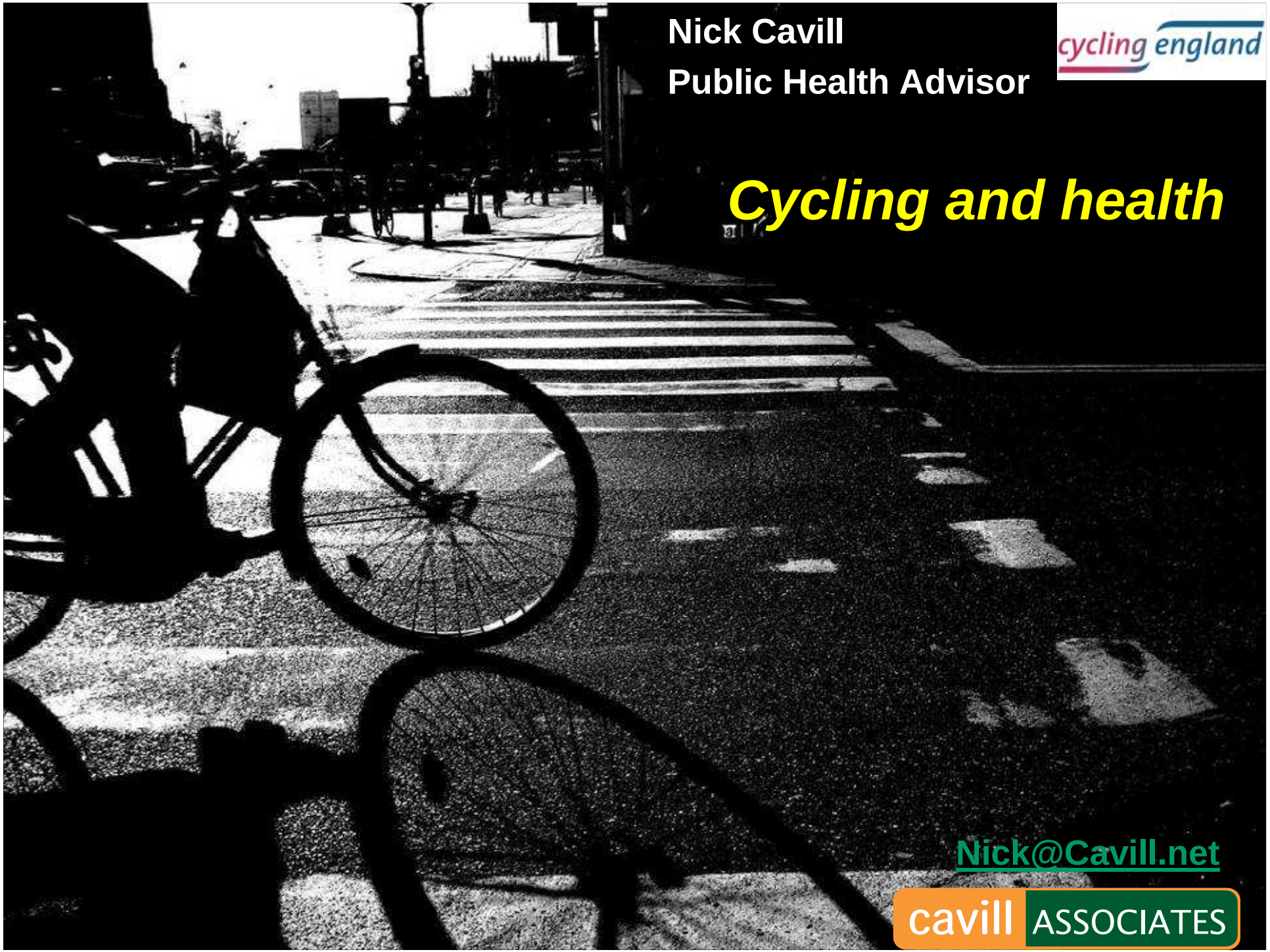

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Cycling and health

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Acknowledgements

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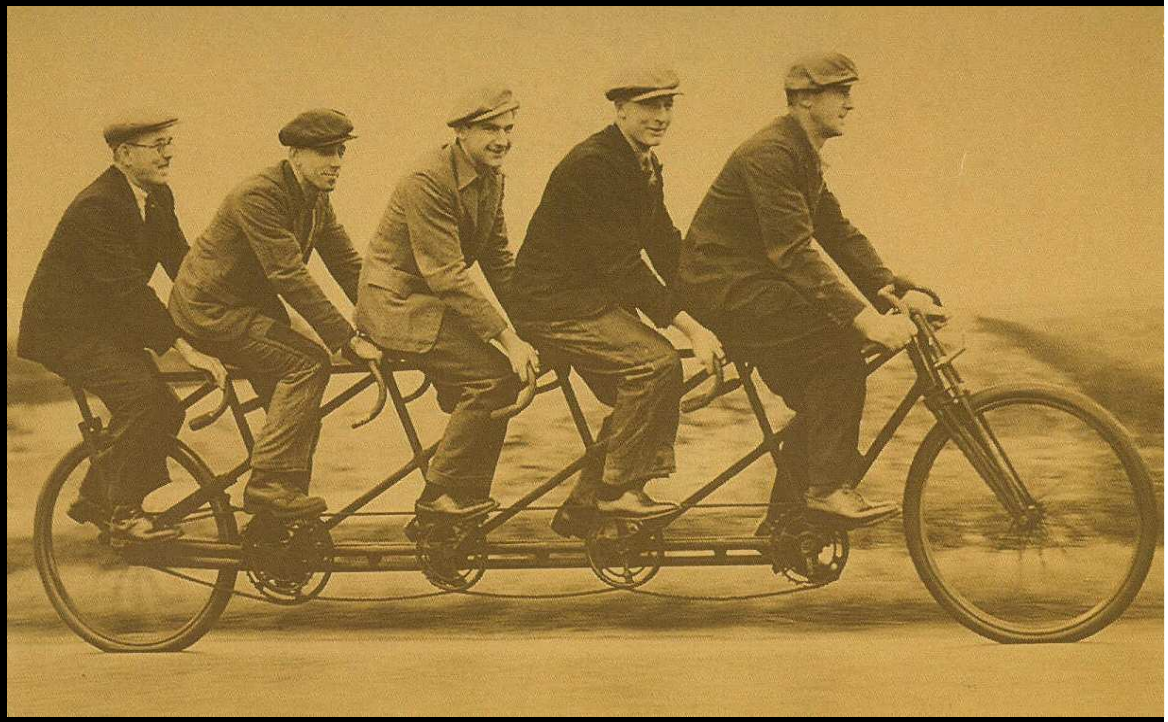
Photographs from Copenhagen:
Mikael Colville-Andersen
Copenhagen Cycle Chic –

http://copenhagengirlsonbikes.blogspot.com

Outline:

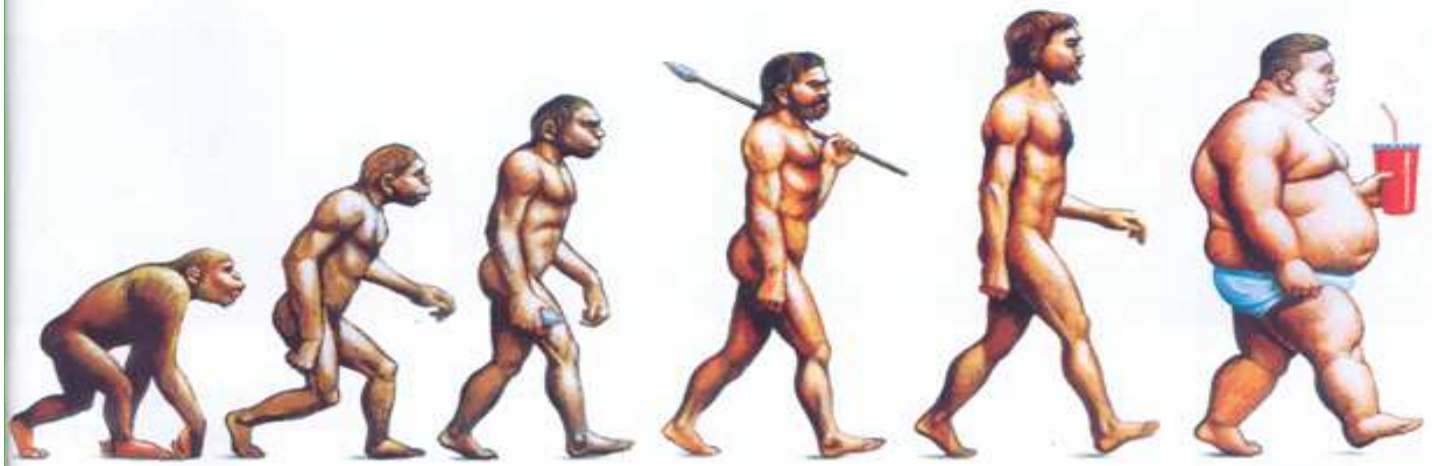
- Evidence: cycling and health
- Other benefits & risks



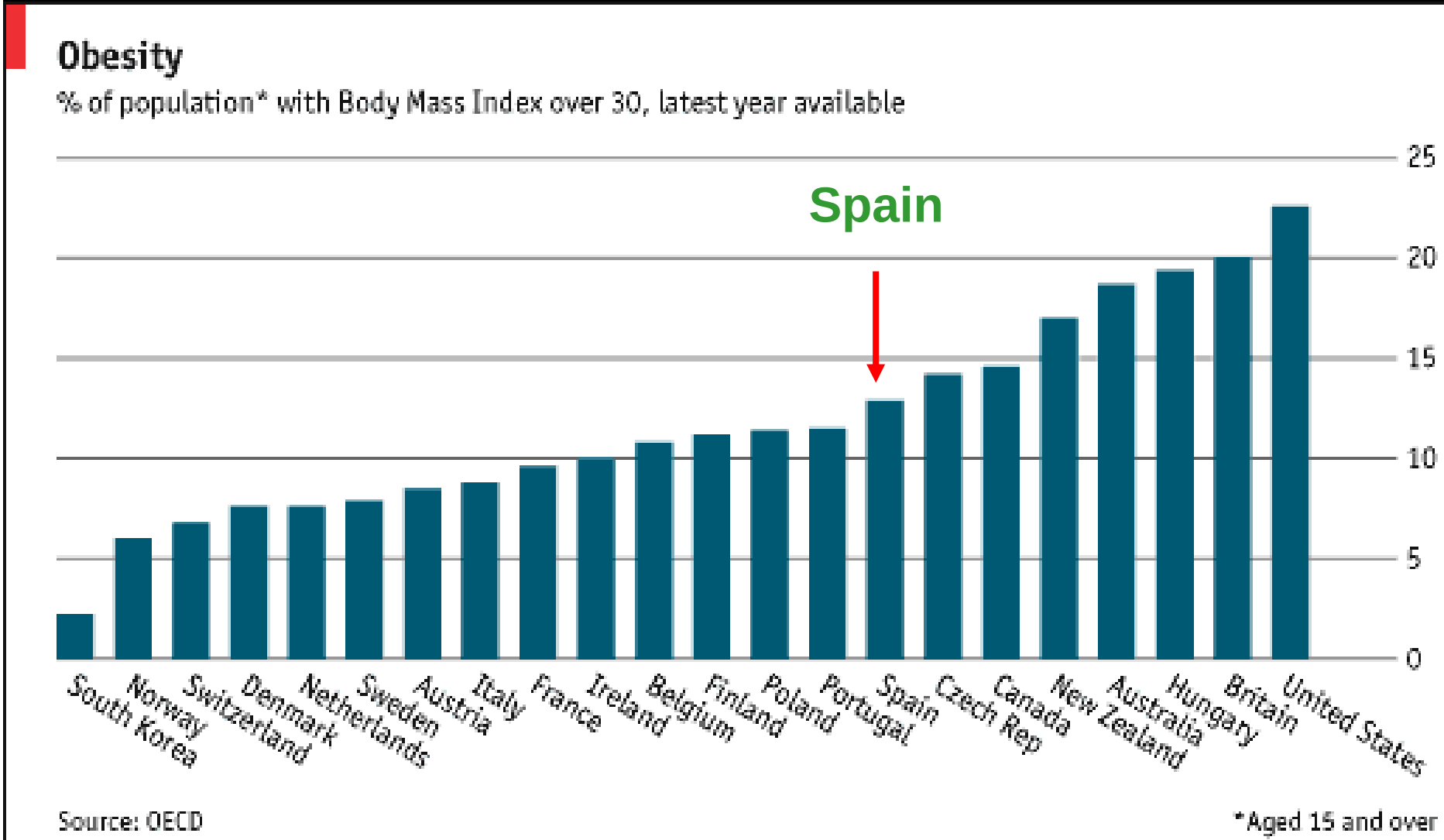
The Economist

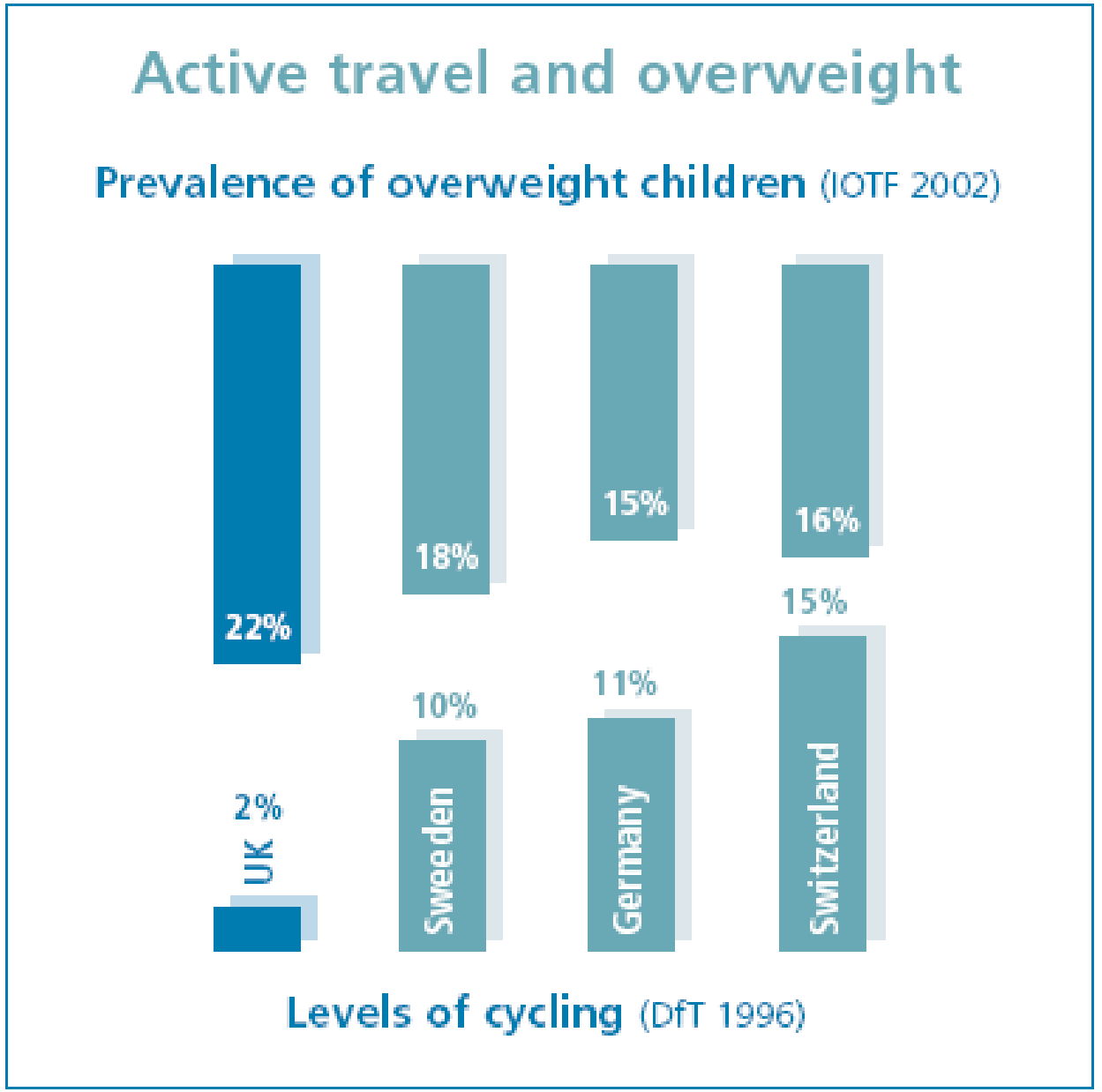
DECEMBER 13TH–19TH 2003 www.economist.com

The shape of things to come



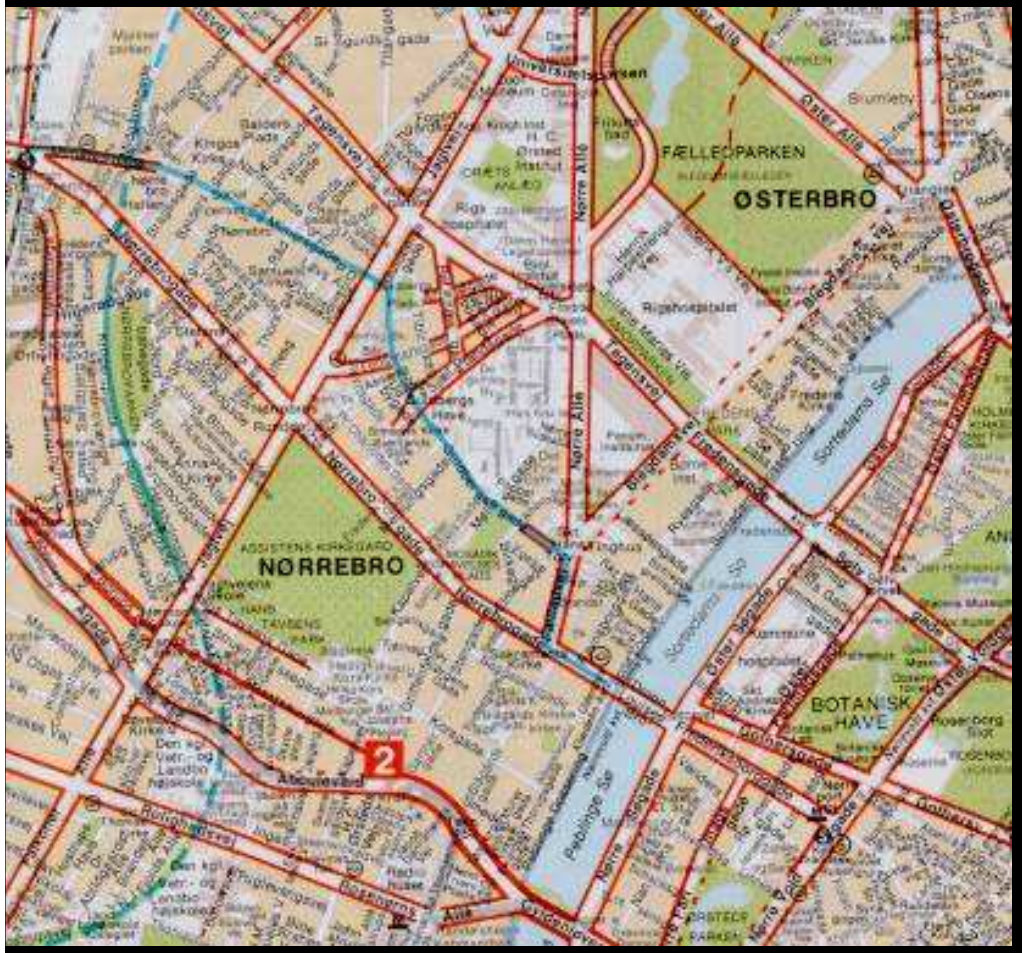
Obesity


Obesity
% of population* with Body Mass Index over 30, latest year available
Spain
25
20
15
10
5
0
South Korea
Norway
Switzerland
Denmark
Netherlands
Sweden
Austria
Italy
France
Ireland
Belgium
Finland
Poland
Portugal
Spain
Czech Rep
Canada
New Zealand
Australia
Hungary
Britain
United States
Source: OECD
*Aged 15 and over



Sustrans, 2008.

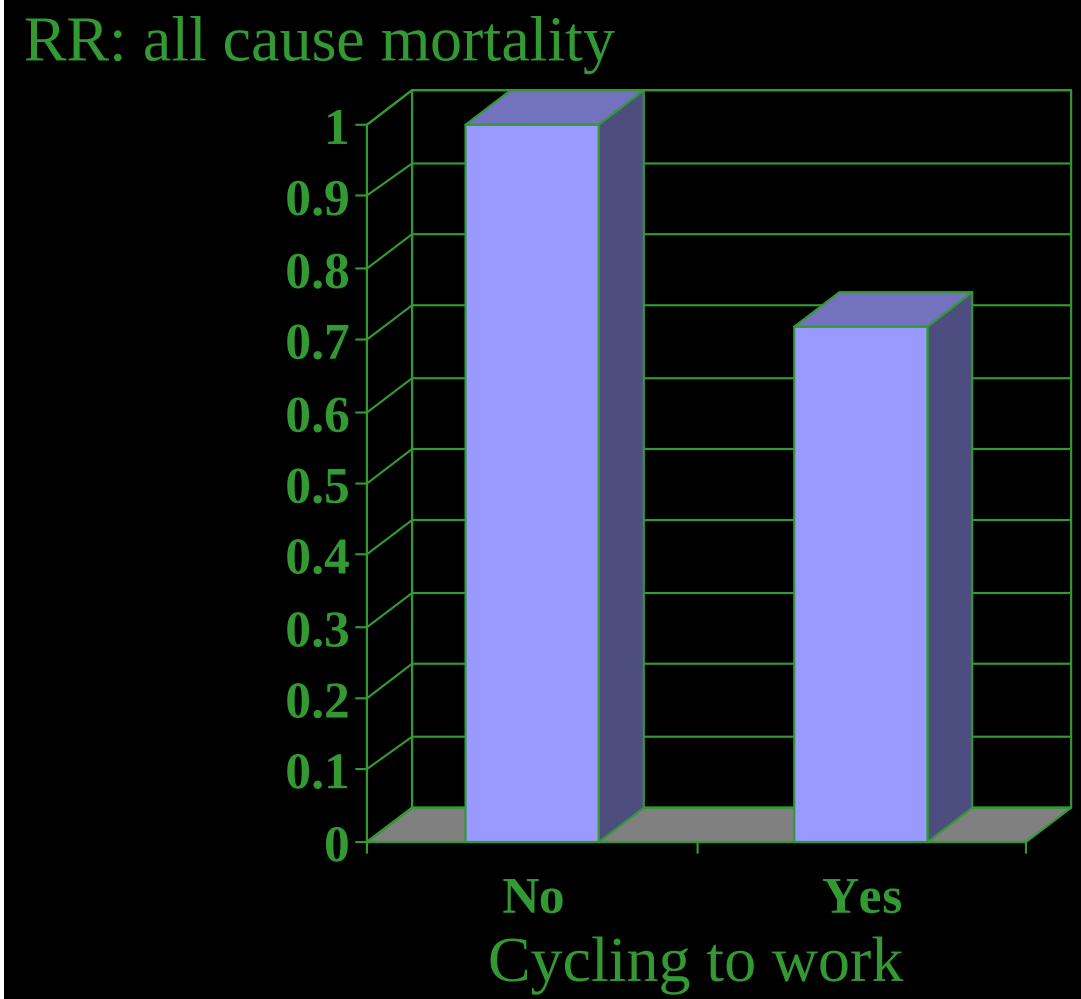
Copenhagen



- 6,954 regular cycle commuters
- total study population of 30,640
- followed up for an average of 14.5 years
- mean journey time for 3 hours per week

Source: Andersen *et al. Arch Intern Med. 2000;160:1621-1628*

Relative risk of cycling to work

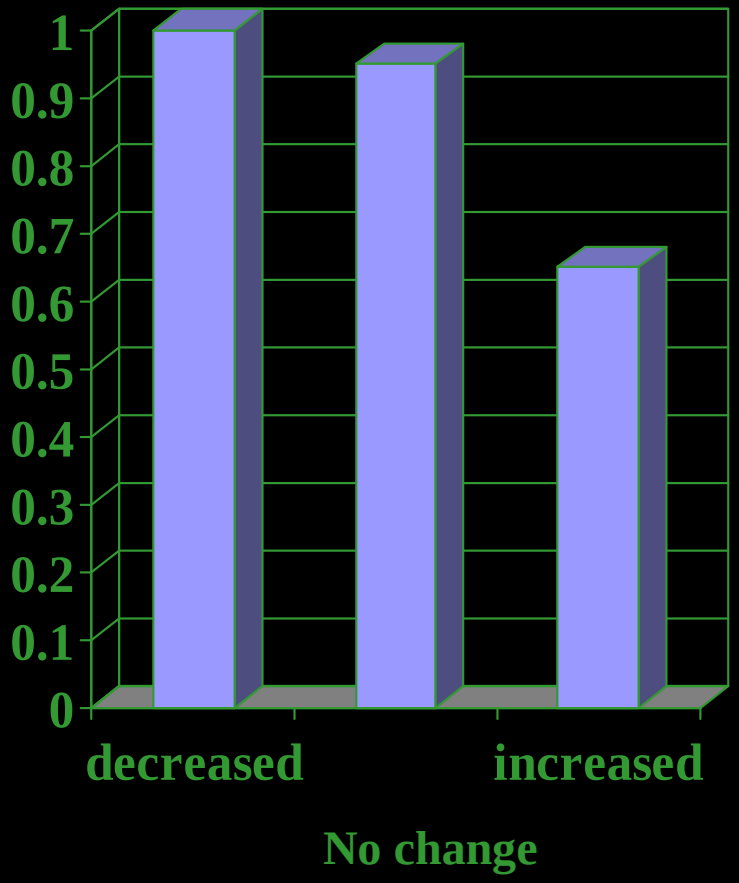


- **6,171 men and 783 women including 2,291 deaths**
- **RR 0.72 (95% CI: 0.57-0.91)**
- **adjusted for age, sex, educ. level, BP, BMI, physical activity, cholesterol and smoking**
- **(data from Copenhagen Male study and Glostrup Population Studies)**


BLITZ

Cyclists live longer

Changes in cycling over 5 years and subsequent mortality: Copenhagen City Heart Study

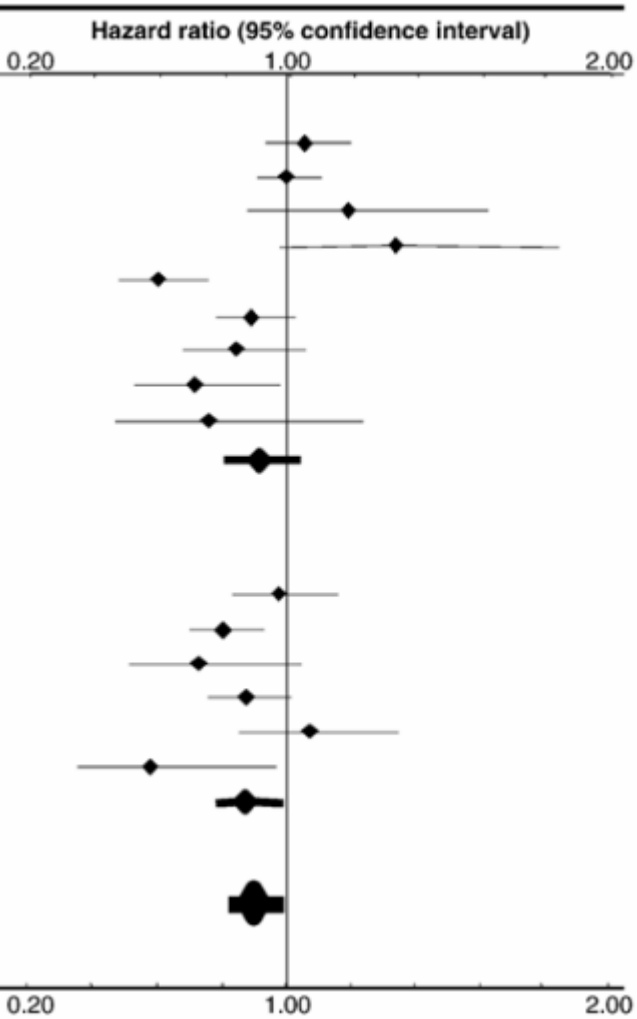


- Changes in cycling habits among 3291 men and women
- 618 deaths


People who take up
cycling live longer

Active commuting and cardiovascular risk

Author (year)	Cardiovascular risk factor	Sample size	Hazard ratio (95% confidence intrerval)
Male			
Barengo et al (2004)	Coronary heart disease mortality	15,853	1.052 (0.930 – 1.190)
Hu et al (2006)	Incidence coronary heart disease	22,877	0.995 (0.900 – 1.100)
Wagner et al (2002)	Hard coronary heart disease	9,758	1.187 (0.870 – 1.620)
Wagner et al (2002)	Angina	9,758	1.336 (0.970 – 1.840)
Wennberg et al (2006)	First myocardial infarction	2,145	0.594 (0.470 – 0.750)
Hu et al (2005)	Stroke	22,841	0.886 (0.770 – 1.020)
Barengo et al (2005)	Hypertension	5,935	0.839 (0.670 – 1.050)
Hayasi et al (1999)	Hypertension	6,017	0.710 (0.520 – 0.970)
Hu et al (2003)	Diabetes	6,898	0.752 (0.460 – 1.230)
Subtotal			**0.910 (0.795 – 1.040)**
Test for subtotal effect			**p=0.165**
Female			
Barengo et al (2004)	Coronary heart disease mortality	16,824	0.971 (0.820 – 1.150)
Hu et al (2006)	Incidence coronary heart disease	24,963	0.797 (0.690 – 0.920)
Wennberg et al (2006)	First myocardial infarction	536	0.721 (0.500 – 1.040)
Hu et al (2005)	Stroke	24,880	0.870 (0.750 – 1.010)
Barengo et al (2005)	Hypertension	6,227	1.067 (0.850 – 1.340)
Hu et al (2003)	Diabetes	7,392	0.571 (0.340 – 0.960)
Subtotal			**0.870 (0.770 – 0.982)**
Test for subtotal effect			**p=0.024**
Overall Total			**0.892 (0.812 – 0.979)**
Test for heterogeneity			**$x^2(15)= 43.73, p < 0.0001$**
Test for overall effect			**p = 0.016**



Hamer M, Chida Y. Active commuting and cardiovascular risk: A meta-analytic review. Prev med. (2007)


Multiple studies now
show cycling reduces
risk of heart disease

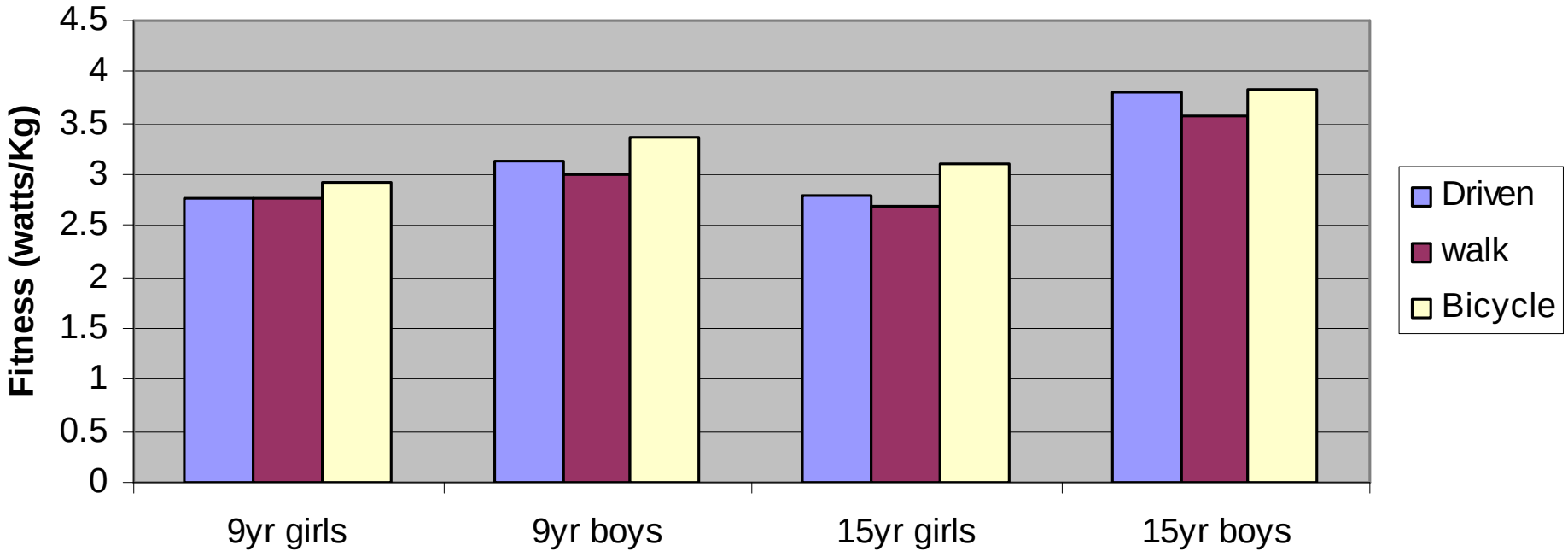
Active Travel to School and Cardiovascular Fitness in Danish Children and Adolescents

ASHLEY R. COOPER[1], NIELS WEDDERKOPP[2], HAN WANG[1], LARS BO ANDERSEN[3], KARSTEN FROBERG[2], and ANGIE S. PAGE[1]

[1]Department of Exercise, Nutrition and Health Sciences, University of Bristol, UNITED KINGDOM; [2]Institute of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense, DENMARK; and [3]Department of Sports Medicine, Norwegian School of Sports Sciences, Oslo, NORWAY

Med. Sci. Sports Exerc., Vol. 38, No. 10, pp. 1724–1731, 2006.

Fitness in relation to travelling mode in 919 children



Med. Sci. Sports Exerc., Vol. 38, No. 10, pp. 1724–1731, 2006.

Scand J Med Sci Sports 2008
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DOI: 10.1111/j.1600-0838.2008.00803.x

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IN SPORTS

Physical fitness in relation to transport to school in adolescents: the Danish youth and sports study

L. B. Andersen[1], D. A. Lawlor[2], A. R. Cooper[3], K. Froberg[4], S. A. Anderssen[1]

[1]Department of Sports Medicine, Norwegian School of Sport Sciences, Oslo, Norway, [2]Department of Social Medicine, University of Bristol, Bristol, UK, [3]Department of Exercise, Nutrition and Health Sciences, University of Bristol, Bristol, UK, [4]Institute of Sport Science & Clinical Biomechanics, University of Southern Denmark, Denmark
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Accepted for publication 18 February 2008

Detailed information on absolute differences in fitness measures between passive transport and the two active types of traveling

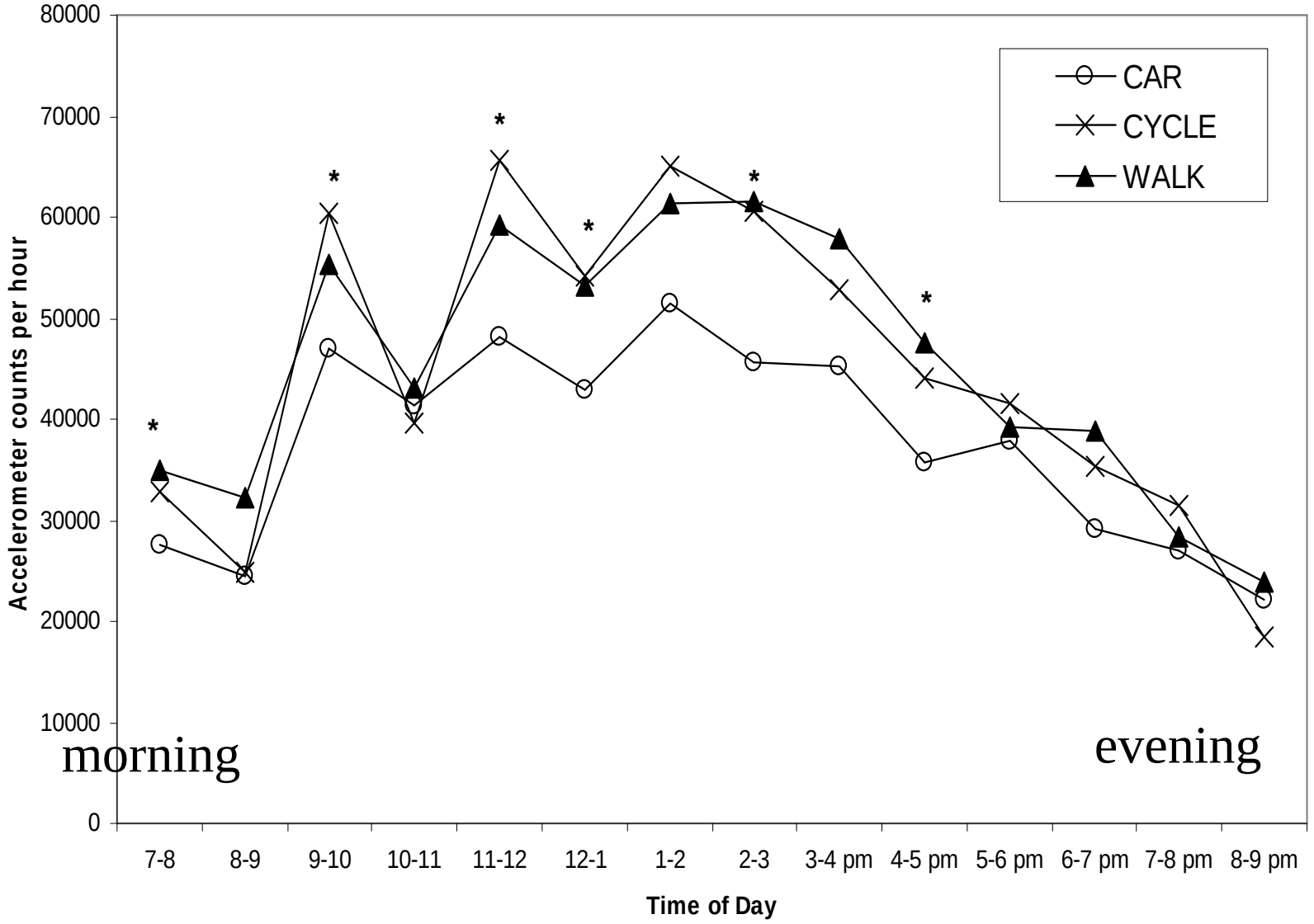
	Walking vs passive (95% CI)	P value	Cycling vs passive (95% CI)	P value
Aerobic power (ml min-1 kg-1)	0.83 (-0.46-2.11)	0.206	2.34 (1.45-3.24)	<0.001
Sargent jump (m)	-0.005 (-0.021-0.011)	0.538	0.004 (-0.007-0.016)	0.435
Iron ball throw (m)	0.04 (-0.07-0.15)	0.453	0.04 (-0.04-0.11)	0.345
Situps (n)	-0.18 (-3.18-2.81)	0.904	2.97 (0.84-5.09)	0.006
Static back strength (sec)	10.70 (-1.53-22.94)	0.086	17.63 (9.03-26.22)	<0.001
Arm flexion dynamic test (n)	-6.47 (-12.59—0.35)	0.038	-2.13 (-6.44-2.17)	0.331
Sit and reach (cm)	1.91 (-0.13-3.96)	0.067	3.14 (1.72-4.57)	<0.001
Shuttle run (sec)	0.15 (-0.06-0.36)	0.171	-0.01 (-0.16-0.14)	0.875


Children who cycle to school are fitter than those who don’t

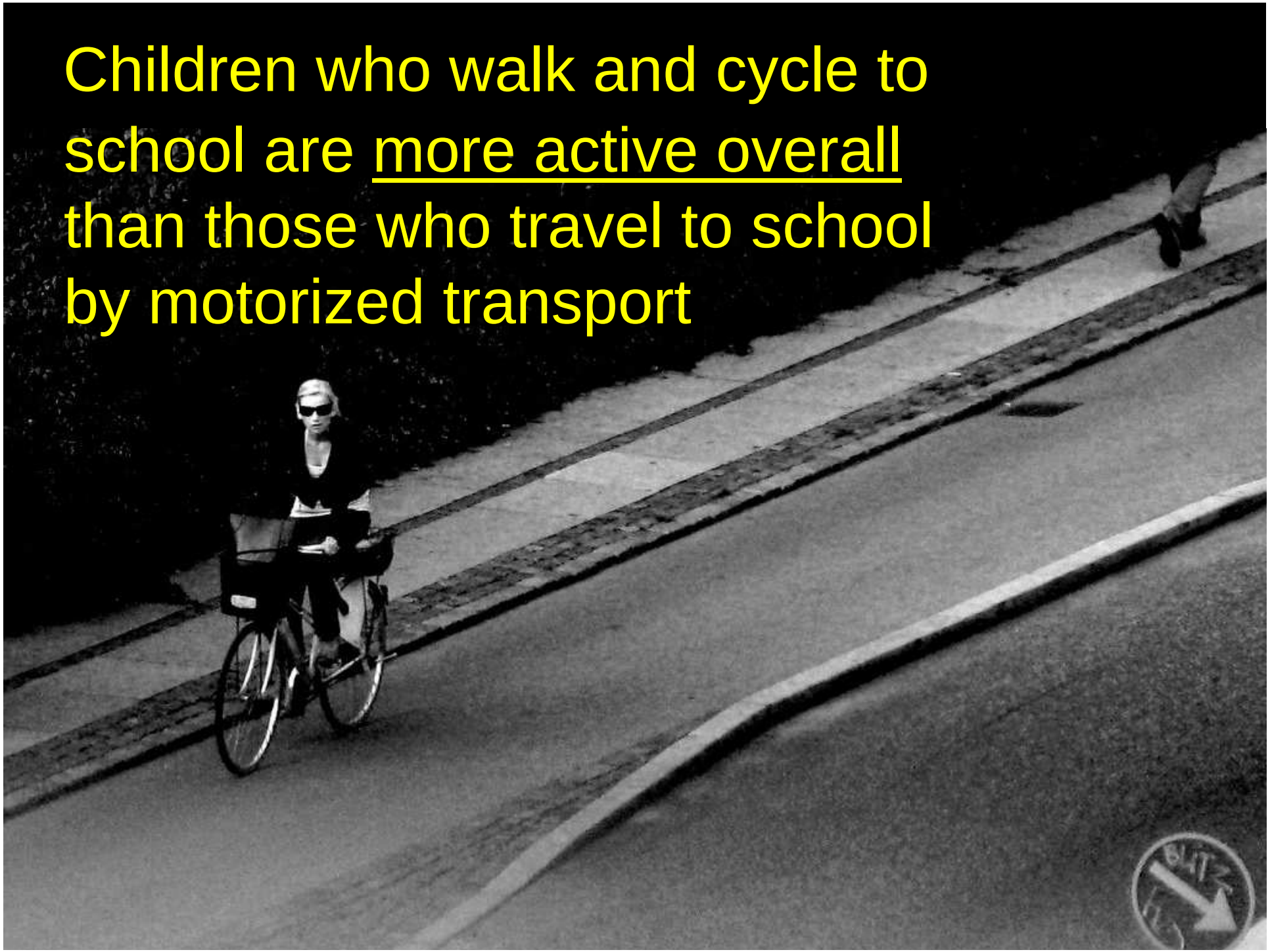
Physical Activity Levels of Children Who Walk, Cycle, or Are Driven to School

Ashley R. Cooper, PhD, Lars Bo Andersen, PhD, Niels Wedderkopp, MD, Angie S. Page, PhD, Karsten Froberg, PhD

- Cycling data for 9 and 15 yr old children
  the European Youth Heart Study
- Physical activity was assessed by accelerometry in about 1000 children
  (Am J Prev Med 2005;29(3):179–184)



Weekday activity pattern of boys by method of travel to school.
*=p<0.05 for active travel (walk and cycle) vs car

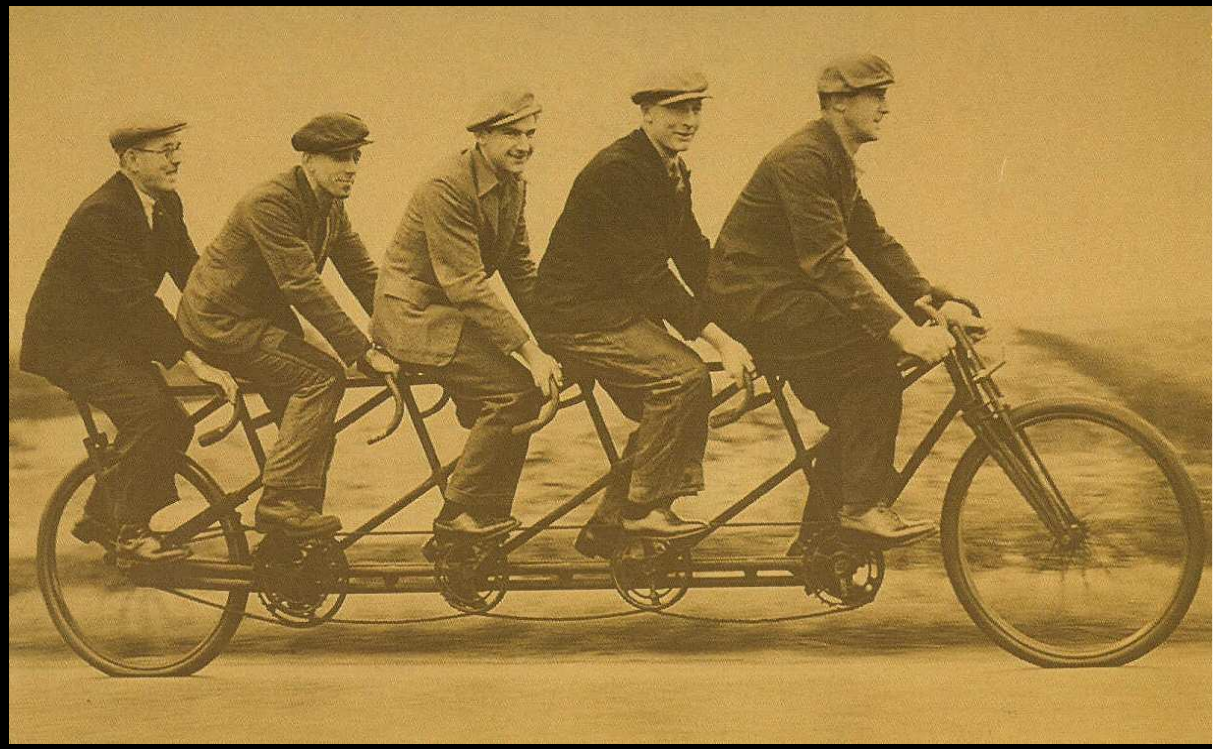

Children who walk and cycle to school are more active overall than those who travel to school by motorized transport

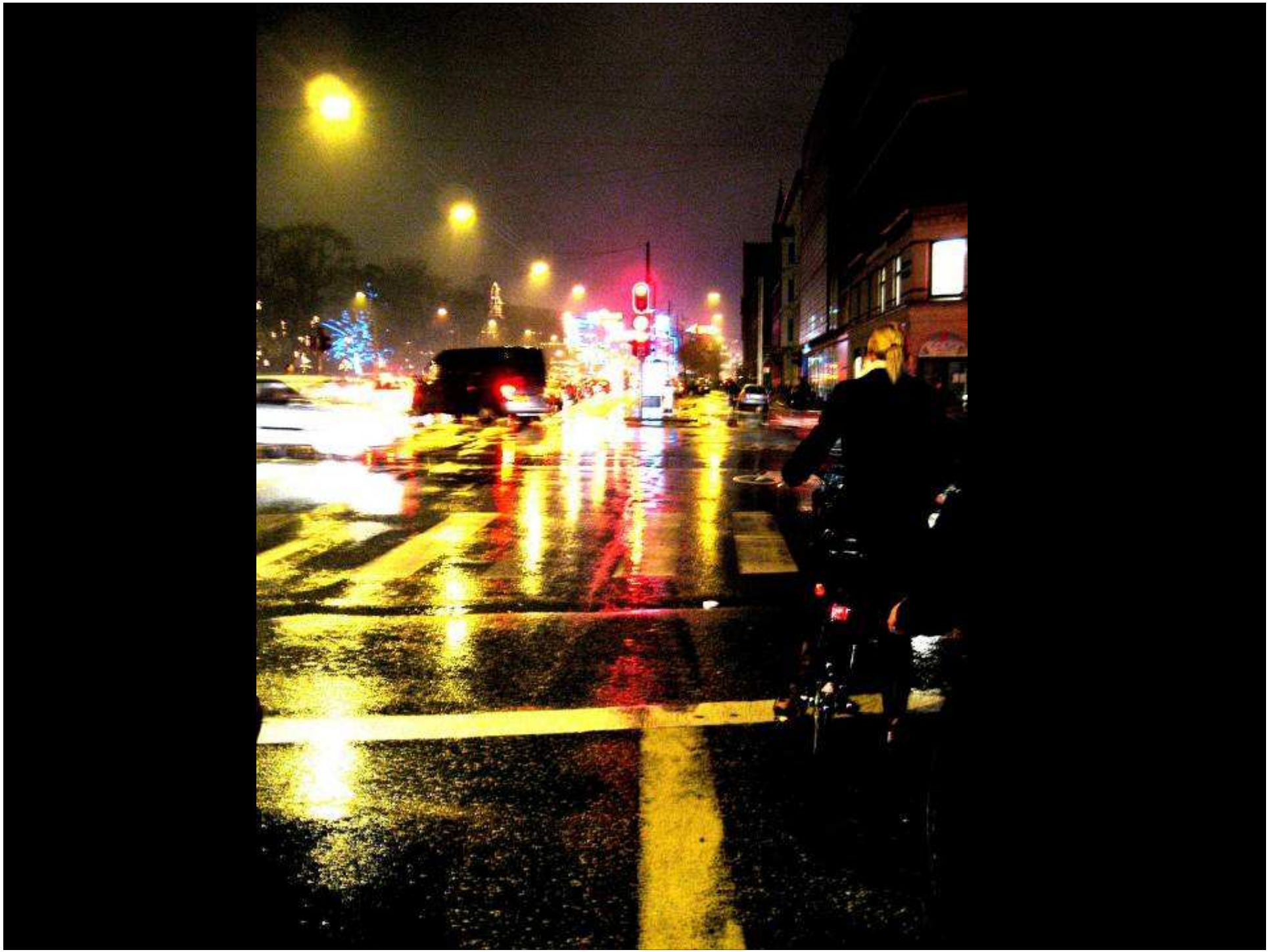

Banesto
Banesto
PINARELLO
Banesto

Cycling is cool and sexy

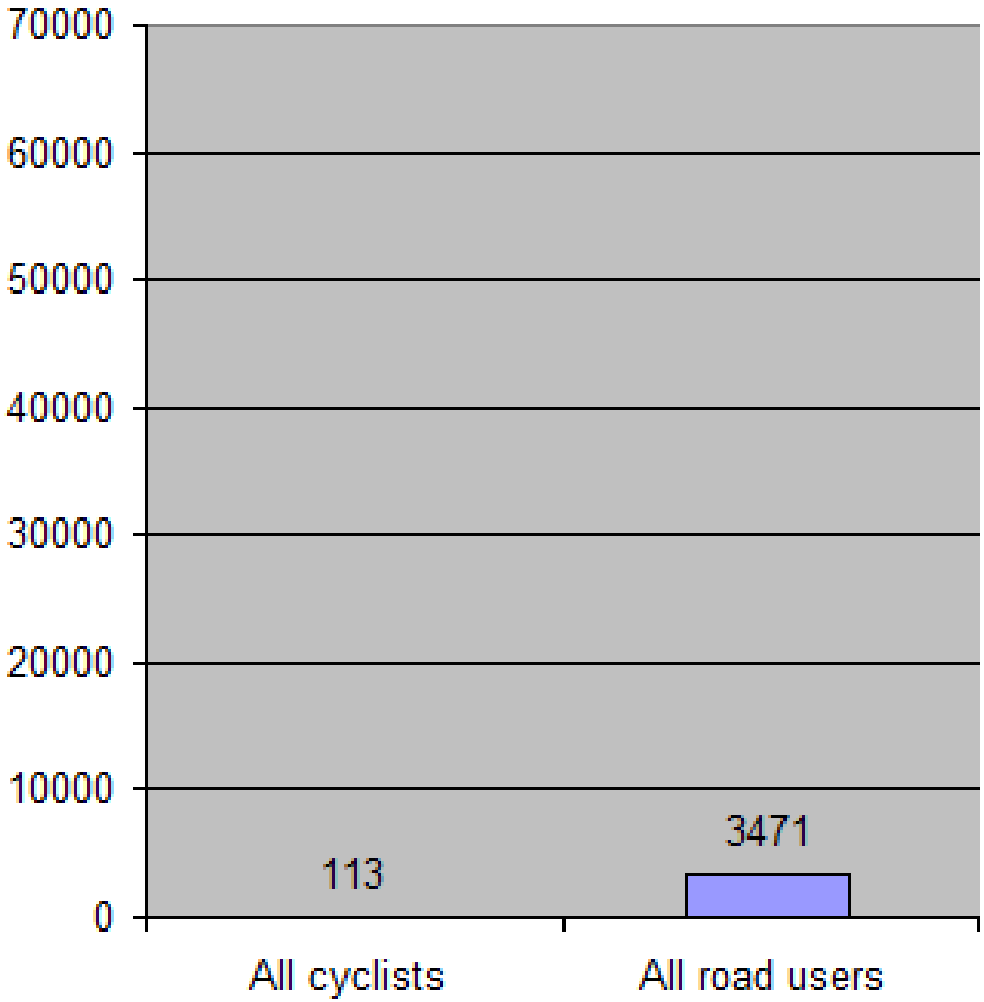
Outline:

- Evidence: cycling and health
- Other benefits & risks





Deaths from road traffic injuries and physical inactivity, 2003



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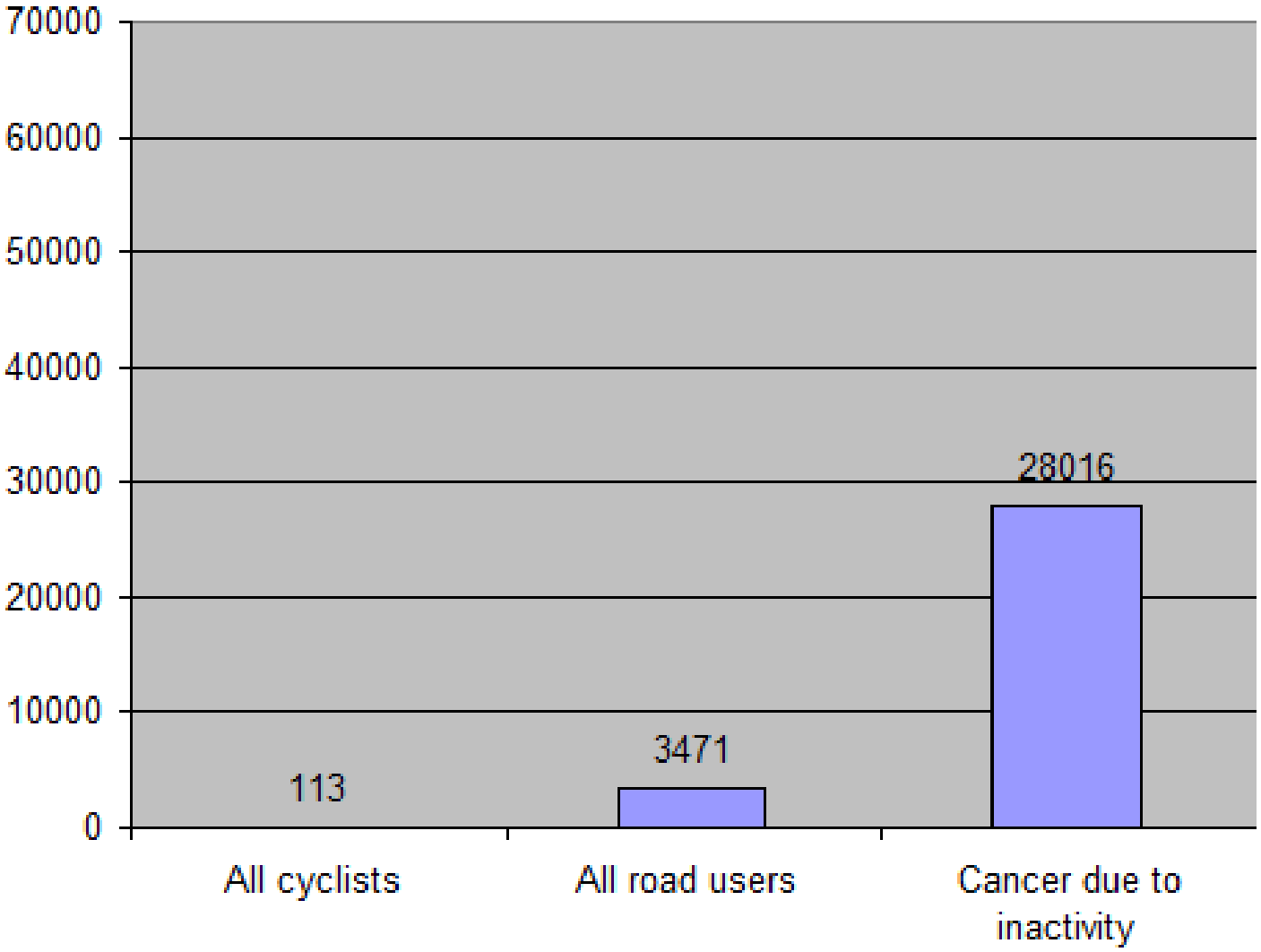

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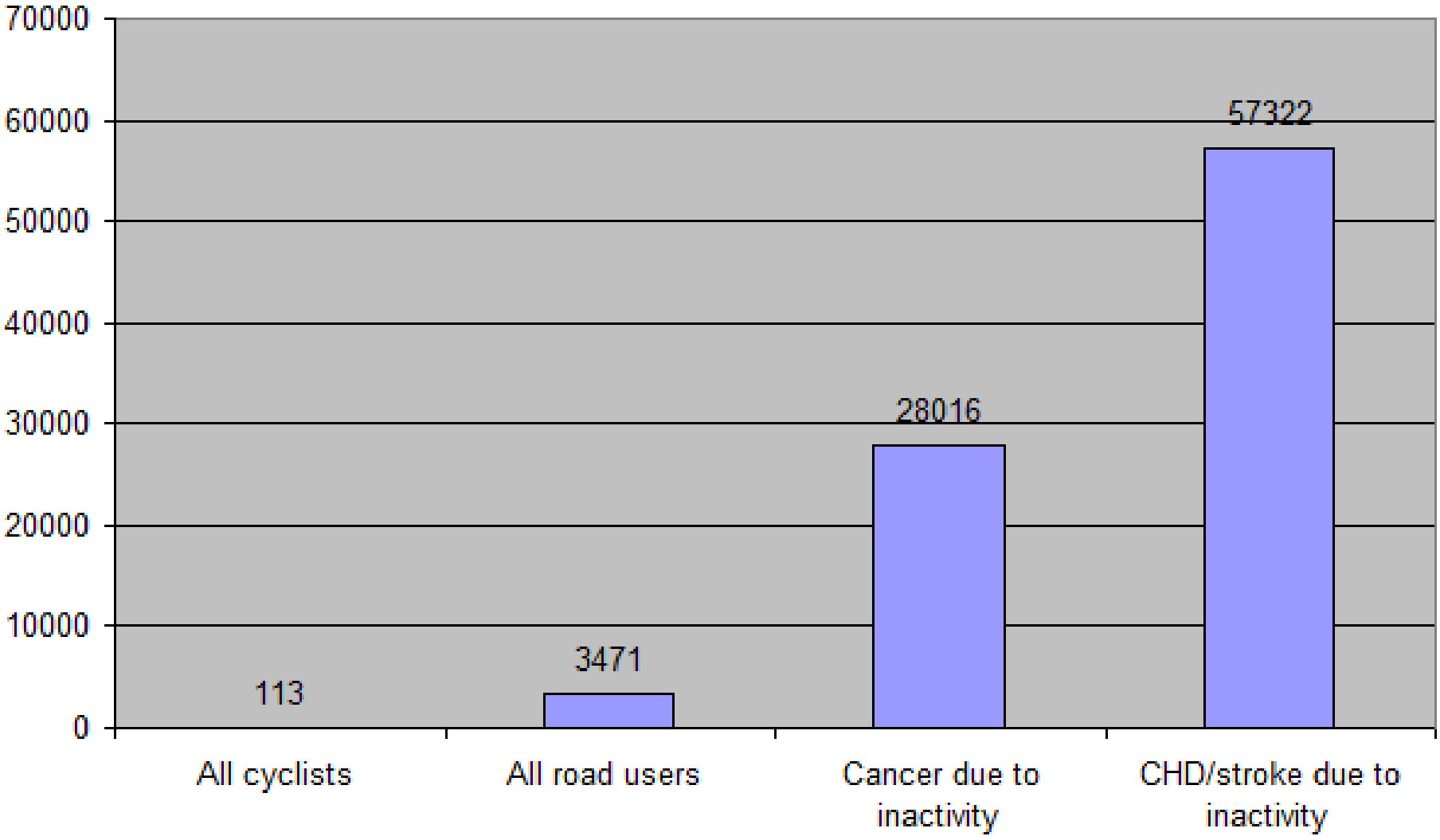
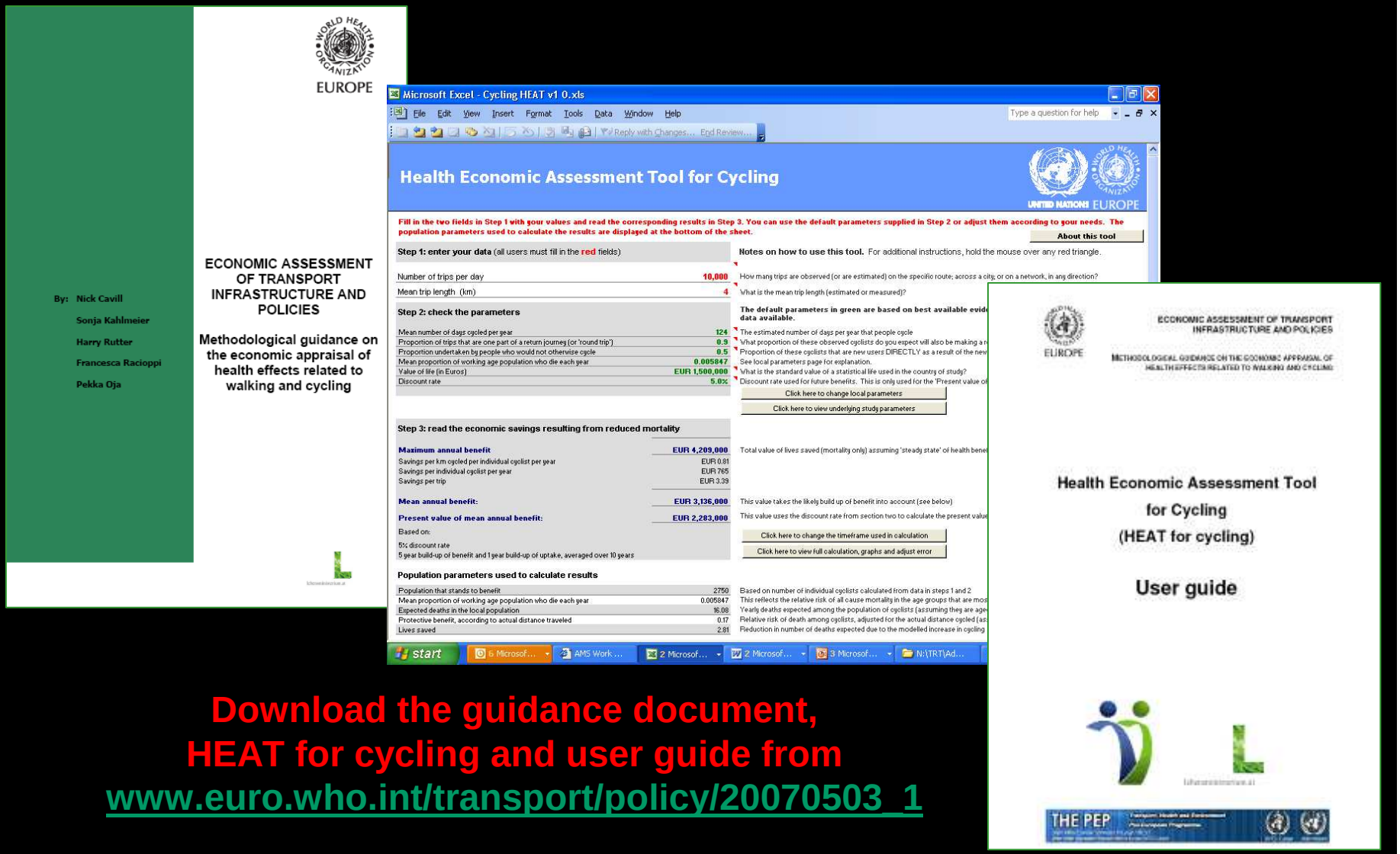


WHO guidance and tool for economic assessment of cycling and walking



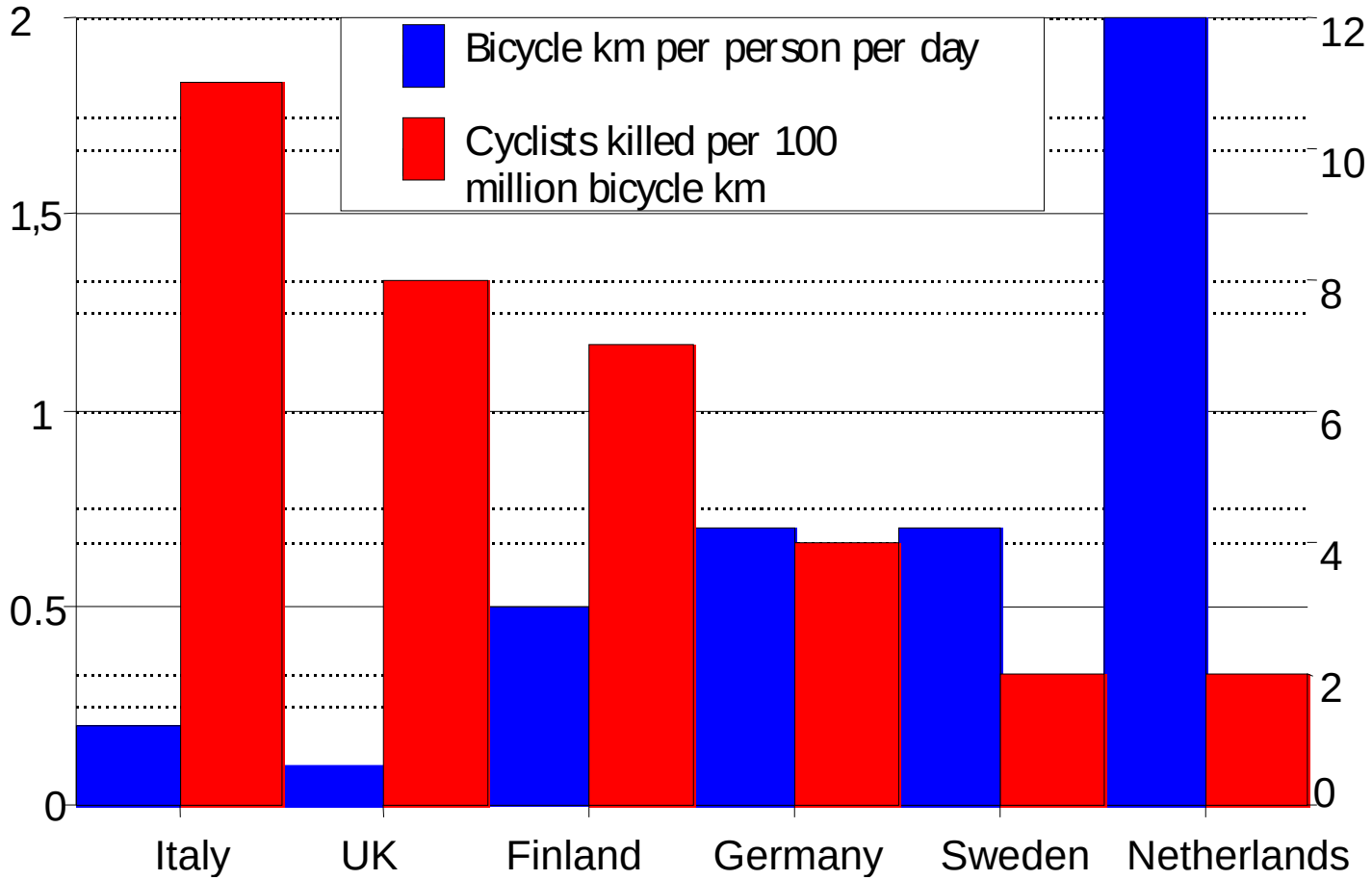
Download the guidance document, HEAT for cycling and user guide from www.euro.who.int/transport/policy/20070503_1

Health cost / benefit of cycling

- At least 20:1 life years gained: lost (Hillman)
- One death per 33m km cycled
- Risky to be sedentary
- Cycling is safer than driving
- There is ‘safety in numbers’

Sources: http://www.transtat.dft.gov.uk/tables/tsgb02/4/download/40702.xls and Hillman, M. Cycling and the Promotion of Health. *Policy Studies* 1993, *14*, 49-58

Safety in numbers: Cyclist risks and distances travelled



Source: WALCYNG – EC 4th framework programme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CYCLE.