Active Travel Toolbox

Linking Active Travel and Public Transport to Housing Growth and Planning

Toolkit Part 2: Planning housing growth to enable active travel and public transport

Delivered by Sustrans in partnership with:

Written by Sustrans with support from Dr Adrian Davis, The TAS Partnership Limited and Living Streets.

About Sustrans

Sustrans is the charity making it easier for people to walk and cycle.

We are engineers and educators, experts and advocates. We connect people and places, create liveable neighbourhoods, transform the school run and a deliver a happier, healthier commute.

Sustrans works in partnership, bringing people together to find the right solutions. We make the case for walking and cycling by using robust evidence and showing what can be done.

We are grounded in communities and believe that grassroots support combined with political leadership drives real change, fast.

Join us on our journey. www.sustrans.org.uk

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This is the second part of the Active Travel toolkit on Linking Active Travel and Public Transport to Housing Growth and Planning.

The Active Travel toolkits aim to help LEPs and their local delivery partners to:

1. Develop your business case for investment in walking and cycling schemes.
2. Link walking and cycling schemes to your strategic economic growth priorities, housing growth and planning, and public health.
3. Support the planning and delivery of walking and cycling schemes in your local area.

This toolkit will cover the following areas:

1. Building in urban areas and the importance of proximity and density
2. Building in suburban and rural areas, including new settlements

A slide pack on *Planning housing growth to support sustainable transport* can be downloaded separately. It summarises the key evidence base and statistics to help you prepare presentations, funding bids and reports.

Our key messages include:

1. The location and design of new housing developments will have a significant role in influencing how people travel and in encouraging economic vibrancy, access to education, workplaces and retail and community cohesion.
2. In order to promote sustainable transport, the chosen locations and resulting design of new housing developments should help to reduce trip length for everyday journeys and support sustainable modes of travel.
3. Building new housing developments within existing settlements enables people to take advantage of shorter distances to travel to places of employment, schools, shops and other services by walking, cycling or public transport.
4. Building to a higher density, wherever feasible, encourages more compact settlements thereby increasing proximity and enabling active travel, and the viability of public transport through higher levels of customer demand.
5. Building outside of existing settlements will also be necessary to meet our housing needs and also offers the opportunity to build large numbers of new homes on the same site.
6. These developments should be mixed use or settlements in their own right, thereby encouraging the internalisation of local trips, for example education or retail trips, within the development wherever possible.
7. New development outside of existing towns and cities should also be built alongside existing public transport corridors or where new sustainable transport corridors are planned which will also help reduce congestion.

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1. Building in urban areas and the importance of density and mixed use

The location and design of new housing developments will have a significant role in influencing how people travel as well as the specific transport infrastructure determined and provided (covered in Part 3 of the Linking Sustainable Transport to Housing Growth toolkit).

Much of the policy and media focus on housing growth in recent years has been on the volume of new homes built and whether enough affordable housing has been enabled. There has been less attention at a national level on the spatial distribution of housing growth and the need to plan for growth in the right places with the right type of infrastructure.

This means it is often unclear nationally if areas earmarked for new development are located in the optimum places for people and their transport needs. The pressure to build more homes and to do so more quickly (e.g. by speeding up the planning process) means that opportunities may be missed to promote sustainable transport. Consequently, new homes may be built far away from employment and services making private vehicle use the only way to travel and more sustainable solutions far more costly to implement and manage.

Building new homes within existing towns and cities means people are located near to where the majority of services and venues that people travel to on a day-to-day basis. This reduces the overall distances that people are required to travel thereby reducing transport demand. Shorter, more localised journeys allow higher levels of cycling and walking and lend themselves to certain bus trips - therefore reducing dependence upon the car and mitigating negative impacts such as traffic congestion and air pollution.

Travel distances may also be reduced by providing diverse and complementary uses within new developments, including retail, employment, education and other services, and a mix of housing provision. This encourages internal trips within the development that can be met using sustainable modes. It also enables the possibility to travel and access services and employment for people who do not own or cannot afford to run their own private vehicle.

Focusing housing growth wherever possible within existing settlements and building at a higher but appropriate density also means development reducing urban sprawl and ensure more compact cities. This not only supports active travel but more people living in a locality increases customers and demand for public transport services. This helps to make public transport services more financially viable and can increase frequency and convenience as well as lead to economic benefits. It is important however that this takes place in the context of an assessment of all the available options for growth, and their sustainability and impact on future and present communities.

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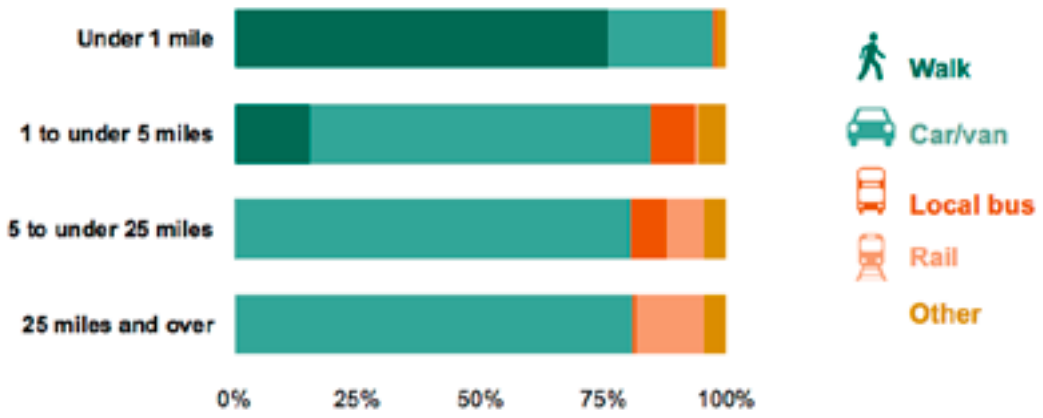
We review three important and interlinking areas to consider:

1 Proximity
2 Density
3 Mixed use

1.1 The importance of proximity

Higher density developments take advantage of people's propensity to travel actively over short distances. The National Travel Survey in 2014 found walking to be the most frequent mode of travel used for trips under one mile in length[1]. On average 80% of journeys shorter than one mile are walked.



Modal share for different trip distances, The National Travel Survey 2014

Similarly, a recent UK academic study researching changes of commuter mode found that switching to non-car commuting becomes much more likely (9.2 times) as the distance to work drops below three miles[2]. This shows that location is as influential in terms of modal choice as the quality of transport infrastructure (e.g. footways, cycle paths and access to bus stops).

The Campaign for the Protection for Rural England has advocated that all planning policy should be governed by what they term 'the proximity principle', i.e. by how close planned developments are to existing services[3].

CPRE's research suggested the following benefits of proximity:

- greater social contact and connectivity
- services (shops, schools, healthcare) are close at hand
- drives innovation (including social and environmental innovation)
- creates a safer and more secure environment
- preserves distinctiveness of rural and urban areas
- community energy schemes are feasible

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- reduces land-take
- supports existing settlements
- reduces carbon emissions from buildings and transport
- makes public transport viable

Similarly, the TAS Partnership, in association with Derek Halden Consultancy, has worked with the DfT on accessibility planning to measure ideal and actual proximity to core services such as education, healthcare and shopping[4].

In addition, younger generations, often referred to as 'millennials', are increasingly attracted to living in more urban, dense neighbourhoods within cities and urban areas where there is greatest culture, restaurants and activities nearby where they live[5].

Balanced with the need to use existing land in urban areas for development, is ensuring that people have access to good levels of green space, as evidence has suggested that the benefits of this access includes increased levels of physical and mental health[6]. It is also important to include a mix of housing options to meet the needs of different people, such as ensuring that families with young children have easy access to play space. All this emphasises the need for proactive and collaborative planning at the earliest stages in the development cycle.

Access to employment

Perhaps the most common reason people want to live in a particular place, or move house to a new location tends to be the location of their employment.

Businesses that export goods and services are critical to the local economy as they bring money into the economy from elsewhere, they have high levels of innovation that increases productivity and wages and their success supports local businesses and organisations flourish too. A recent report from the Centre for Cities found that businesses that export services tend to cluster in urban locations in cities, whilst goods exporters show a preference for non-urban locations[7].

This has implications for the location of new housing developments in terms of accessibility to and from employment by sustainable transport depending on where the workforce is located and where new employment growth is likely to be situated. For most towns and cities this is likely to still concentrate on urban centres as 81% of the workforce in England and Wales are employed in the service sector[8]. There are however still major clusters of manufacturing employment in many cities and towns where a different strategy will be required if new housing is to be ideally located to enable people to travel to and from manufacturing employment typically based away from the city centre on the edge of settlements or in more rural areas.

1.2 Building at the appropriate density

To increase proximity and take advantage of people's tendency to travel actively over shorter distances we need to keep things closer together. This means we need to build more compact cities and encourage appropriate high density development. High density not only supports active travel but more people living in a defined area increases the number of customers and demand for public transport services, making services more financially viable and frequent.

There are many studies focusing on housing density and the movement of people. Kenworthy and Laube[9], for example, studied cities around the world. They found overall that as the density of people decreases the number of vehicle miles increases. Conversely as the urban density increases the proportion of passengers that use public transport increases.

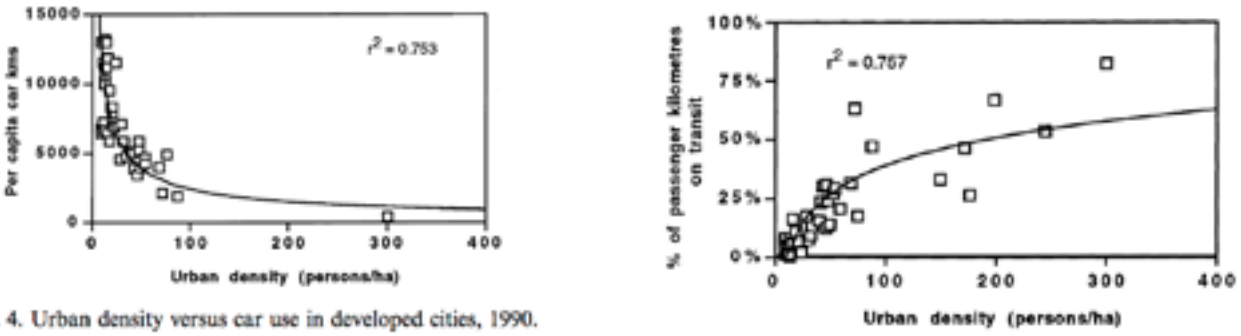

Fig. 4. Urban density versus car use in developed cities, 1990.

Urban density verses car use and transit use in developed cities. Kenworthy and Laube, 1999.

Case study: A comparison of urban density and public transport provision in Barcelona and Atlanta

This case study shows how urban form and public transport provision influence modal choice. In Barcelona the density of the urban form supports ready access to and use of public transport. The extensive spread of Atlanta means that PT is not as cost effective and the car is more convenient.

In 2004 Barcelona's metro network was 99kms in length and over 60% of the city's population lived within 600 metres of a station. Similarly Atlanta's metro network is 74km in length however only 4% of the population live within 800m of a station. Only 4.5% of trips in Atlanta are made by public transport in contrast to 30% of trips in Barcelona.

According to mapping research[10] if Atlanta wanted to ensure 60% of the population lived within 600m of a metro station (i.e. the same as existed in Barcelona in 2004) it would have to build an additional 3,400km of track and about 2,800 metro stations. Barcelona has 136 stations.

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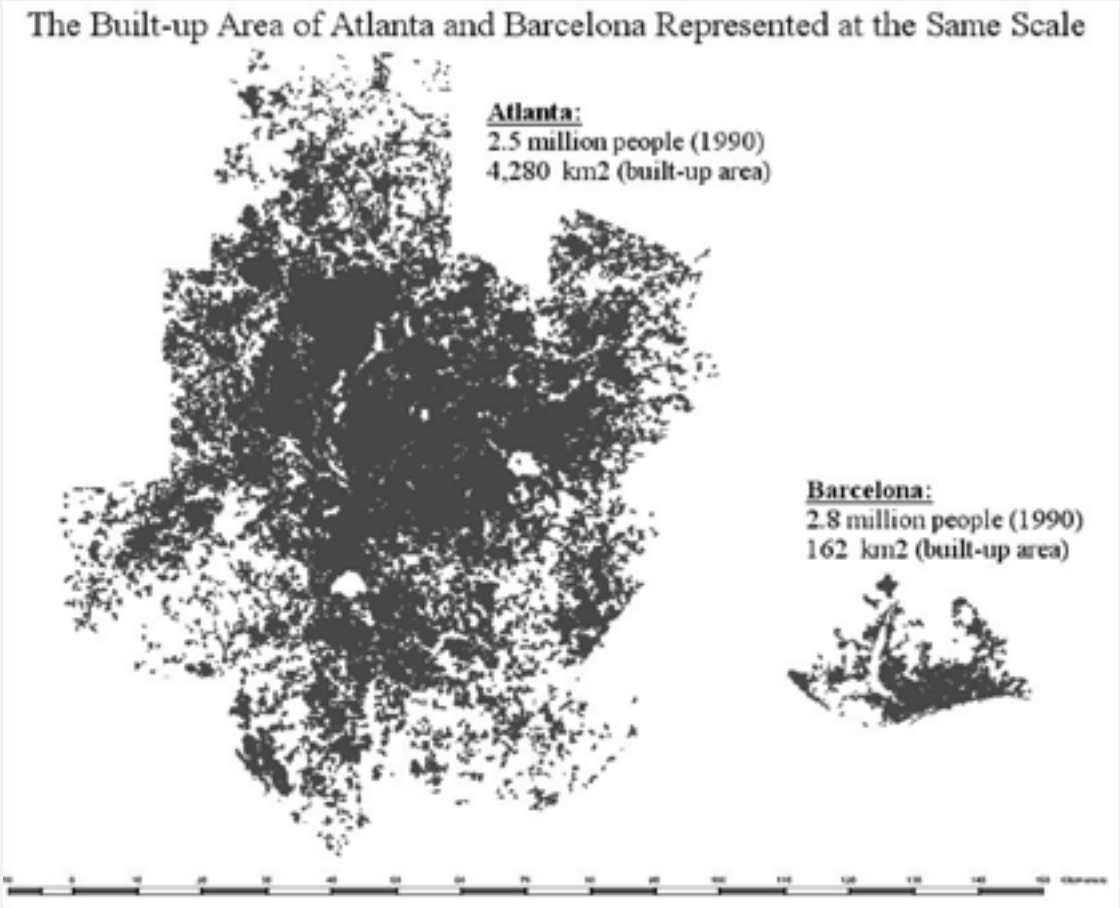

The cities of Atlanta and Barcelona (at the same scale). Sourced from Bertaud, 2004.

Wider benefits of higher densities

The Town and Country Planning Association's (TCPA) policy statement on density lists a number of benefits supported by higher densities:

a. reducing the need to develop on undeveloped land
b. making more economical use of energy through terraces and flats than low density detached housing developments typically do
c. creating a more intense and varied urban environment which is visually and socially exciting and better suited modern lifestyles

The TCPA believes however that increasing densities in the right places must, however, be accompanied by a robust spatial planning process including good space standards to reduce overcrowding and ensure decent homes for all. The impact, for example, of the changes in permitted development rights that have enabled the switch from commercial to residential use without planning permission, has resulted in homes as small as 13 sqm in parts of London, and the loss of key affordable employment space[11].

Finally high density development takes less geographical space and increases the return on investment on the land developed thereby benefiting developers too

as long as the necessary transport infrastructure capacity allows. In London, for example, the high-density redevelopment of Nine Elms and Battersea Power Station is helping to pay for the extension of the tube network. This ensures benefits for both the developer and Greater London Authority.

In England and the UK we already live in a densely populated island and maximising the use and productivity of land is important.

Case study: Centre for Cities - Building the Northern Powerhouse

More compact and dense cities built alongside the right transport infrastructure can create specialist economic hubs which helps to concentrate workers with the right skills and strongly performing cities.

The Centre for Cities recently undertook research that suggested the economic success in cities is based upon a specialised regional economy with strongly performing cities at their heart. This is likely to be achieved through concentrating similar economic activities in the same area (i.e. within the same cities) which tends to concentrate workers with the right skills (see Figure 1).

The research found increasing the density of cities, including the density of homes and employment, education and services, makes it easier for people and organisations to recruit from a pool of workers with the right skills, share information, learn and innovate around supply chains. Higher densities however can also increase pressure upon transport infrastructure and can increase congestion. Therefore, it is essential that both housing and transport are planned together.

Figure 1: The benefits of agglomeration

Source: Centre for Cities

This must include sustainable transport solutions such as walking, cycling and public transport to take pressure over the road network.

Read the report here.

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Increasing density around commuter hubs

Whilst national policy has never prescribed where to build, a supportive policy framework does exist through the National Planning Policy Framework (NPPF) for aligning housing and transport goals.

In late 2015 the Government consulted on housing density around 'commuter hubs' as part of a number of suggested reforms to the National Planning Policy Framework (NPPF). Feedback is still being reviewed at the time of publishing.

Commuter hubs were defined by the government as:

a. a public transport interchange (rail, tube or tram) where people can board or alight to continue their journey by other public transport (including buses), walking or cycling; or

b. a place that has, or could have in the future, a frequent service to that stop. We envisage defining a frequent service as running at least every 15 minutes during normal commuting hours

The Government suggested significant benefits could be achieved by encouraging development around new and existing commuter hubs including reducing travel distances by private transport. It also signalled support for higher density housing development around commuter hubs to help meet a range of housing needs including those of young first-time buyers.

In the consultation, the Government proposes a change to national planning policy that would expect local planning authorities, in both plan-making and in taking planning decisions, to require higher density development around commuter hubs wherever feasible.

This is the first time the Government has considered 'density' at a national level since 2010 and suggests a move towards encouraging greater density to help solve local housing issues in places that are accessible by sustainable transport. It is important that this is accompanied by a strategic planning approach that reviews all growth options and assesses their sustainability based on robust evidence.

The government estimates there are around 680 potential commuter hubs in England and that in 2013-14 34,000 homes were built within 0.5 miles of a transport hub at an average density of 34 dwellings per hectare.

Case study: South Yorkshire's Land Use and Transport Integration (LUTI) system

South Yorkshire Passenger Transport Executive (SYPTE) have developed a guide to support developers in designing and developing sustainable sites for transport.

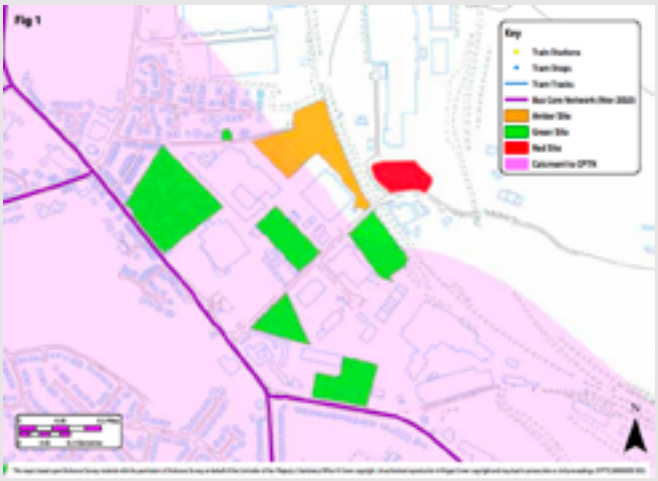
SYPTE have developed a simple traffic light classification system similar to the *Dutch ABC Model*[12], to identify areas most suitable for housing growth based on their proximity to public transport[13]. This is used within South Yorkshire's Planning Transport Guide to support developers in designing and developing sustainable sites that enable more sustainable transport choices. The guide helps developers to reduce delays to an application. The system focuses on public transport and it is hoped will maximise development linked to public transport accessibility and use.

The system uses maximum walking distances, as developed by the Institution of Highways and Transportation, of 400m to a bus stop and 800m to tram and train stations. If a proposed development is outside of these distances SYPTE will request additional mitigation to ensure developments contribute towards increased public transport provision.

A traffic light system is used:

- Green Sites are an acceptable distance away from the core public transport network and favour high density developments due to the enhanced opportunities for sustainable travel
- Amber Sites are located party within the acceptable distance, however intervention may be required to ensure the entire site has attractive public transport provision.
- Red Sites fall outside of the acceptable walking distance and will require intervention if development is to proceed.

Intervention could include funding to introduce a new bus service to the site, re-route an existing service where feasible or to enhance existing services, for example amending the timetable for greater provision or flexibility of operational hours. It is expected that any amendments will be funded by the developer until they become commercially sustainable.



You can find more information about South Yorkshire's Land Use and Transport Integration System here.

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Case study: Passenger Transport Accessibility Levels (PTAL), London

PTAL is a system used in London to link new housing developments with transport provision. It rates locations across the capital in terms of access to public transport provision which then informs housing density and parking provision within the development.

The need for housing is possibly most acute in London where estimates suggest 1.5m homes will be required by 2050[14]. This additional growth will also increase pressure on London's transport networks. The Greater London Authority therefore needs to manage both the pressure from developers for greater density against the need to move people around the city.

Increasing housing provision is coordinated through The London Plan. The London Plan supports higher density housing wherever public transport provision is perceived to be adequate. It does this through a tool called Public Transport Accessibility Levels (PTAL). If public transport is not adequate it could be met by developer contributions to improve public transport to and from larger developments, for example Battersea Power Station and Nine Elms[15].

PTAL allows planners to measure public transport access and produce travel time reports. The Public Transport Accessibility Level (PTAL) method assesses the level of walking distances to transport stops and stations, including measuring the level of transport service and wider connectivity. A high PTAL value indicates good connectivity to the transport network (by foot) alongside the frequency of public transport services provided. PTAL can therefore be used to identify areas where transport provision is likely to be greatest and focus development here.

The London Plan aims to optimise housing densities based upon the PTAL and location (suburban, urban and central). This ranges from 35 units/ha in suburban, low PTAL areas up to 405 units/ha in central, high PTAL areas.

More information about the London Plan and PTAL is available here.

Whilst PTAL has had a lot of influencing on housing density in new developments, it has also been suggested that it could artificially limit housing density.

ARUP are in the process of developing an Active Transport Accessibility Level (ATAL)[16]. In the future, this work could be used to align active travel within the Public Transport Accessibility Level (PTAL) tool thereby increasing connectivity in areas currently poorly served by public transport. This would have the effect of unlocking parts of London for higher density housing development that would help to solve London's housing problem whilst enabling more active travel across the capital.

ARUP's modelling suggested that if areas with a low PTAL could transformed to a high ATAL housing density could be increased by more than 50%.

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1.3 The importance of mixed-use

In order to increase walking levels, new housing developments should be next to or provide places people want to reach (such as, shops, leisure, education, employment) within walking distance. This underlines the desirability of mixed use developments as they contribute towards increasing proximity and the 'internalisation' of more local journeys within the development itself.

Mixed zones encourage streets to become destinations for example apartments located above shops, offices and restaurants. This additionally encourages walking and cycling[17] and improves safety and the perception of safety through increased natural surveillance. In some cities such as London however, where private renting is becoming increasingly common for a wider spectrum of household types including families, it is vital to consider the right type of housing offer with access to amenities and the type of environment that meets their needs.

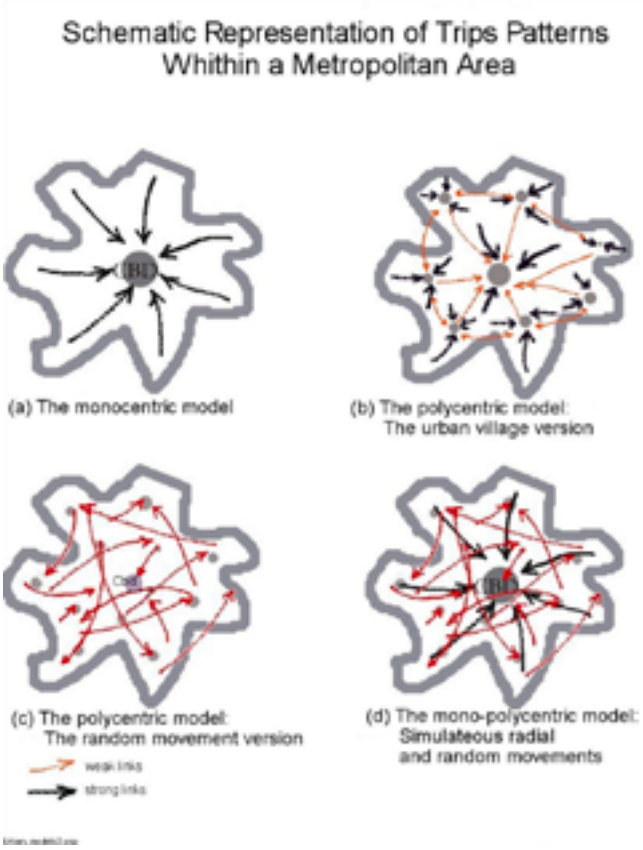
Finally, developments should also enable more equitable mobility and ensure affordable housing provision so low income groups can have vital access to sustainable transport whilst also contributing to increased social resilience. Sustrans own report Locked Out found that whilst no official definition of transport poverty exists it is a daily reality for millions of people across England[18]. Many people do not have access to a car and inadequate public transport, walking and cycling links can contribute towards social exclusion for these groups. The location of developments and unaffordable or inappropriate housing continues to contribute to transport poverty.

Studies have found that development separated into housing zones, commercial zones, leisure and retail zones meant people had to move more and longer distances. Conversely mixed-zoned development reduced overall mobility and supported active and sustainable travel[19]. Mixed-use development also supports local businesses by increasing foot traffic. Transport for London found that pedestrians spend up to 60 percent more money at businesses each month than those traveling by car.[20]

Different types of cities

Many movement patterns exist within different cities. Academics have tried to define urban spatial structures and the movement they generate. Bertaud[21] example developed four schematic models for a typical city:

- the monocentric model which has a single centre (a)
- a polycentric city which larger cities tend to evolve over time



Schematic representation of trips patterns within a metropolitan area, sourced from Bertaud, 2004.

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into an array of smaller centres develop around the main Central Business District (CBD). In a polycentric city almost all trips are short in duration and people live where they work (b).

- in reality polycentric hubs can attract people from all over the city in often an apparently random way (c)
- the centre is still likely to exert an increased demand arising in radial and random movements (d).

Therefore whilst increasing mixed use and creating smaller hubs beyond the main CBD can reduce the distance of travel trips it does not always lead to expected outcomes. Many other factors will also decide where people travel to access their needs for example housing prices in different locations, visiting friends or poor radial accessibility through public transport links.

Case study: Walk Score

Increasingly 'millennials' are moving back into city neighbourhoods and want to live in close proximity to the services they require – food, culture, employment. Walk Score answered this need by developing a tool to help place a value on how easy it is to get access to the services people want.

Studies have examined the effects of walkability on property values and investment returns. In the USA for example greater walkability has been widely associated with higher office, retail and apartment values[22].

Walk Score[23] is an organisation that has developed a tool to help people find places to live that are more walkable around the world. Walkability is determined by the presence of desirable destinations, such as shops and restaurants within walking distance. The tool measures how 'walkable' a neighbourhood is based upon a scale from 1-100. It aims to make it easy for people to evaluate walkability and transportation when choosing where to live. Walk Score measures walking to local shops, restaurants, schools, parks and cultural attractions.

In the USA where it is most developed Walk Score additionally features a score for public transport and cycling. You can also search for flats and houses in each area, learn about the neighbourhood in more detail and see options to improve your commute.

More information about Walk Score is available here.

2. Building in suburban and rural areas including new settlements

Many barriers exist that can make building new homes within existing settlements difficult. These could include private land ownership, or the cost for remediation of former industrial brownfield sites.

Another approach, as promoted by the Town and Country Planning Association, is to return to building large scale new settlements which have infrastructure planned from the start including affordable sustainable transportation. The government has recently committed to supporting new Garden Cities as an approach to create beautiful places which offer a wide range of employment opportunities (initially through the delivery of the development, but in the long term through the promotion of lasting business growth); a complete mix of housing types, including social and affordable housing; zero-carbon design; sustainable transport; vibrant parks; and local food sourcing. One of the Garden City principles is integrated and accessible transport systems, with walking, cycling and public transport designed to be the most attractive forms of local transport[24].

Building large numbers of houses in Greenfield land can be more straight-forward than within settlements, however a secondary challenge is to ensure these settlements are sustainable. Encouraging sustainable transport however is a much more difficult challenge when your new settlement is located far away from jobs, schools and other services.

If we are to successfully build new towns and settlements in suburban and out of town areas we need to ensure:

a. sustainable travel modes are enabled and promoted, through integrating public transport networks linked to existing urban areas
b. settlements are mixed use in nature with holistically planned homes, jobs, hospitals and schools all connected by walking and cycling routes and within easy reach of public transport networks, encouraging healthy living
c. high quality affordable homes of a mix of type and tenure are provided to meet local needs, ensuring people can remain living in an area throughout their lifetime and building strong community networks

Building large scale new development in a well-planned way has a number of benefits including the provision of sustainable and affordable transport infrastructure in the right places, a mix of high quality homes to meet local need, and creating low carbon lifestyles by integrating green travel options that encourage walking and cycling. A number of local authorities are taking proactive approaches towards building new communities that meet the needs of local people, as exemplified by the TCPA's New Communities Group.

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Case study: TCPA New Communities Group

The New Communities Group brings planners from across the country together to help plan and develop large-scale new communities that are sustainable.

The TCPA New Communities Group[25] was established in 2009 by TCPA and the Department for Communities and Local Government. Its members are local authorities and development corporations planning and delivering exemplary large-scale new communities, from Garden City inspired new towns and villages to urban regeneration and extension schemes. The Homes and Communities Agency's Advisory Team for Large Applications (ATLAS) is also a member and provides ongoing support to the local authorities.

The Group collectively helps to develop plans, provide political support and encourage a sharing of knowledge and best practice through seminars, workshops, study visits, parliamentary meetings and newsletters. Together the Group is providing innovative local leadership for plans delivering in the region of 150,000 new homes.

Creating a new community provides a unique opportunity to plan and implement transport systems in a radically different way. Conventional approaches can be turned on their head in order to create lifetime places that prioritise people over vehicles. The New Communities Group's annual programme of seminars includes workshops on developing sustainable transport systems and ensuring new development prioritises walking and cycling routes. The group is also looking at options for pioneering smart technology to reduce energy use in transport, such as exploring how the use of technology by individuals and communities can help shape more efficient and effective urban planning and design for transport.

2.1 Locating along public transport corridors

Wherever feasible housing developments should also be prioritised near to existing or planned public transport corridors (with the necessary capacity, or potential to expand). Transport corridors such as railway lines or major bus or rapid-transit routes can provide easy access to employment and other services in nearby cities and towns. This is especially the case for existing underused public transport systems, which should be seen as a potential asset with potential to be used more efficiently. Alternatively, new bus services and where feasible railway stations can be built in tandem with larger housing developments to facilitate accessibility.

Investing in safe walking and cycling routes and networks around transport hubs in new settlements can expand the area that can easily access public transport hubs thereby joining up different sustainable transport modes into the same journey.

Investment in sustainable transportation is key and building well-planned new communities offers the opportunities of economies of scale to ensure that new homes are built close to transport nodes, and accompanied by walking and cycling routes.

Case study: Cranbrook, Devon

Cranbrook in East Devon has made travelling by train into Exeter City centre more convenient by building a new train station.

Like many places in England, Exeter and East Devon has a rapidly rising population. To respond to this housing demand East Devon District Council decided to build a new settlement in Cranbrook. Cranbrook is situated approximately six miles east of Exeter City Centre to the north of Exeter International Airport. The vision for Cranbrook is a self-sufficient, low carbon new community in close proximity to skilled employment opportunities, encouraging people to use sustainable modes of transport[26].

Work on the development commenced in spring 2011. Today 1,500 homes are already occupied, the primary school is full and a secondary school has recently been opened. In total over 2,900 homes are expected to be built in the first phase, rising ultimately to more than 8000 dwellings. Most people moved to the development from Exeter and East/ Devon. Exeter itself is also extending towards Cranbrook through East Devon Growth Point – multiple business and housing growth areas east of Exeter, including 10,000 houses on the East of Exeter.

The biggest challenge to Cranbrook was how to get people to travel sustainably whilst the development is outside of the city of Exeter. A cycling link has been developed that provides an attractive and safe crossing of the M5 and goes all the way to Cranbrook although due to the large distances involved usage is low. In December 2015 Cranbrook train station opened. It now takes 14 minutes to travel by rail from Cranbrook to Exeter St. David's whereas travelling by car can take up to 30 minutes. Cranbrook Rail Station was enabled by Section 106 and is on the Exeter to London line.

76% of people drive regularly and only 20% of residents spend one hour cycling or jogging each week. Cranbrook has now been selected by NHS England as a Healthy New Town which should see more support going towards a range of initiatives to improve health including active travel.

The Cranbrook masterplan is available here.

2.2 Designing new settlements

The design of new settlements plays a critical role in supporting sustainable transport. Well-planned new settlements will build housing near to public transport hubs and design active travel options such as walking and cycling routes, helping to encourage people to choose these travel options by making them safe and attractive to use and separate to roads. An advantage of new settlements is the ability to create routes that are planned from the start with health and sustainability in mind from the start, which cannot always be achieved in existing settlements.

The layout of the settlement in relation to sustainable transport can also play a significant role as these two examples from Europe demonstrate.

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Case study: Houten, The Netherlands

Houten is a model in developing a new town outside the existing settlement of Utrecht that was spatially designed to meet sustainable transport objectives. The sustainable transport infrastructure wouldn't work without the complementary wider design of the street layout in Houten. 66% of trips are made without the use of a car.

Houten, a city near Utrecht in The Netherlands is a successful case study in how to build a large town to prioritise active travel and sustainable transport[27]. The town was built on a rail corridor with the addition of two train stations in the north and the south. These connect Houten to the larger city of Utrecht five miles away.

Spatially Houten was designed from scratch around the two railway stations and within a ring road surrounding the settlement. Within the ring road is a network of low-speed streets where cycling and walking can be prioritised to connect to local services and the two train stations. The streets are arranged in a series of neighbourhoods accessible from the ring-road but not from neighbourhood to neighbourhood, except by bike or foot. This layout makes it far more convenient to travel actively for all internal journeys in Houten. The neighbourhoods are mixed zones with shops and services and jobs and no one in Houten lives further than a mile and a quarter from a train station.

As a result 66% of trips are made without the use of a car and access to public transport to commute to Utrecht is easy for everyone in Houten far higher than most suburbs in other cities.

More information on Houten is available from this ITDP case study.

Street Layout of Houten, sourced from Houten, Utrecht Case Study, ITDP Europe

Written by Sustrans with support from Dr Adrian Davis, The TAS Partnership Limited and Living Streets.

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