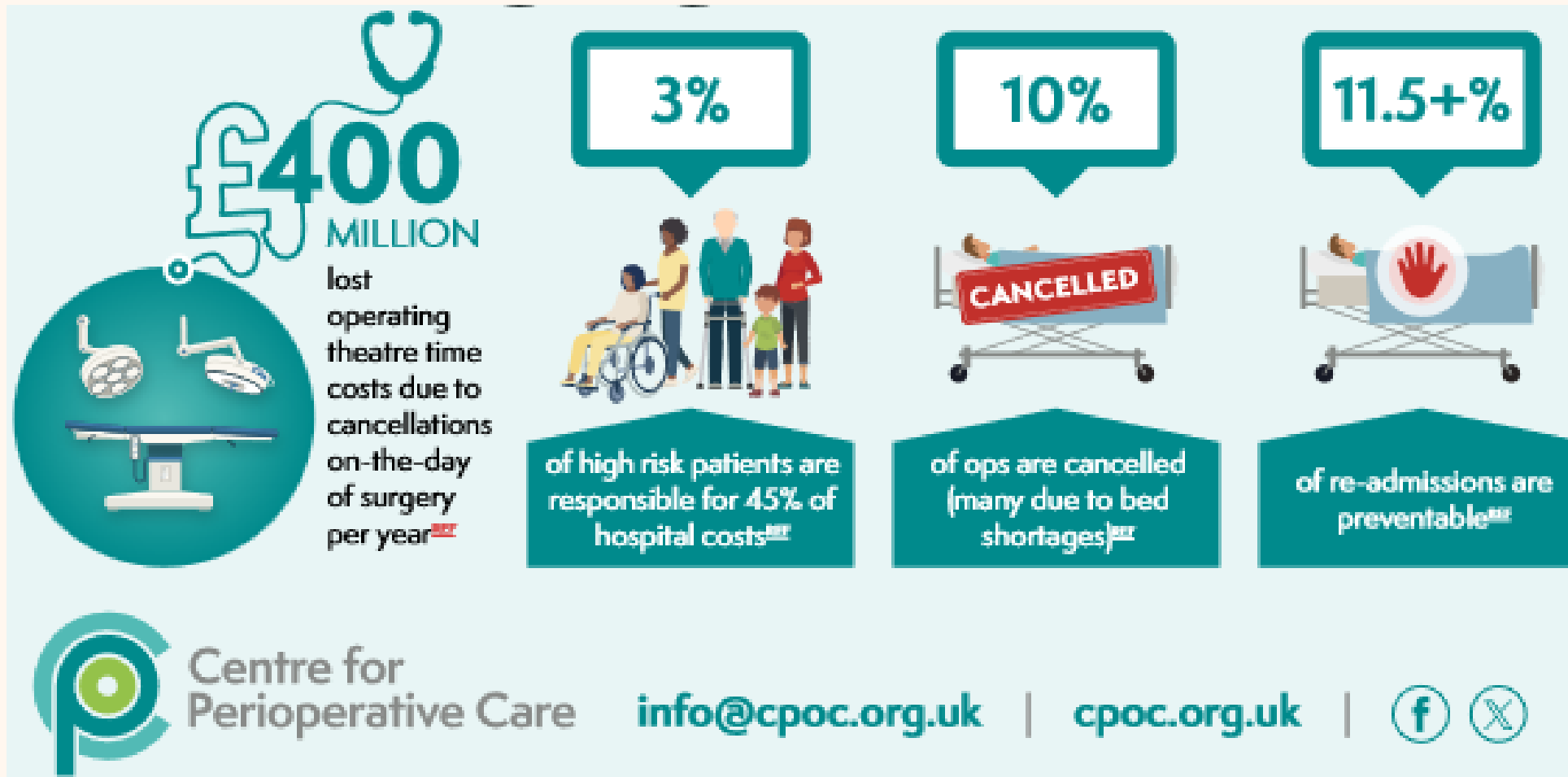
www.cpoc.org.uk

- + Patients
- + Charities
- + Advisory group

How to reduce hospital waiting lists at www.cpoc.org.uk



Fix the NHS waiting list
Reduce complications by 50%
Be a “day case” www.cpoc.org.uk

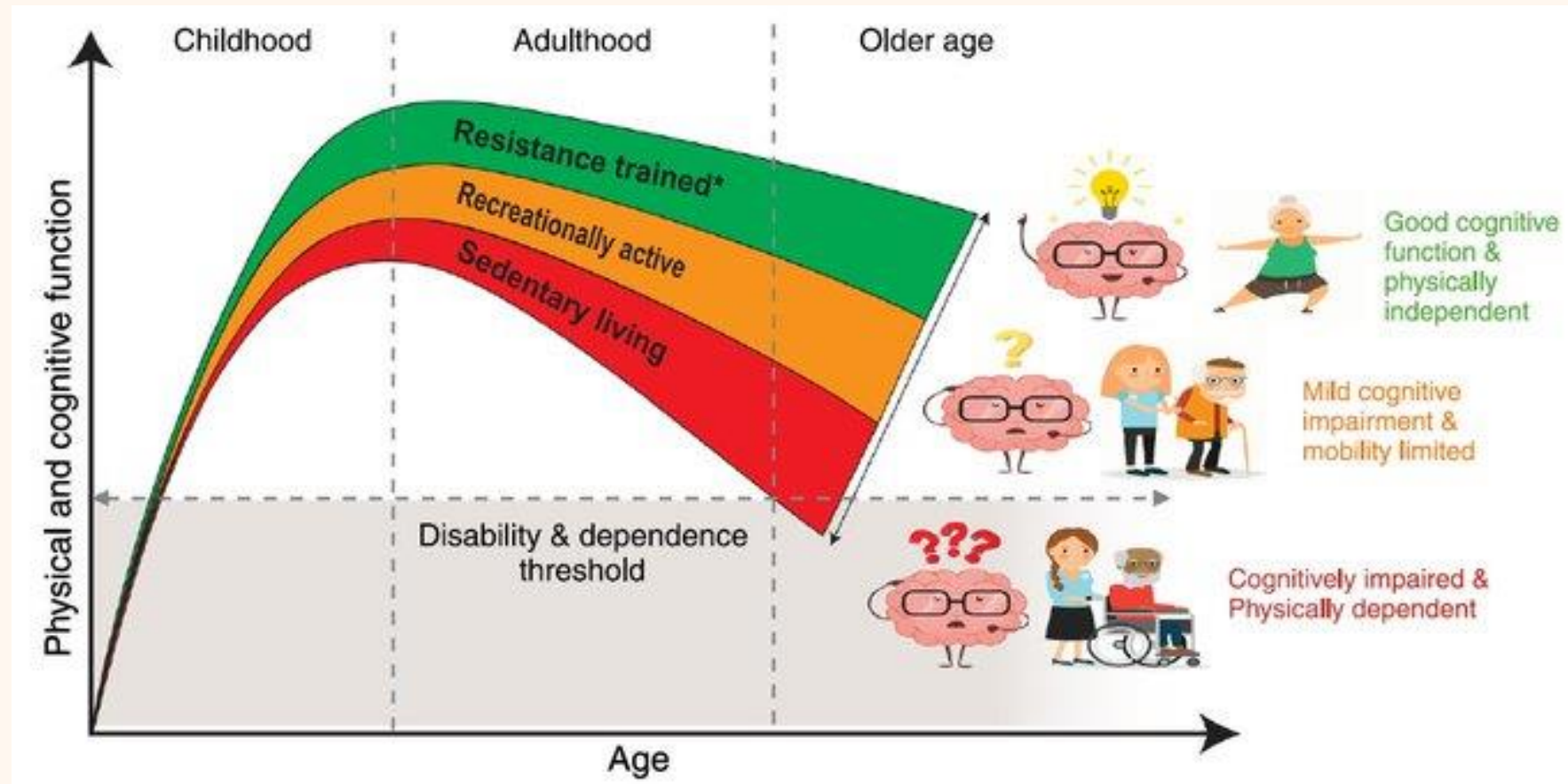


How to reduce the need for social care

My BMJ paper at www.scarlettmcnally.co.uk



- Ageing is different from lack of fitness
- Start exercise:
 - Can “drop a decade” in better fitness
 - Reduce need for social care
 - If you can get to the toilet in time

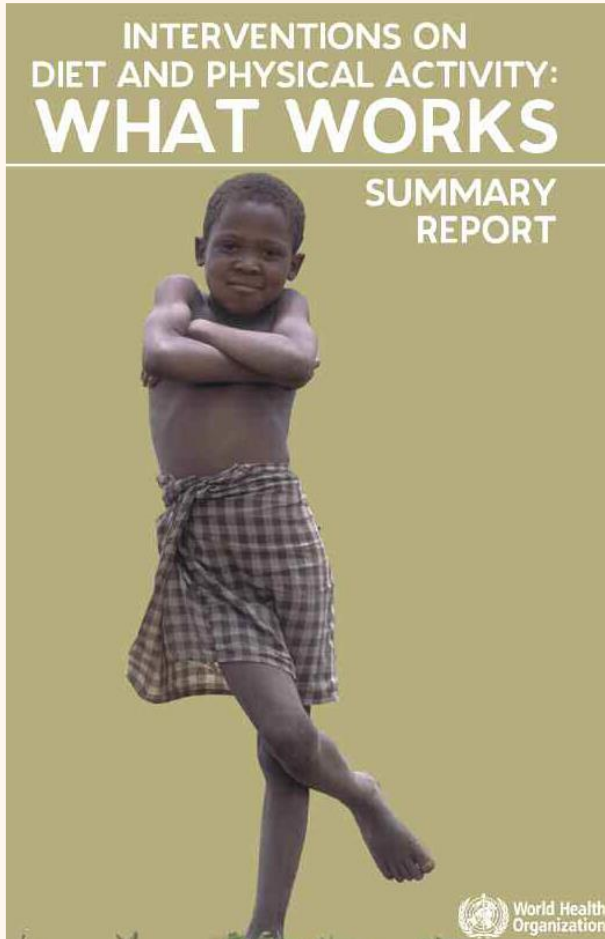


Sawan et al 2023 https://journals.lww.com/acsm-esm/fulltext/2023/01000/the_health_benefits_of_resistance_exercise_beyond.2.aspx@jacksonfyfe

How to get change?

	Individual	Society/ Governments/ Institutions
Why		
How		

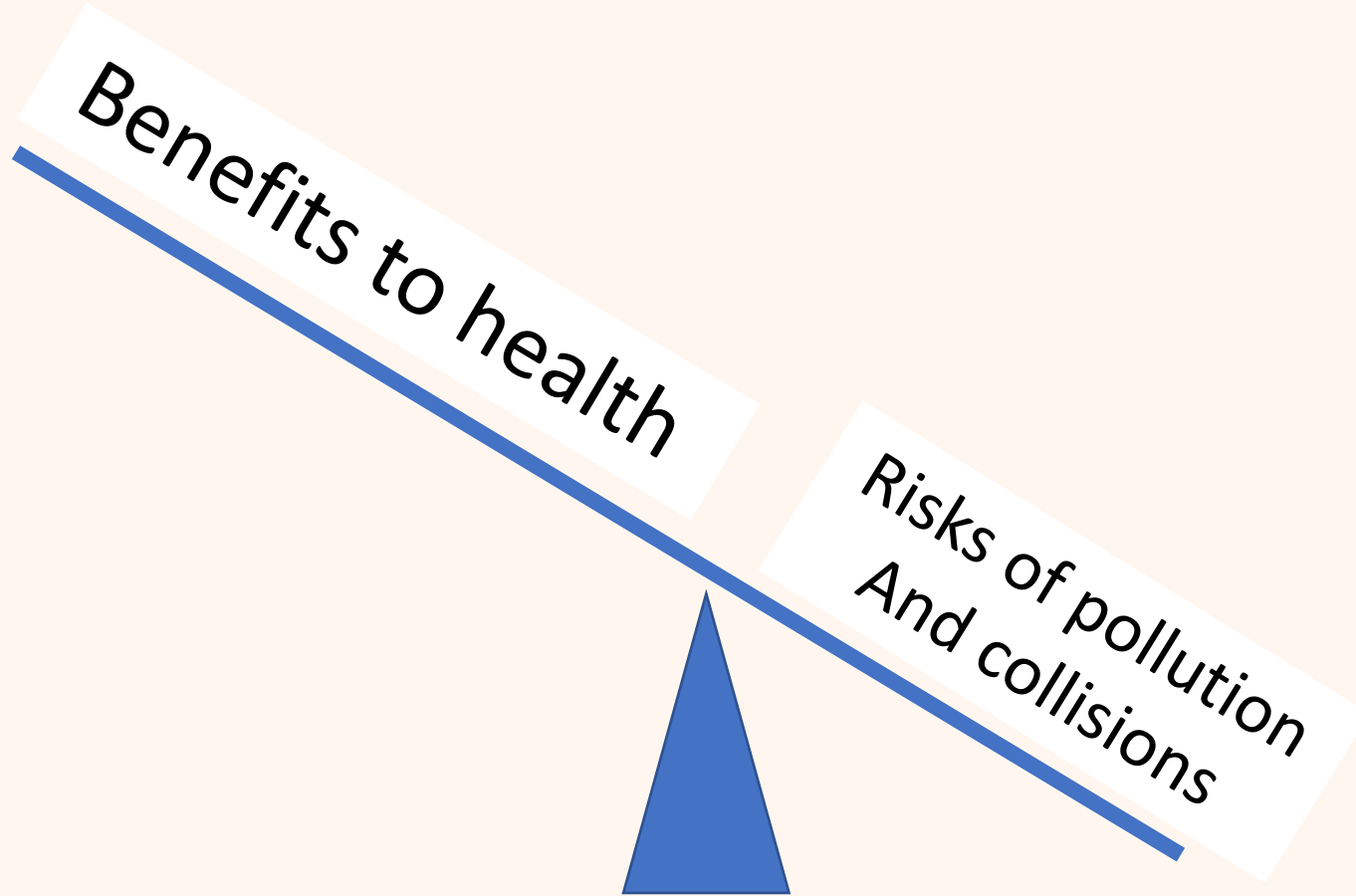
World Health Organization



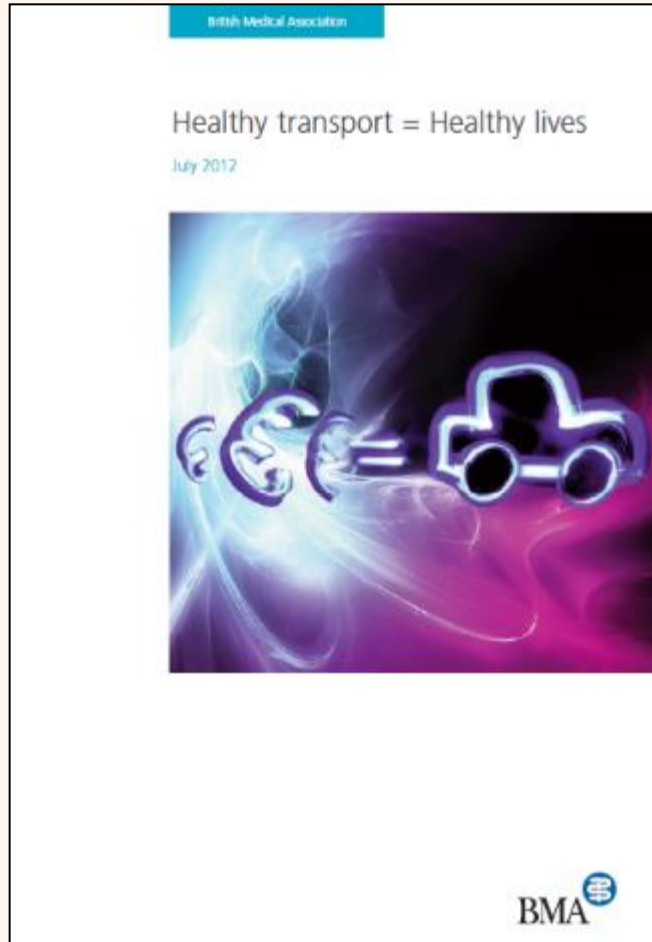
1. Government food regulations
2. Built environment
 - Active travel
 - Space for recreation
3. Using stairs (prompts)
4. Food price at point-of-sale
5. Multi-targeted:
 - walking & cycling to school
 - healthier commuting
 - & leisure activities

<https://www.who.int/dietphysicalactivity/whatworks/en/>

Health benefits of active travel outweigh risks 10:1



- Review papers: Mueller et al, 2015, Götschi et al, 2015, Tainio et al, 2016



“The best forms of exercise are those that fit into everyday life”

British Medical Association (BMA) 2012

62% UK adults say it is too dangerous to cycle on the road

Department for Transport (2018) Statistical data set. Walking and cycling statistics (CW)
<https://www.gov.uk/government/statistical-data-sets/walking-and-cycling-statistics-cw>

Only 3.5% of walking journeys are over 2 miles.

Department for Transport, Walking & cycling statistics (2018).
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/674503/walking-and-cycling-statistics-england-2016.pdf AND NTS0308: Average number of trips by trip length and main mode: England (2018)
<https://www.gov.uk/government/statistical-data-sets/nts03-modal-comparisons#trips-stages-distance-and-time-spent-travelling>

50% cycling journeys are 2 - 5 miles.

Department for Transport, Walking & cycling statistics (2018).
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/674503/walking-and-cycling-statistics-england-2016.pdf

56% of car journeys are under 5 miles.

Department for Transport, Walking & cycling statistics (2018).
<https://www.gov.uk/government/statistics/national-travel-survey-2020/national-travel-survey-2020#journey-lengths>
new one

34% to school by car. 2% by bike.

England, National Travel Survey 2016
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/476635/travel-to-school.pdf

40% reduction in cancer incidence/death in cycle commuters.

<https://www.bmj.com/content/357/bmj.j1456>

45% reduction in heart disease/death in cycle commuters

“Free and generous parking availability quadruples the odds of driving a car to work”

<https://t.co/NIUJ7cYCSV>

Electric-cycles are a game-changer

- Physical activity levels are similar e-cyclists/cyclists
- E-cyclists switch from car for journeys

[Study of over 10,000 participants in seven European cities, Castro for PASTA(2019)

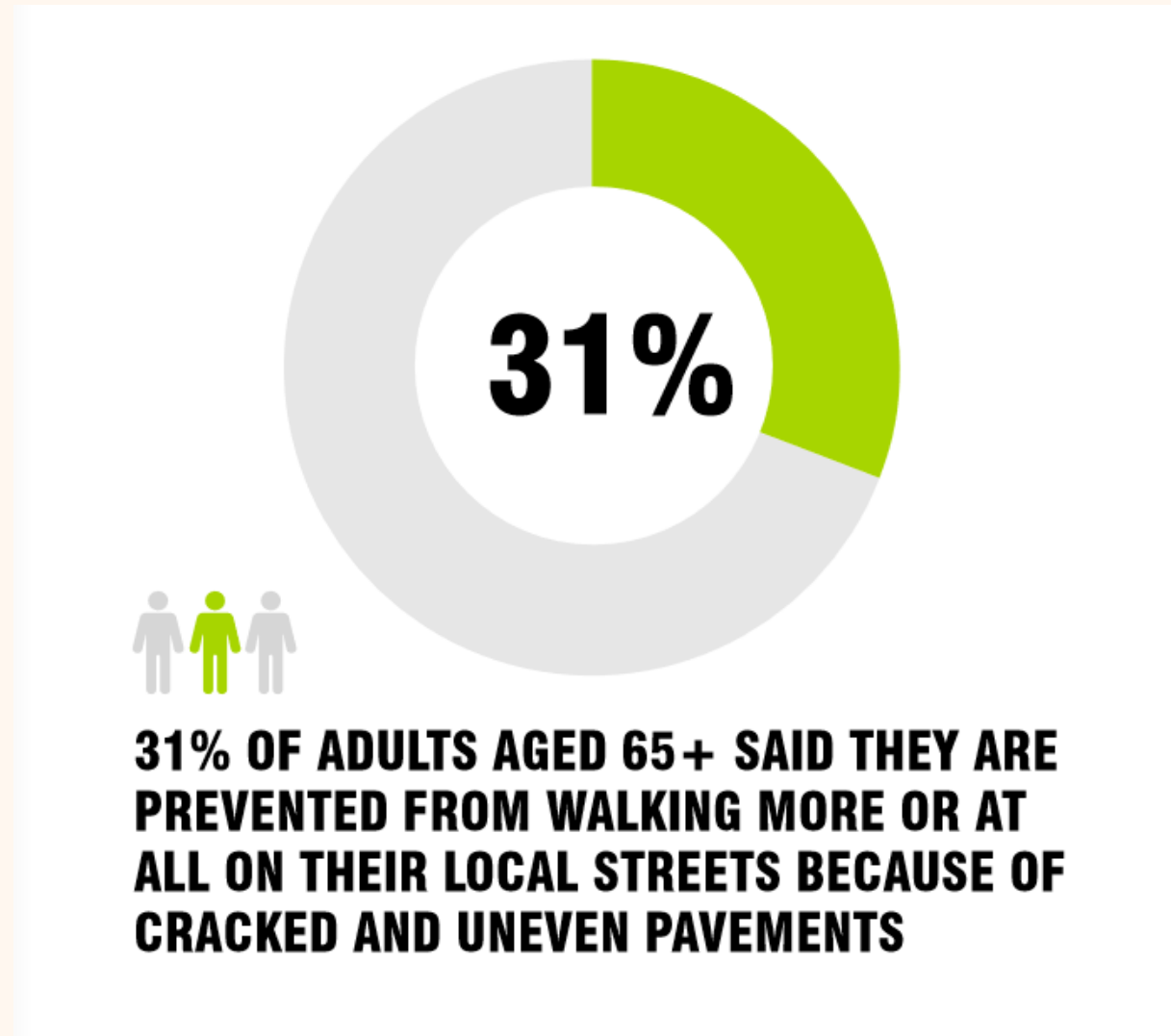
<https://www.sciencedirect.com/science/article/pii/S259019821930017X>

- Loaning 80 employees an e-cycle for 6 – 8 weeks
 - car mileage reduced 20%
 - 59% increased Physical Activity

Bjørnarå (2019) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6619759/>



Fix pavements



<https://www.livingstreets.org.uk/media/>

DISSECTING HEALTH

Scarlett McNally: Prioritising the health of our children by reducing road traffic deaths

Scarlett McNally professor

Last year, 27 450 people were killed or seriously injured on Britain's roads.¹ If these deaths or serious injury from road traffic crashes were a cancer, they'd represent the fifth leading new cancer diagnosis in the UK—with only prostate, lung, breast, and bowel cancer higher.² This is a public health matter, and health inequalities play a big part. Children in the most deprived 20% of areas are six times more likely to be injured than those in the least deprived 20%, and 16 children are killed or seriously injured in road crashes every week on their way to or from school.³

We know how to prevent this: a combination of environmental and driver behavioural changes. The *Highway Code* changed in January to mandate safer driving behaviours around vulnerable road users, such as leaving at least 1.5 m (5 ft) when overtaking a cyclist,⁴ but 61% of drivers are unaware of the changes.⁵

Some real examples show what's possible. In Edinburgh a change to 20 mph limits has reduced road traffic casualties by 40%.⁶ So, let's bring in 20 mph limits in all urban areas. Oslo and Helsinki have reportedly eliminated pedestrian deaths with Vision Zero—an initiative including car-free zones around schools.⁷ And all types of fatal collisions fell by 49% when San Francisco introduced segregated cycle lanes.⁸

We should stop seeing the world through our windcreens. The government's economic analysis of its £27bn (€31.3bn; \$32.4bn) funding for major road traffic schemes focuses on a hypothetical reduction in traffic delays,⁹ without acknowledging the increased road travel and resulting incidents created by expensive, new, widened roads.

When local residents petition for a zebra crossing by their school, their project joins a list of at least 79 others, and funding goes only to the top three lucky projects—but we need to prioritise making our roads safer.¹⁰ Children make up 21% of the UK population.¹¹ Only 76% of mothers with dependent children are in employment, compared with 92% of fathers.¹² In a cost of living crisis, running a car is one of the biggest household expenses. But if children can cycle, walk, or scoot to school safely, the household may need only one car. Furthermore, walking or cycling has clear benefits for health by reducing sedentary lifestyles, as well as for the environment.

We're in a vicious cycle where 34% of children are driven to school,¹³ 62% of UK adults say that it's too dangerous to cycle, and 59% of car journeys are under five miles.¹⁴ Only 5% of walking journeys are over two miles, so a modal shift from cars requires better

infrastructure for cyclists and pedestrians, with better public transport. Electric cycles allow older people and people with disabilities to cycle more easily, especially on hills and for longer distances.

We should harness the health benefits of reduced car travel. Pollution from road traffic contributes to many health conditions¹⁵: 34% of men and 42% of women are not active enough for good health,¹⁶ and active travel can be one of the best ways of fitting in exercise into a busy day.

Let's prioritise our health by making roads safer. We

DISSECTING HEALTH

Scarlett McNally: Upgrading public transport and active travel can transform communities and public health

Scarlett McNally professor

I've been travelling more on buses recently. After my recent hip replacement surgery, I was advised to avoid cycling and driving for six weeks. Buses have improved since my journeys to school in the 1970s—they are safer, quieter, less polluting, and more reliable now. England's bus fleet is 99% accessible to wheelchair users and 99% enabled with tracking for real time information at bus stops or on apps to enable people to plan ahead.¹ Despite these improvements, systemic underinvestment in transport is still a problem. Yet if we invested in building and repairing transport infrastructure, it could be transformational for the health and wellbeing of communities.

I have written extensively about the negative effects of cars on health, through road traffic collisions,² pollution,³ and physical inactivity,⁴ and the positive effects of public transport and active travel, including walking, wheeling, and cycling.^{2,4}

Like proverbial buses, with several coming at once, there is a slew of new reports extolling the health boosting power of transport and improving the liveability of local places.

A new report from the Royal Society for Public Health⁵ calls for more inclusive design for neighbourhoods and for measures to encourage walking, cycling, and wheeling to increase people's physical activity and social connection. Yet the Institute for Public Policy Research found that 44% of 2071 survey respondents considered transport difficulties to be limiting their everyday life.⁶ Many rural places lack public transport

boosts followed by prolonged underinvestment" for

Eastbourne, UK

DISSECTING HEALTH

Scarlett McNally: Enabling active travel can improve the UK's health

Scarlett McNally professor

There is an urgent need to improve the nation's health, which worsened over the pandemic. There is an abundance of evidence and reports, including by me, claiming that exercise is a miracle cure that improves physical and mental health and reduces demands on NHS services and the need for social care.^{1–4}

The best forms of exercise are those that fit into everyday life. Active travel is a "best buy" for improving health. Commuting by cycling reduces incidence of, and mortality from, heart disease and cancer by over 30% in a dose dependent manner⁵ and reduces sick days and depression.⁶ People don't swap from their car to active travel because cars are normalised and our infrastructure is built around them. This means that 71% of women (and 61% of men) say it is too dangerous to cycle on roads.⁷ Where there are segregated safe cycle routes, people use them, as has been demonstrated in Paris.⁸

Pavements need to be repaired⁹ and pedestrian junctions improved for the safety and accessibility

require minimal cost—a few signs, a change of culture, and enforcement rather than expensive traffic calming measures.¹⁸

Thirdly, the NHS workforce should be role models. The BMA and the Health Foundation suggest the NHS should be an "anchor institution."^{19,20} The NHS is responsible for 5% of the UK's total transport emissions—and 1.3 million staff commuting makes up the bulk of that.^{19,21} A modal shift from driving to active travel needs focus, practical support, and some funding. We need pavements in all NHS sites, secure cycle parking, and lockers for wet gear. A few freebies might help, such as waterproof overtrousers for new staff and subsidised bus passes for NHS staff. Salisbury Hospital has five electric cycles that staff can try out free for two weeks, which has encouraged them to buy their own. This hugely successful scheme cost only around £15 000 and should be rolled out everywhere.²² People using an electric cycle get just as fit as those using a standard bike, because they ride further and convert more journeys from car driving.²³

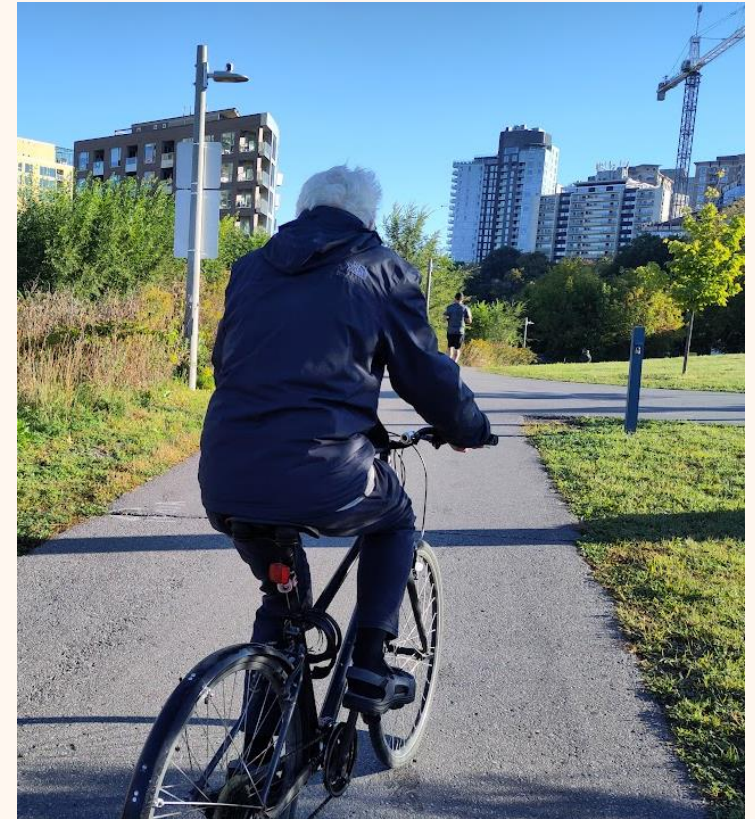


- <https://www.bmj.com/content/379/bmj.o2862>
- <https://www.bmj.com/content/390/bmj.r1866>
- <https://www.bmj.com/content/384/bmj.q522>

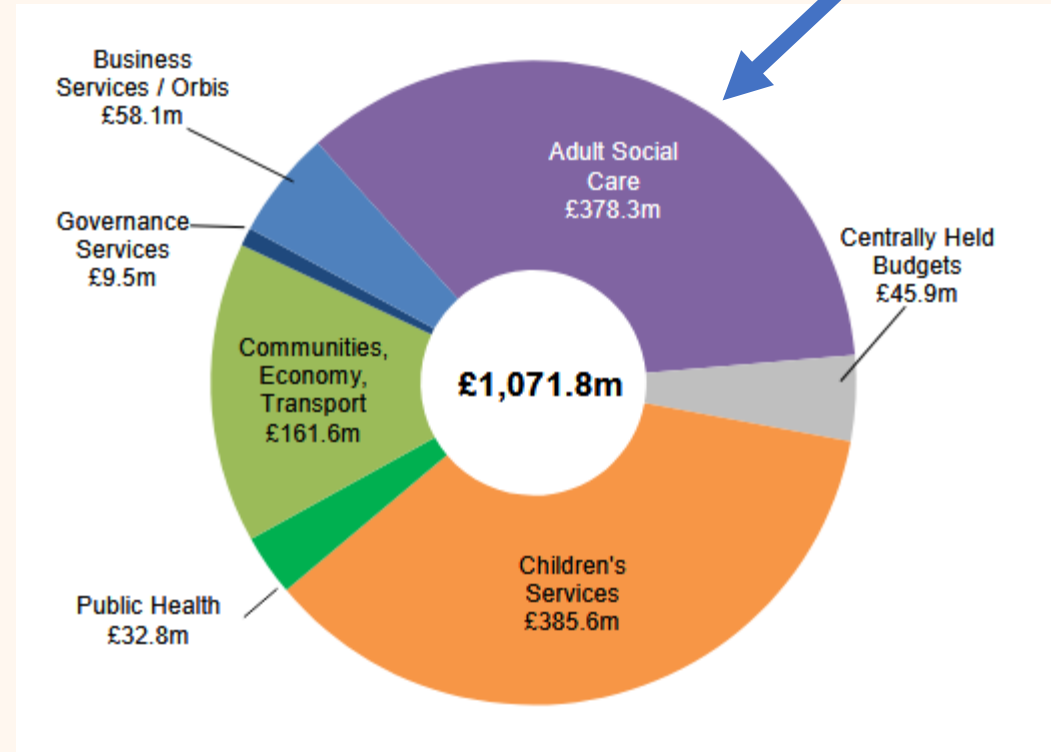


The population AND the economy

- 20% are children
- 19% over 65
- 3:1 working age adults to every over 65
- (Japan = 2:1)
- Why are we building housing estates only accessible by car?
- 98% of road network = local roads. Less funding than “strategic” roads. <https://www.bmj.com/content/390/bmj.r1866>



35% of ESCC revenue budget = Adult Social Care



Low traffic future

<https://lowtrafficfuture.org.uk/>



#BIKEISBEST



Campaign for Better Transport

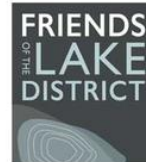


CleanCities



cta
community transport association

we are cycling UK



global action plan

GREENPEACE

HOPE FOR THE FUTURE

IP PR



LONDON CYCLING CAMPAIGN

Possible.

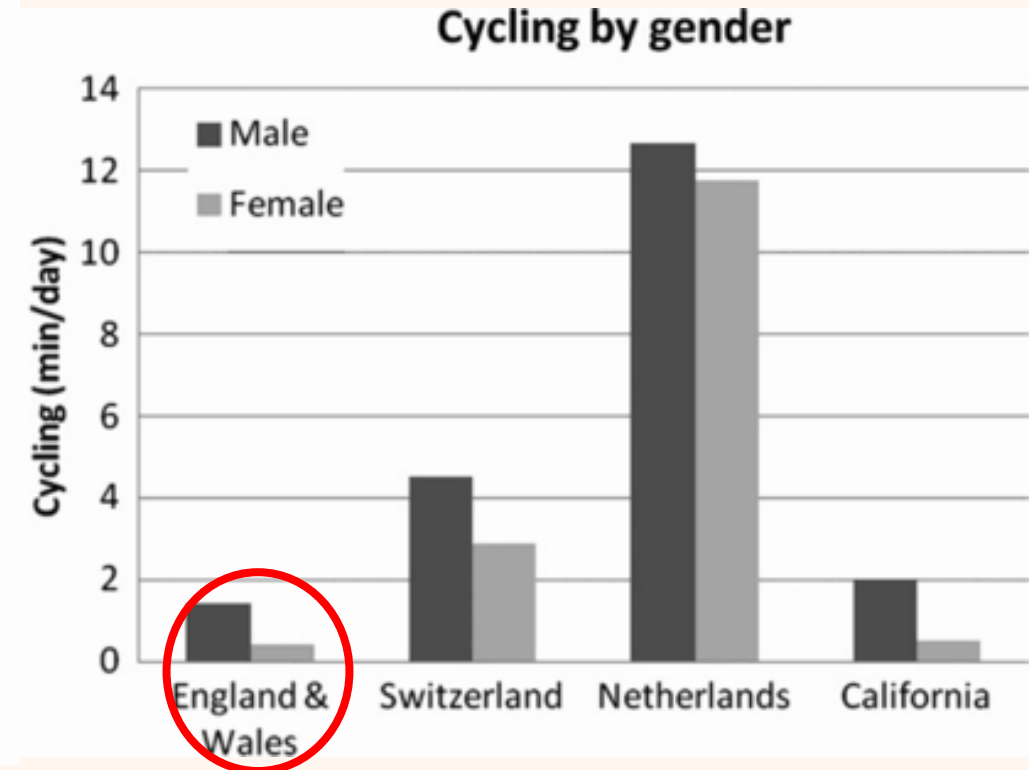
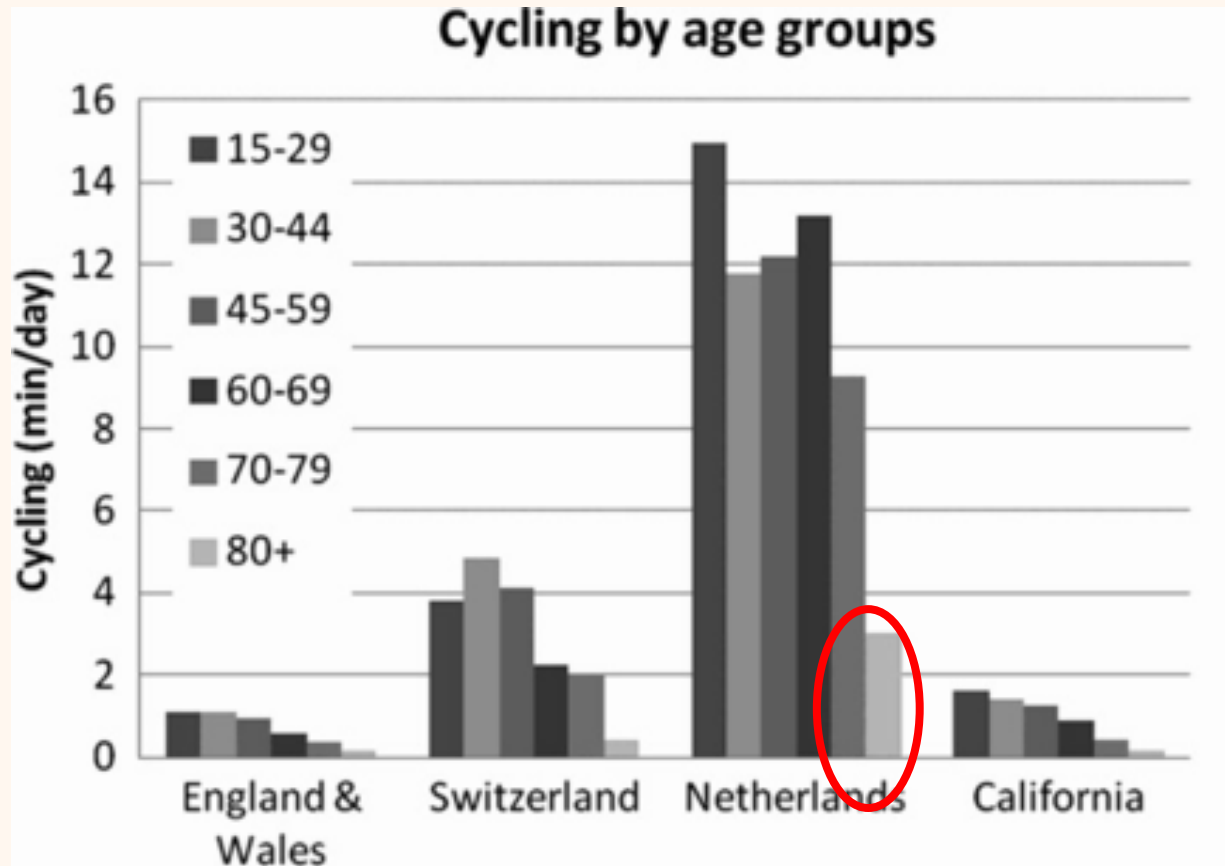
RAMBLERS



Transport & Health
THSG
Science Group



In England men cycle 3x as much as women
Dutch 80-year-olds cycle more than English 20-year-olds



Götschi T, Garrard J, Giles-Corti B (2015): Cycling as a Part of Daily Life: A Review of Health Perspectives, Transport Reviews: <http://dx.doi.org/10.1080/01441647.2015.1057877>

Why do something to support other people to be physically active?

It is nice

- Improves mental health
- Improves physical health
- Wellbeing

We can't afford not to

- Saves NHS costs
- Saves social care costs
- Social care predicted to be needed for 10 years
- Families reduce paid work to be carers
- 10 million carers in UK
- NHS costs (staff/money) for diseases that might not have happened
- Reduces pollution = emissions + particulates from cars
- Fewer sick days
- More disposable income (?1 car per household)

What works and is cheap?



- 20mph is cheap
- More walking. More cycling
- Fewer collisions. Fewer injuries
- 20mph limits = cheap (signs, advertising, think of the children)
- 20mph zones = expensive (need chicanes, build-outs, speed bumps)

What can drivers do? (change the culture)



DRIVERS:

- If you cannot give 1.5 metres (5 feet) DO NOT OVERTAKE

CYCLING:

- ride in the centre of the lane in slower-moving traffic and approaching to junctions or road narrowings



<https://www.gov.uk/government/news/the-highway-code-8-changes-you-need-to-know-from-29-january-2022>

Story: me...

- 2018: Myeloma (cancer of plasma cells) + cardiac amyloidosis.
Chemo. Disabled.

My Consultant: “Your heart’s a muscle you’ve got to use it”

My GP: “Go for a walk every day”

- 2019: GOT ELECTRIC-BIKE
- 2020: Stem Cell Transplant
- 2025: Hip replacement



The Bristol declaration

1 Oct 2025



The Bristol declaration

- The public realm and local transport have a hugely **powerful impact on health**.
- **Bad transport harms health (car-centric planning)**
 - Pollution - exhaust and particulates - causes strokes, heart disease, diabetes, dementia and cancer. (Particulates from all heavy vehicles, including electric cars)
 - Road traffic collisions and the fear of them + injuries
 - Noise
 - Loneliness, children's play/independence, social isolation and lack of safety
 - Physical inactivity - being sedentary in a car or not going out. Habits → lifetime of inactivity
 - Transport poverty.
- **Good transport enables ALL people** to access education, work and amenities and physical and social activity
 - 20% are children, 19% are over 65, 24% adults live with multiple long-term conditions, 22% UK households – no access to a car
 - 6% of UK adults are classified as completely physically inactive and 30% of children do insufficient activity
- Recognising the **costs of inaction** and health benefits of action. Healthy people leads to a healthy economy
- **Active travel (walking, wheeling and cycling) and public transport** – to improve physical activity, social interaction and access to education/work/£

“We demand transformation of the UK so healthy transport options are the easiest, natural choice for most everyday journeys, without relying on a car. Change requires a change in vision, culture, laws, and funding to make and maintain practical changes.”

The Bristol declaration – demands:

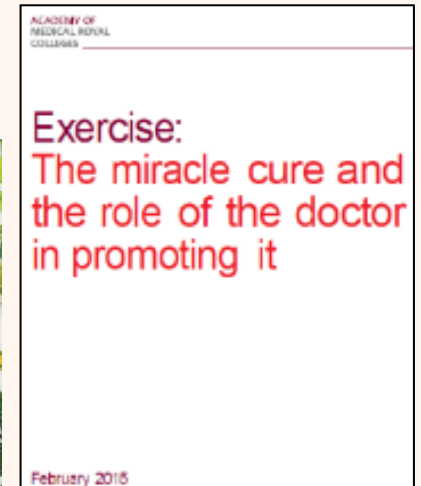
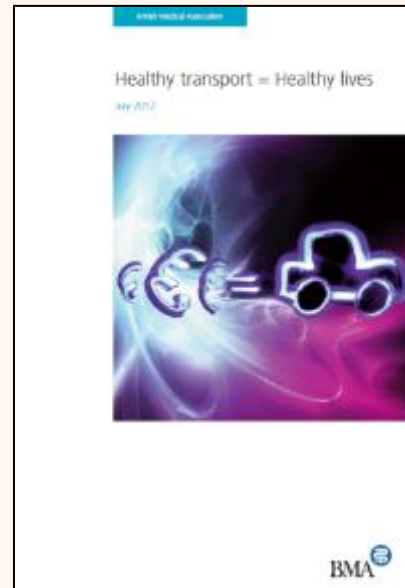
1. Acknowledgement that **car dependency** is a problem – with ill-health and negative economic impact
2. Governments and organisations **to enable modal shift** from car to walking, wheeling, cycling and using public transport
3. **Funding** to £35 per capita (from £10) and targets for half of journeys under 5 miles being walked and cycled by 2030.
 1. Capital funding for local roads and infrastructure
 2. Revenue funding for maintenance, communication, education, enforcement and subsidies.
4. Decisions and funding to focus on accessible and safer active and sustainable travel – especially for vulnerable groups (children, teenagers, women and girls, older and disabled people)
5. **20mph** default speed limits in built up areas where people and vehicles mix.
6. All organisations to **focus on details** (car parking, speed limits, cycle parking, workplace lockers, infrastructure for walking, wheeling and cycling, repairing pavements, action on pavement parking, policies for driver behaviour, education, signage, maintenance and grants.
7. Health and wellbeing in **appraisal** assessments of capital and revenue projects - World Health Organization toolkit
8. Urban areas: cycling, electric-cycling and public transport for 2 – 5-mile journeys. **Rural: safe paths** along and across busy roads, traffic and speed management.
9. **Planning policy** should reflect healthier transport. All new homes with safe access to key amenities without a car.
10. Reform of **highway legislation** and design. European examples.

Summary:

Modal shift to Active travel + public transport

→ Health, Social care + economy benefits

- Exercise
- Less Pollution
- Community
 - Social inclusion
 - People empowerment
 - Loneliness
- Transport poverty (car costs)
- Fewer Collisions
- Sustainability



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