

The role of active travel in improving mental health

Part 2: Improving air quality by walking and cycling

Active Travel Toolkit Slide Pack

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The Role of Active Travel in Improving Mental Health Toolkit Part 2: Improving air quality by walking and cycling. Part of the Active Travel Toolbox, written by Sustrans with support from Dr Adrian Davis, The TAS Partnership Limited and Living Streets.

Sustrans is a registered charity no. 326550 (England and Wales) SCO39263 (Scotland).

What is this slide pack for?

This slide pack provides a summary of the toolkit: Improving air quality by walking and cycling.

The Active Travel Toolbox slide packs are designed to demonstrate the benefits of sustainable transport and help LEPs and local delivery partners strategically invest in walking and cycling schemes.

This slide pack provides:

- Key messages
- Statistics and evidence
- Signposting to tools and case studies

Contents

This slide pack includes:

- What is air pollution?
- How does air pollution damage health?
- The benefits of modal shift to sustainable transport for short journeys
- Approaches to improve air quality that encourage modal shift

Key messages

- Air pollution is damaging our environment and our health. Up to 40,000 early deaths are attributable to air pollution each year in the UK and road transport is responsible for 80% of the pollution where legal limits are being broken.
- The pollutants of main concern in connection to motor vehicle use are particulate matter (PM10/2.5) and Nitrogen Oxides (NOx).
- Strategies to reduce vehicle use, especially for short trips and for the most polluting vehicles in cities will help to reduce pollution.
- The Avoid (align transport and urban development), Shift (modal shift to active travel and public transport) and Improve (use technology to reduce emissions) approach is a useful framework for reducing air pollution.

What is air pollution?

Air pollution is the term given for a number of different substances suspended in the air that are harmful to human, animal and plant life as well as the built environment. The pollutants of main concern in connection to motor vehicle use are particulate matter (PM10/2.5) and Nitrogen Oxides (NO_x).

Particulate matter (PM10/2.5)

A wide variety of airborne particulate matter exists of which the most concerning are PM10 particles (<10 µm) and PM2.5 particles (<2.5 µm). These particles are small enough to penetrate deep into the lungs and pose significant health risks to people exposed to them. The principal source of PM10 and PM2.5 matter is road traffic emissions, particularly from diesel vehicles. EU limit values are very often exceeded in many European cities.

Nitrogen oxides (NO_x)

NO_x is a term used to describe a mixture of nitric oxide (NO) and nitrogen dioxide (NO₂). They are inorganic gases formed by combination of oxygen with nitrogen from the air. NO_x can cause detrimental effects to the bronchial system. NO₂ concentrations frequently approach, and sometimes exceed air quality standards in many European cities. NO_x is emitted when fuel is being burned from a wider variety of sources e.g. in transport, industrial processes and power generation.

CITEAIR, 2016. Air Quality in Europe.

The impacts of poor air quality on human health

Air pollution is damaging our environment and our health. Up to 40,000 early deaths are attributable to air pollution each year in the UK and road transport is responsible for 80% of the pollution where legal limits are being broken (Defra, 2015).

Air pollution has a number of health consequences and has particular consequences for some demographic groups. Air pollution:

- has been linked to cancer, asthma, stroke and heart disease, diabetes, obesity, and changes linked to dementia.
- particularly effects children and older people because of their age as well as those with existing respiratory conditions.
- contributes to health inequalities, because deprived communities are often in areas with higher levels of pollution or near busy roads.

Studies have found that technical measures to abate vehicle exhaust provides less benefit for public health than focusing on measures that increase sustainable transport (Royal College of Physicians, 2016).

When weighing long-term health benefits from physical activity against possible risks from increased exposure to air pollution, research finds that promoting cycling and walking is clearly justified in UK traffic conditions (Kubesch et al, 2014).

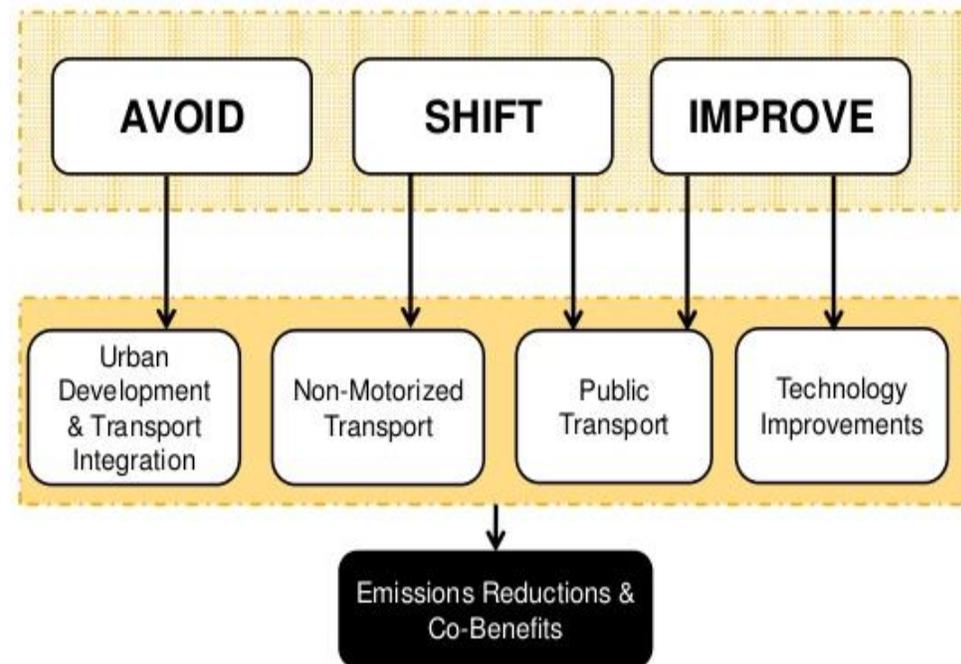
The benefits of modal shift to sustainable transport for short journeys

The majority (68%) of UK trips undertaken are under 5 miles, with 19% of trips being less than 1 mile in length.

These short trips are amenable to walking and cycling for most people and are particularly relevant areas of focus for improving air quality as they contribute disproportionately to emissions.

An effective approach to prevent ill-health resulting from transport related poor air quality can be summarised by the Avoid – Shift – Improve (ASI) approach (WRI, 2016).

The range of co-benefits from the ASI approach are many, even when only focusing on changes in travel mode for journeys under five miles.



Avoid-Shift-Improve Approach, World Resources Institute

Avoid – reducing the need to travel

Compact urban forms are the most effective urban system for encouraging sustainable transport and reducing dependence on private motor vehicles. Compact settlements can reduce private motor vehicle miles travelled by around 30% in comparison to lower density developments (Ewing et al 2007).

Studies have shown more sprawling places produce greater amounts of air pollution however exposure to air pollution is worse in compact cities due to more people living in areas with the highest concentration levels.

Research (Frank et al 2006) finds that people living in more walkable neighbourhoods (characterised by mixed use, connected streets, high residential density, and pedestrian-oriented retail):

- walk and cycle more for transport
- have lower Body Mass Index's,
- drive less, and
- produced less air pollution

Compact settlements on their own are likely to be insufficient without additional measures to promote sustainable transport.

Shift – changing to sustainable modes

Policies to encourage modal shift are most likely to work when measures to managed private motor vehicle usage are balanced with incentives to encourage sustainable transport that is attractive, convenient and direct.

Policies to manage private vehicle use include parking costs and a reduction in the provision of car parking space, road pricing, developing car free zones and speed restrictions.

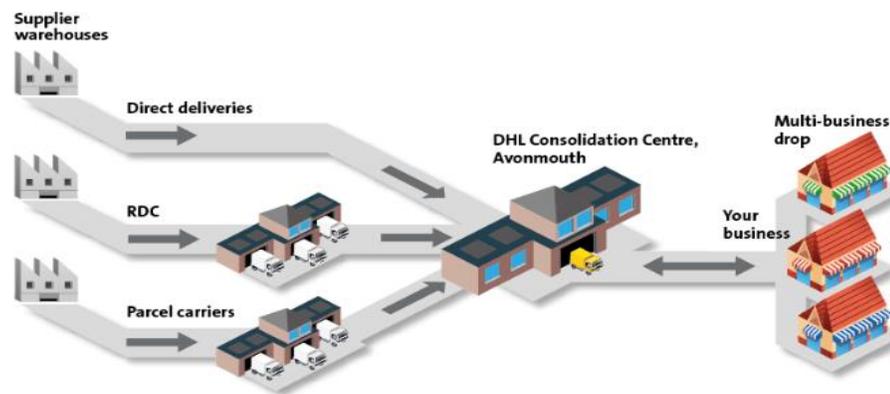
Examples to encourage walking include improving the pedestrian environment, developing car-free zones, improving signal timings for pedestrians.

Case study: Reducing freight impacts: Bristol Bath Urban Freight Consolidation Centre

Since 2004 businesses in Bristol and Bath have been using Freight Consolidation to manage their deliveries more effectively through the BBUFCC. This consolidation service is a partnership between the courier service DHL, Bristol City Council and Bath and North East Somerset Council.

An evaluation of the deliveries to Bristol City Centre from the Bristol Bath Urban Freight Consolidation Centre (BBUFCC) demonstrated a reduction of 74% of delivery trips in the city.

The BBUFCC has proven to be a service valued by its more than 100 customers, however, encouraging wider participation has required significant efforts with limited results.



Bristol Bath Urban Freight Consolidation Centre (from Travelwest)

Improve – technology improvements

Improving technology also has an important part to play to reduce emissions and improve air quality from vehicles in cities across England.

It is important to note however that there are fewer co-benefits from this approach than other approaches realise, for example improving health and reducing congestion.



Edinburgh: source Creative Commons

Case Study: Edinburgh Ecostars

The City of Edinburgh is using the ECOSTARS scheme to incentivise and support fleet operators in the city to improve environmental performance including air quality.

ECOSTARS is a European standard administered by local authorities that fleet operators can apply to. Fleet operators receive tailored support to improve environmental performance and must meet criteria to receive the EUROSTARS standard.

ECOSTARS Edinburgh rates vehicles and operating practices to recognise levels of environmental and energy savings performance. Operators then receive tailor-made support to ensure the fleet is running as efficiently and economically as possible, and to help them progress to higher ratings within the scheme.

24 fleet operators have been recruited within the first 18 months of the scheme. This translates to over 2,500 registered vehicles. 15 operators have attained the highest possible 5-star rating.