Imperial College London

October 23rd 2019

Improving air quality through sustainable transport, cycling and walking

Greater London Authority's International Air Quality Conference

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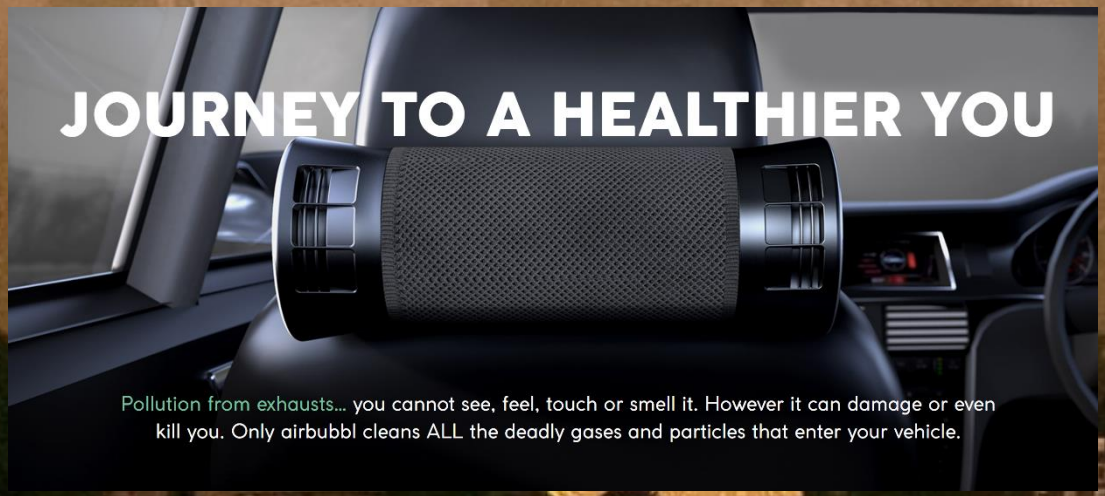
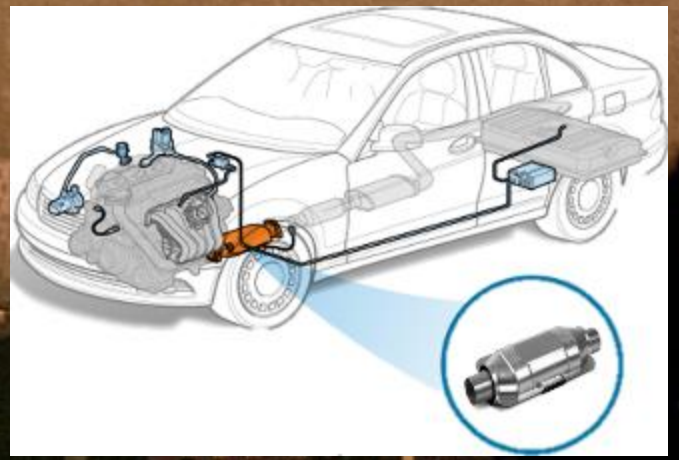
airlabs
breathe better

The Air Problem | The Solution | The Airbubbl.

clean the air.



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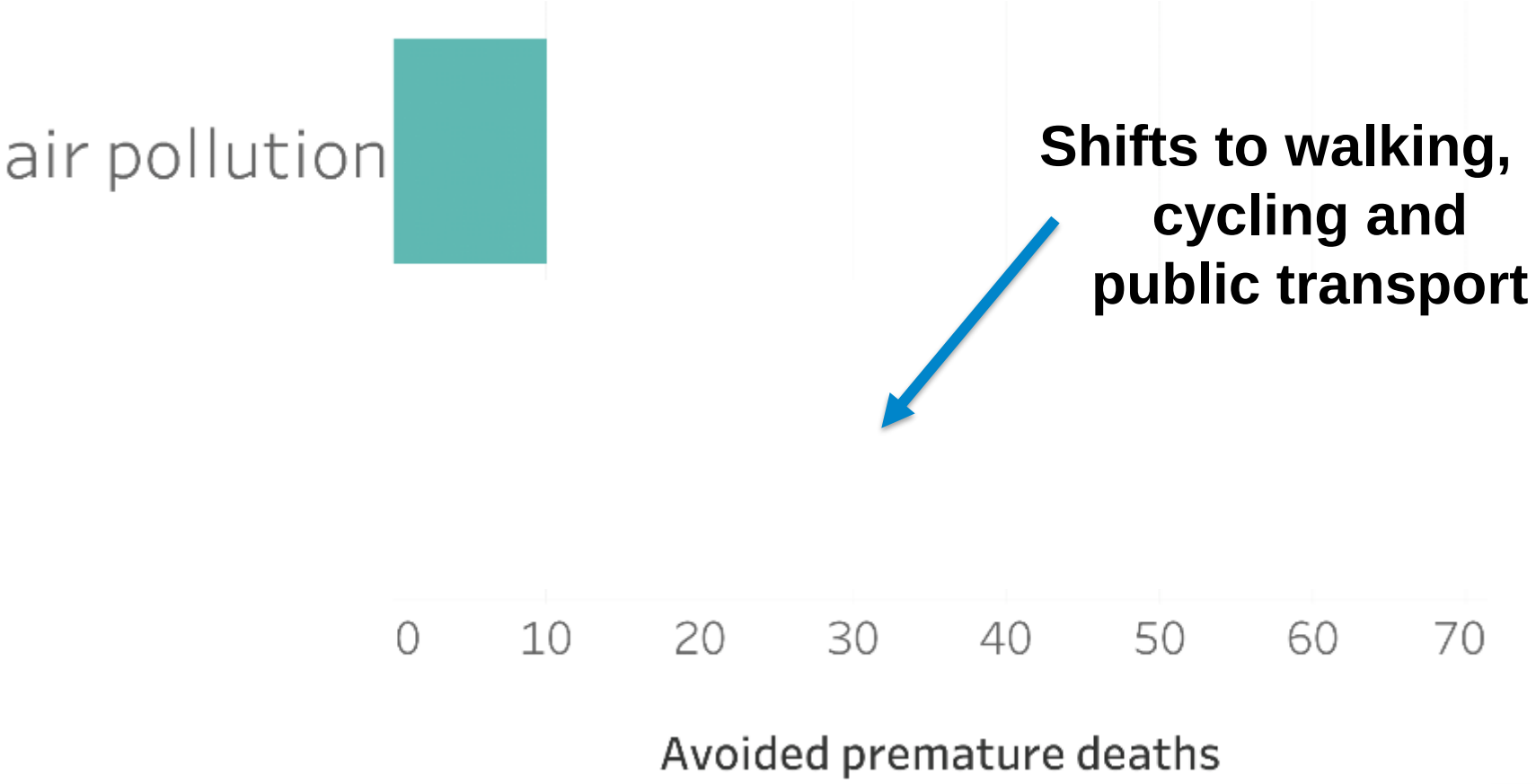
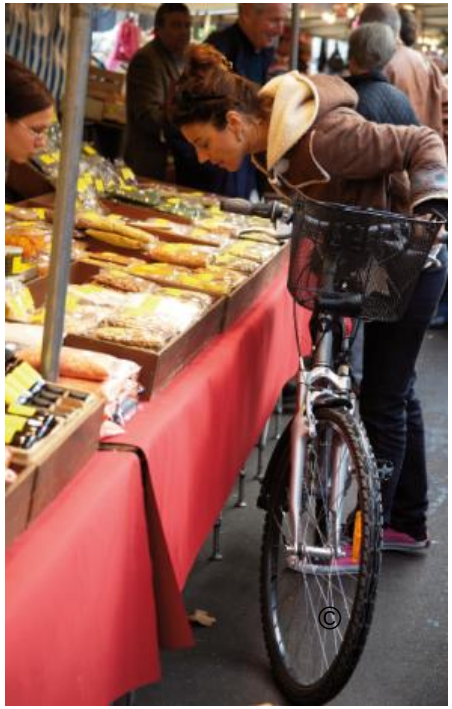
Evidence base: making the case for holistic thinking

Benefits of reducing 40% of car travel, Barcelona, Spain, health impact modeling



Rojas-Rueda et al. Environment International 49 (2012) 100-109



Transport mode use (days/month)	Self-perceived health[a] OR (CI 95%)	Perceived stress[b] coef (CI 95%)
Car	1·00 (0·99, 1·02)	-0·003 (-0·019, 0·013)
Motorbike	1·02 (0·99, 1·04)	0·006 (-0·018, 0·031)
Public transport	0·99 (0·98, 1·01)	-0·002 (-0·016, 0·011)
E-bike	0·99 (0·96, 1·02)	-0·025 (-0·052, 0·003)
Bicycle	**1·07 (1·05, 1·08)****	**-0·016 (-0·028, -0·004)***
Walking	**1·02 (1·00, 1·03)***	-0·005 (-0·019, 0·010)

Avila-Palencia et al. (2018) The effects of transport mode use on self-perceived health, mental health, and social contact measures: A cross-sectional and longitudinal study. Environment International 120

Regression models assessing associations between the different transport modes and the health outcomes, adjusted for all the potential confounders. [a]Mixed-effects logistic regression models. [b]Linear regression models. [c]Logistic regression models. All models were adjusted by age, sex, education, nationality, employment status, and city. Sample sizes: Self-perceived health (n=8218); Perceived stress (n=3241); Mental Health (n=3243); Vitality (n=3243); Loneliness (n=3247); Contact with friends/family (n=3247). *p-values<0·05, **p-value<0·001.

Avila-Palencia et al. (2018) The effects of transport mode use on self-perceived health, mental health, and social contact measures: A cross-sectional and longitudinal study. Environment International 120

Transport mode use (days/month)	Mental Health[b] coef (CI 95%)	Vitality[b] coef (CI 95%)
Car	0·03 (-0·05, 0·12)	-0·02 (-0·12, 0·07)
Motorbike	-0·06 (-0·19, 0·07)	-0·09 (-0·24, 0·06)
Bicycle	**0·11 (0·05, 0·18)****	**0·14 (0·07, 0·22)****
Walking	0·05 (-0·03, 0·13)	**0·14 (0·05, 0·23)***

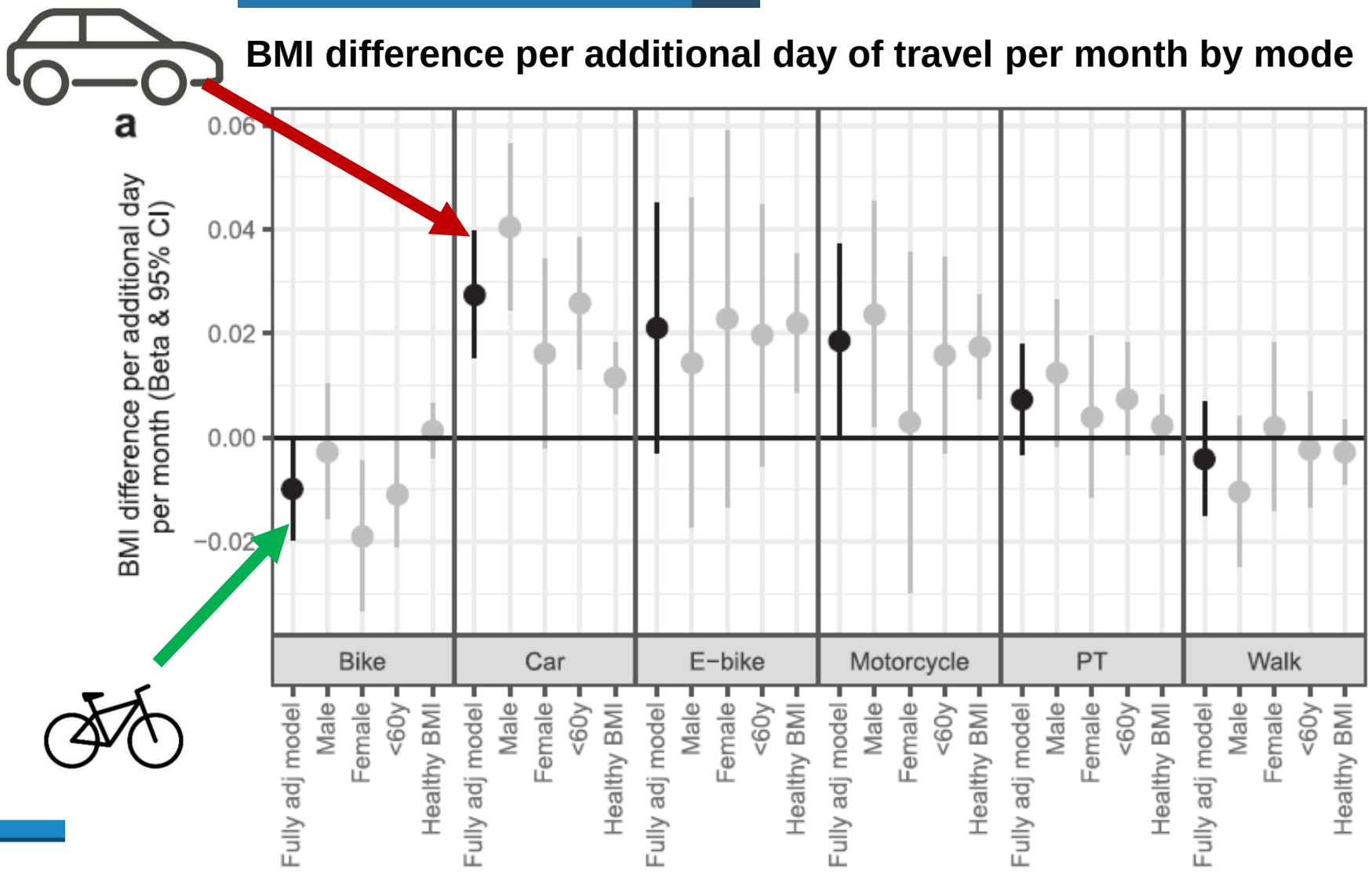
Table 3. Regression models assessing associations between the different transport modes and the health outcomes, adjusted for all the potential confounders

[a]Mixed-effects logistic regression models. [b]Linear regression models. [c]Logistic regression models. All models were adjusted by age, sex, education, nationality, employment status, and city. Sample sizes: Self-perceived health (n=8218); Perceived stress (n=3241); Mental Health (n=3243); Vitality (n=3243); Loneliness (n=3247); Contact with friends/family (n=3247). *p-values<0·05, **p-value<0·001.

PASTA
PHYSICAL ACTIVITY THROUGH SUSTAINABLE TRANSPORT APPROACHES

Dons et al. (2018) Transport mode choice and body mass index: Cross-sectional and longitudinal evidence from a European-wide study. Environment International 119

BMI difference per additional day of travel per month by mode



Dons et al. (2018) Transport mode choice and body mass index: Cross-sectional and longitudinal evidence from a European-wide study. Environment International 119

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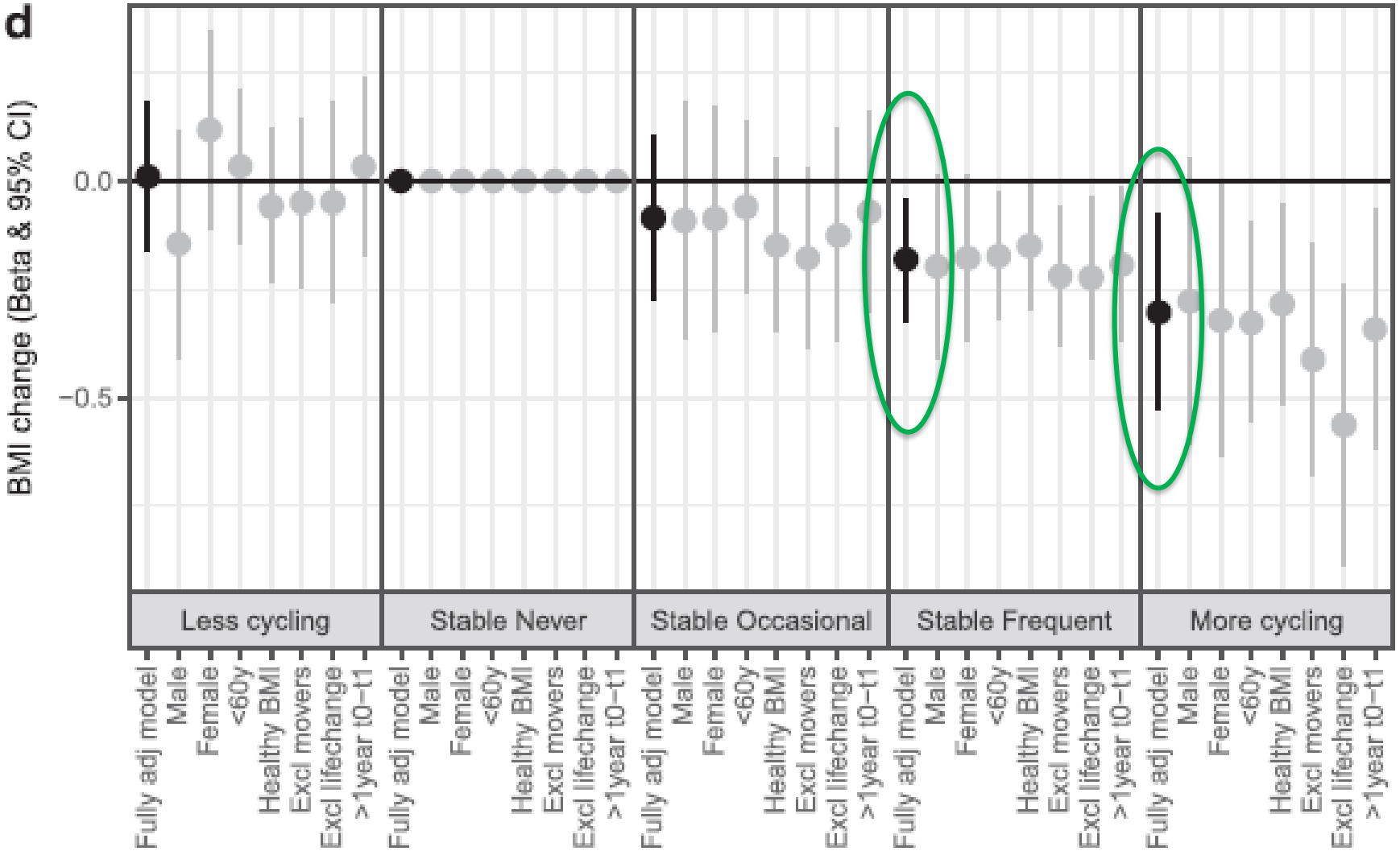
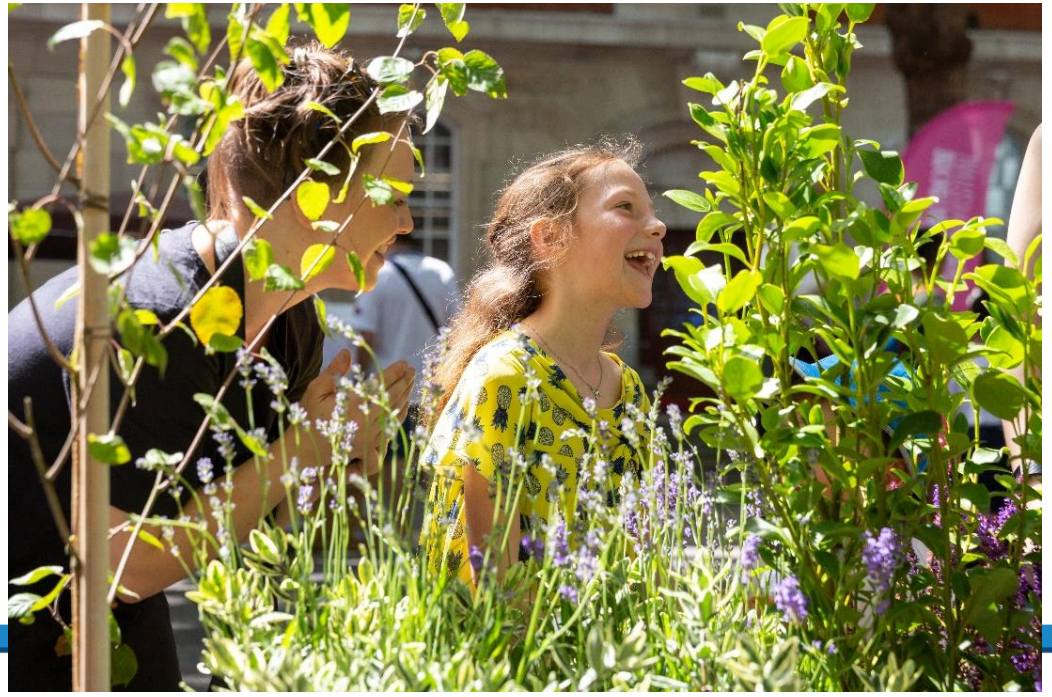
PHYSICAL ACTIVITY THROUGH SUSTAINABLE TRANSPORT APPROACHES

BMI and travel mode longitudinal analysis: Impact of change in cycling





In Summary: With holistic thinking we identify that urban design strategies can provide additional benefits compared to single-purpose strategies such as air pollution technological solution.

Impacts can be modelled to help make the case.

Co-benefits?

- Air pollution
- Climate change
- Greenspace
- Biodiversity
- Noise
- Physical activity
- Traffic injuries
- Diet
- Air flows
- Inequalities
- Etc

Trade-offs?

- Cooling agents
- Air pollution inhalation
- Traffic injuries
- Pollen
- Air flows
- Inequalities
- Etc.

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