

Strategic Walking Analysis

TfL City Planning
Strategic Analysis



EVERY JOURNEY MATTERS

Contents

I. Introduction.....	3
PART A - Walking Insights	
2. Current walking patterns.....	4
3. Walking potential.....	14
PART B - Strategic Data	
4. Framework to identify key areas for walking.....	21
5. Next steps.....	27
Glossary.....	31
Appendix : Using the framework in the City Planner Tool.....	33

I. Introduction

Walking as part of regular travel has many benefits; it helps people to stay healthy and is a great way to explore the city. In addition switching from motorised travel to walking reduces road danger, air pollution and noise. Walking also encourages interaction and helps to makes Town Centres and High Streets thriving places.

Walking is integral to the Mayor’s Transport Strategy (MTS) published in March 2018. One of the core MTS targets is for 80 per cent of all trips in London to be made on foot, by cycle or using public transport by 2041. The MTS also has an ‘Active People Target’ for all Londoners to do at least the 20 minutes of physical activity a day required to stay healthy by 2041. Walking as part of regular travel is the easiest way for Londoners to become, and remain, physically active, in line with our Healthy Streets approach, as well as reduce reliance on the private car.

Following on from the MTS, TfL published its Walking Action Plan in July 2018, which sets out the scale of change needed to deliver the MTS. The plan outlines two additional walking-specific targets and a series of actions required to make London a more walkable city.

Target 1:
Increase the number of walking trips by more than one million per day by 2024 (from 6.4 million to 7.5 million).

Target 2:
Increase the proportion of trips to primary schools made by walking to 57 per cent by 2024 (from 53 per cent).

Action 9 of the Walking Action Plan is to publish the first Strategic Walking Analysis (SWA), comprising a suite of datasets for boroughs and stakeholders, and this summary report. The SWA draws on existing data and combines analyses of levels of walking, walkable trips and barriers to walking, mapping out at a granular level where the walking experience could be improved and where more people could walk. This report also demonstrates how this data can be combined with other information, for example where people are not currently achieving 20 minutes of daily active travel, in order to define measures to meet the objectives of the MTS.

The SWA will help to inform prioritisation and investment in walking to obtain the best result for Londoners and local communities. This will allow TfL, the London Boroughs and other partners to make best use of their resources to deliver improvements to enable trips to be undertaken by safe, efficient and sustainable modes including walking. This will contribute towards the objectives in the MTS including the 80 per cent mode share target.

This summary report is split into two sections. Part A contains various insights on walking across London, whilst Part B sets out a framework which can be used to help identify where walking improvements could be implemented. The data underpinning this framework is based on current levels of walking and what the potential for more walking in an area might be. The report also details the additional data available within the City Planner Tool (CPT) which can be used to supplement the SWA data.

2. Current walking patterns

2.1. Overview

To understand how and where to encourage more walking, it is important to understand the current situation. This chapter presents data on walk trips and stages, pedestrian density, walking distances and socio-demographic variations. The data has come from the London Travel Demand Survey¹ (LTDS).

Whilst LTDS is currently our most comprehensive source of information on walking in London it has some methodological and statistical limitations that are common to traditional travel diary recall surveys. For example, it is not ideal for measuring incremental changes in the amount of walking in London. In addition the data applies to London residents only and therefore omits the sometimes substantial amount of walking made by non-residents in central London.

For this reason, TfL has developed a new direct-count survey of pedestrian activity. This initially focuses on central London but is expandable to Greater London. This data will be capable of giving a robust trend for all walking. Data from this survey will be used to measure progress towards the 2024 Walking Action Plan target.

¹The London Travel Demand Survey is a continuous household survey of the London area and has been running since 2005/06 with an annual sample size of around 8,000 households. It captures information on households, people, trips and vehicles.

2.2. Walk Trips and Stages

The walking done by Londoners can be broken down into *walk trips* and *walk stages*.

Walk trips capture end to end trips which are walked all the way. For example, a trip from home to work which is walked the whole way without using another mode of transport.

Walk stages are walks which are made as part of a longer trip, involving other modes. For example, a walk stage from home to a London Underground station, followed by another journey stage on the Underground, and then a further walk stage to the final destination.

Over the last 13 years, the number of walking trips and stages made by the average Londoner has been broadly stable. However there has been a small decrease in recent years.

Data from Travel in London has shown that in recent years, there is a broad trend of declining trip rates across all modes. The trips most affected are those made for shopping, personal business and leisure purposes. This suggests that a decline in discretionary trip purposes has been driving the overall decline in recent years². This general trend is also reflected for walking trips and stages where the data shows in recent years the amount of walking made by London residents has been declining.

² Travel in London 10, Chapter 4: <http://content.tfl.gov.uk/travel-in-london-report-10.pdf>

Figure 1 - Walk trip rates and walk stage rates (LTDS)

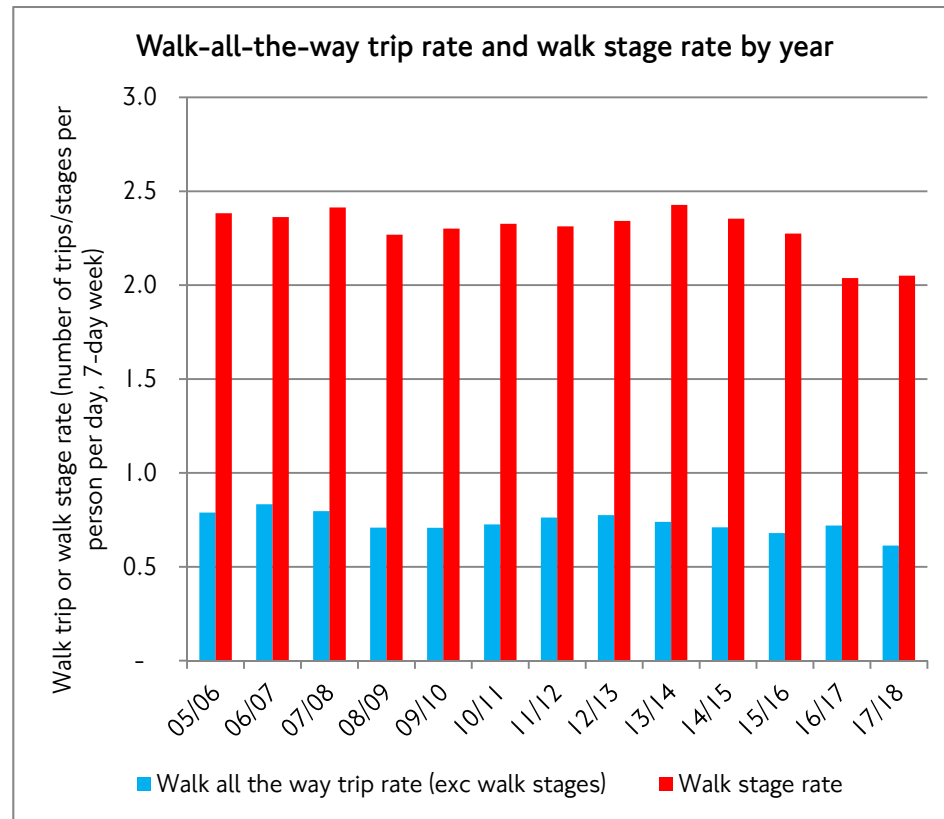


Figure 1 shows in 2017/18 Londoners made on average 0.6 walk-all-the-way trips per day and 2.1 *walk stages* per day. This is the lowest it has been since the LTDS database began collecting data in 2005/06. The SWA will help inform prioritisation and investment in walking through providing data driven insights. It is one of the key tools which can be used to help turn around this trend and increase the amount of walking in London.

Figure 2 - Change in *walk trips* and stages relative to 2005/06 baseline (LTDS)

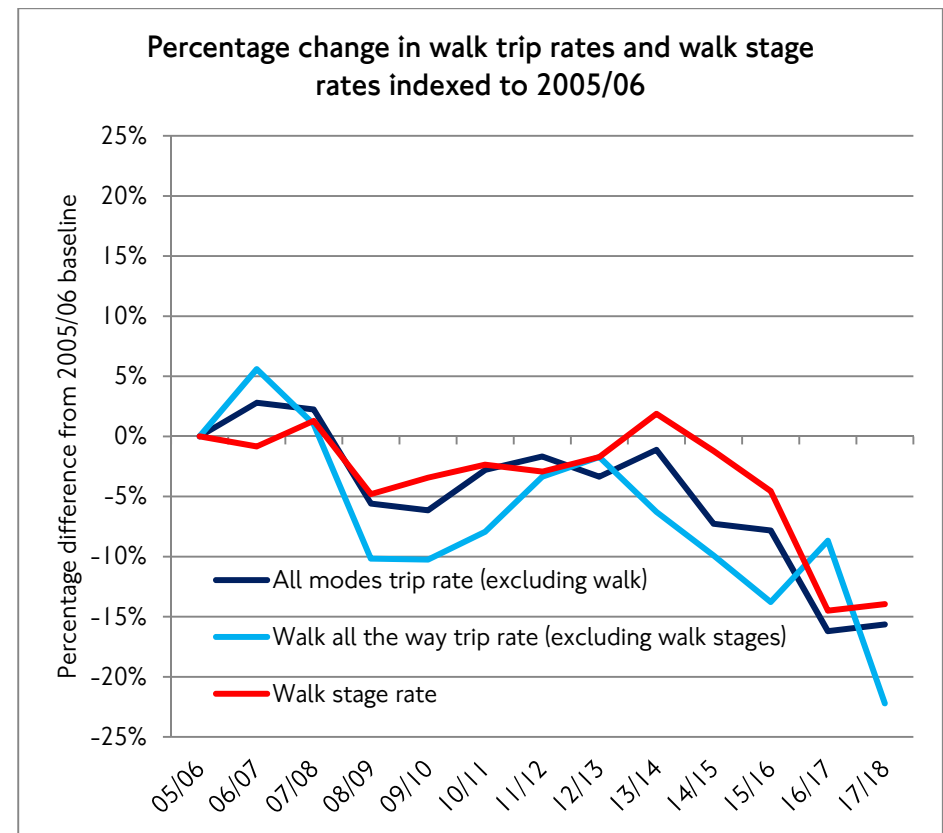


Figure 2 shows how walk trip and walk stage rates have changed since 2005/06. Walk trip rates have been mostly reducing since 2012/13 and walk stage rates since 2013/14. In 2017/18, walk stage rates have remained stable but represent a reduction on the 2005/06 baseline data.

2.3. Walking distances

Walking is an important source of physical activity. It is possible to look at the distances Londoners walk on average to get a sense of how much walking may be contributing to Londoners' health and how this is changing over time.

In 2017/18 the average daily walk distance per person was 1.2km. This was made up of 0.7km in walk-all-the-way trips and 0.5km in *walk stages* to or from other modes.

Walk all the way trips are on average longer than *walk stages*. However, London residents make more *walk stages* than trips each day, and therefore *walk stages* account for a slightly higher proportion of the total distance walked per person per day.

Figure 3 shows that in 2017/18 the average daily distance walked per person from both walk-all-the-way trips and *walk stages* is at its lowest for 10 years.

Average walk distances for both walk-all-the-way-trips and *walk stages* have stayed broadly stable over the last 10 years. The decline in average daily distance walked per person is a result of the reduction in the number of *walk trips* and *walk stages* made by the average Londoner as described in the previous section.

Figure 3 – Daily walk distance per person in trips and stages (LTDS)

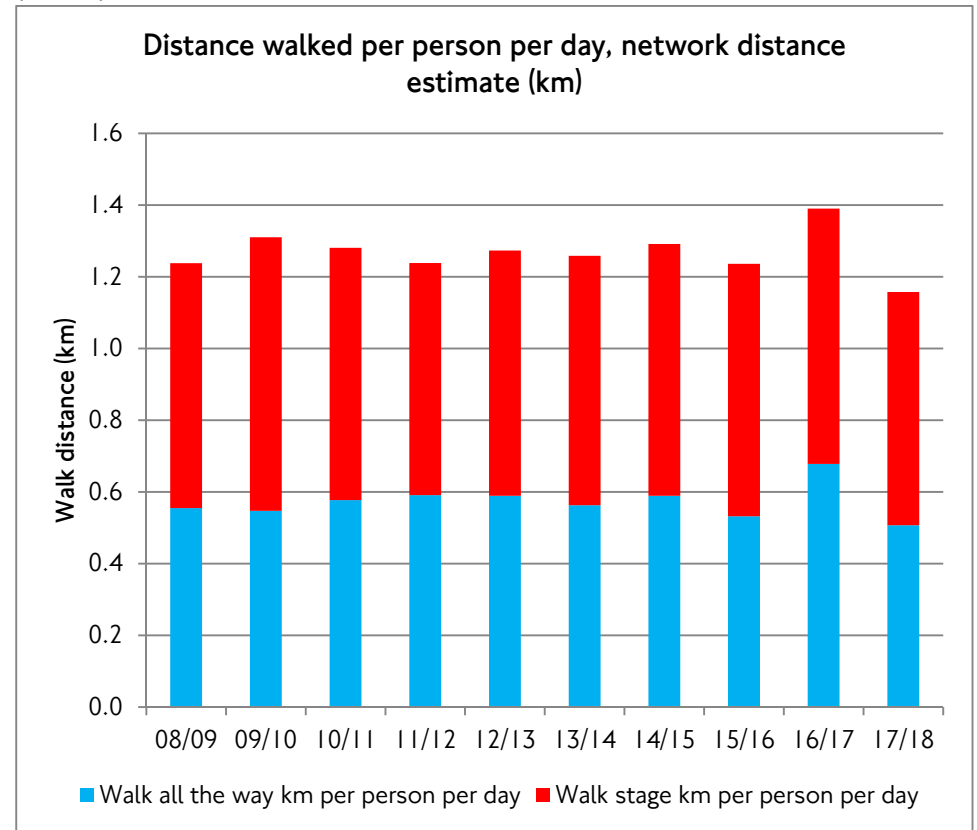


Table I summarises the key statistics about the number and distance of walk-all-the-way trips and *walk stages* for 2017/18.

Table I - Key statistics for walking in 2017/18

London Travel Demand Survey 2017/18 Average		
	All Londoners (over 5 years old)	Londoners who made at least one walk trip or stage on survey day
Number of walk-all-the-way trips per person per day	0.6	1.0
Number of walk stages per person per day (excluding walk-all-the-way trips)	2.1	3.4
Average distance of a walk-all-the-way trip (km)	0.84 km	
Average distance of a walk stage (km)	0.32 km	
Daily average distance walked per person from walk-all-the-way trips (km)	0.51 km	0.83 km
Daily average distance walked per person from walk stages (km)	0.65 km	1.07 km
Daily average total distance walked per person (km)	1.16 km	1.9 km

2.4. Pedestrian density

2.4.1. Overview

Using LTDS data, it is possible to estimate, at a neighbourhood level, the amount of pedestrian movement across London.

Pedestrian density is a measure that estimates the amount of walking that takes place in a neighbourhood in terms of the total daily distance walked per unit of area.

This has been done by partitioning the Greater London area into 350m hexagons and calculating the pedestrian density in each hexagon. This approach has limitations but allows comparison of relative densities across London.

The data only captures London residents so in areas of high activity by non-Londoners, such as tourists and non-London based commuters, the measure is likely to under-represent the amount of walking taking place.

Figure 4 shows the London-wide 24-hour *pedestrian density* and highlights some key points about its distribution.

Academic research³ has shown that the varying levels in *pedestrian density* across London can be explained to a large extent by several key factors:

- the diversity of land use
- the residential density
- the density and connectedness of the walk network
- the availability of public transport

These factors don't capture the quality of the local walking environment, which is an important factor in understanding the walking experience. However, they do demonstrate that land-use planning and public transport play a key role in enabling an area to have high levels of walking.

2.4.2. Areas of high pedestrian density

The highest *pedestrian densities* are observed in Central London and in Town centres. Central London has *pedestrian densities* which are on average four times greater than in Inner London.

Table 2 shows average daily *pedestrian densities* in different town centre types⁴ in London. International Centres and

Central Activity Zone (CAZ) frontages have the highest densities and are found in Central London which overall has a very high *pedestrian density*.

Major and Metropolitan town centres have similarly high levels of *pedestrian density*. District town centres have lower *pedestrian densities* compared to other town centres, but their average densities are still over 4 times higher than areas outside of a town centre.

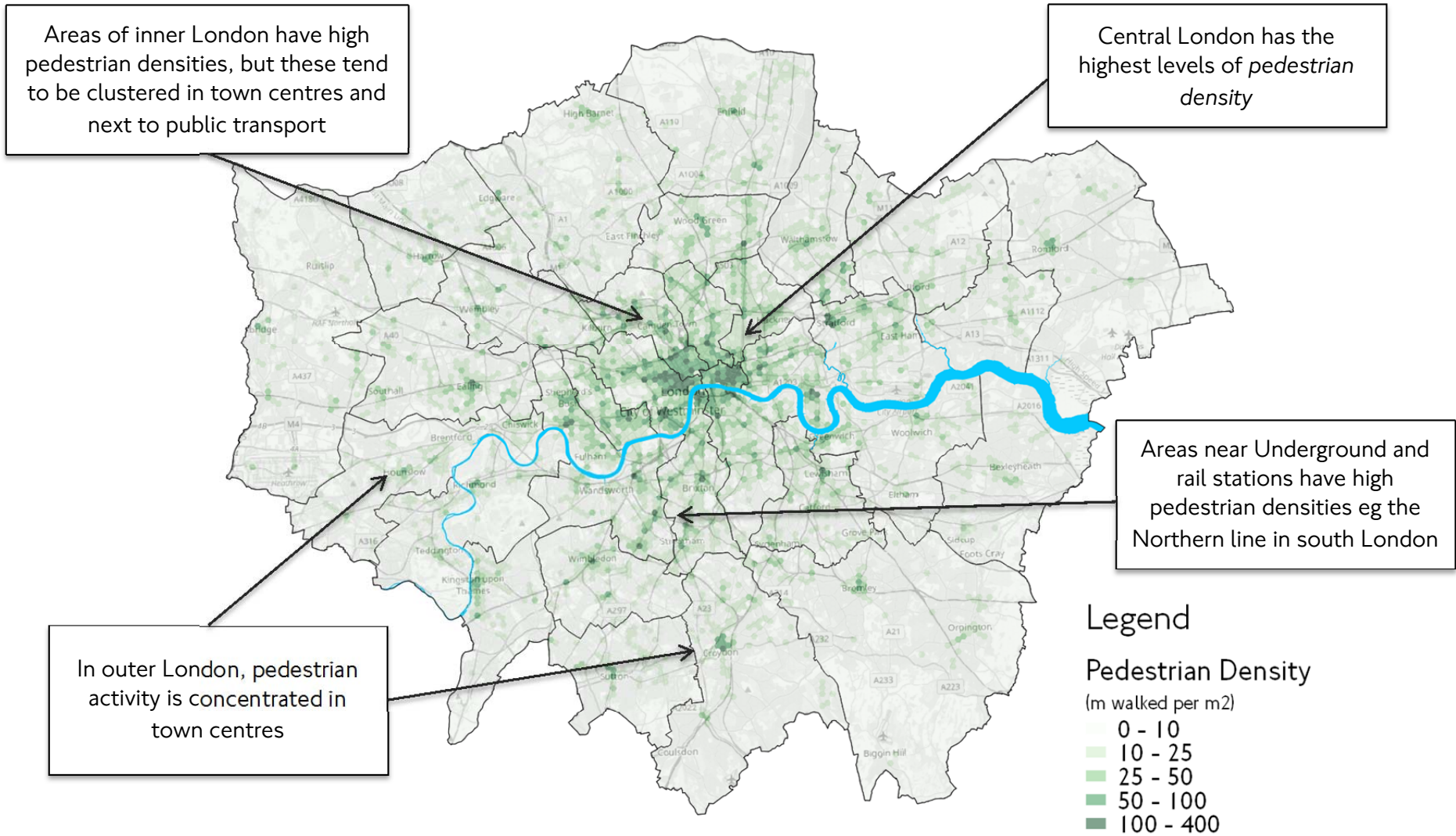
Table 2 - Pedestrian densities in different town centre types

Town Centre type	Average daily pedestrian density (m walked per m ²)
International Centre	152
CAZ Frontage	105
Major Town Centre	48
Metropolitan Town Centre	47
District Town Centre	26
All town centre type average	42
London average	7
Not within a town centre	6

³For more information see "Estimating pedestrian demand for active transport evaluation and planning" (2017) by Dhanani et al. published in Transport Research Part A: Policy and Practice

⁴ An explanation of the different town centre types can be found in the glossary. Further details can be found at <https://www.london.gov.uk/what-we-do/planning/london-plan/current-london-plan/london-plan-annexes/annex-two-londons-town>

Figure 4 - Pedestrian density, 24 hour, LTDS 2012/13 to 2016/17 (inclusive)



2.5. Socio-demographic variation

2.5.1. Overview

As well as varying geographically, walking levels also vary across the population and LTDS data can be used to look at these variations.

2.5.2. Personal characteristics

Analysis shows that women walk more than men. In terms of age those aged 60 and over walk less than those under 60.

As shown in Figure 5, combining these two variables produces further insights, with contrasting patterns across the two genders. The number of daily walk-all-the-way-trips made by women in the 25-44 age category is much higher than males in the same age range with women making nearly 50% more walk trips than men. However, this is not the case in the older (60+) age categories where men and women make a similar number of *walk trips* per day.

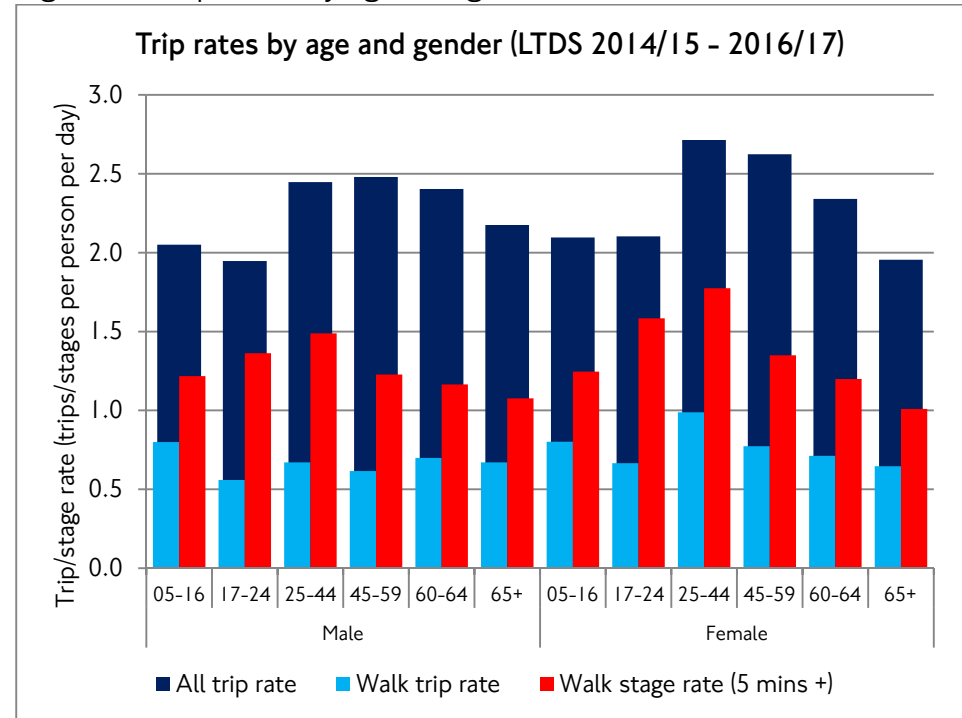
Other personal variables considered showed little variation, though it was observed that people in the Asian⁵ ethnic grouping walk notably less than other ethnic groups.

There was no clear pattern in the amount of walking done across different employment status categories. There is also

⁵ The Asian ethnic group includes those identifying as ethnically Indian, Pakistani, Bangladeshi, Chinese or Other Asian

little evidence to suggest any difference in walking levels between those that hold a driving licence and those that don't.

Figure 5 - Trip rates by age and gender (LTDS 2014/15 – 2016/17)



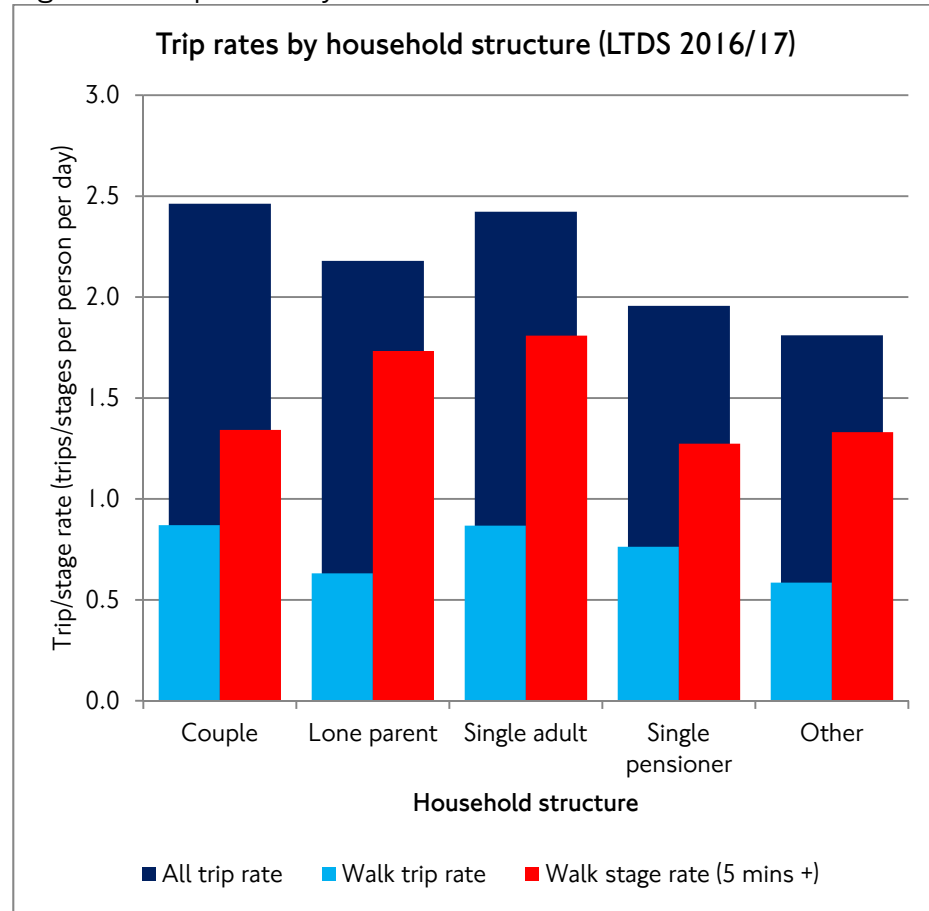
2.5.3. Household characteristics

Analysis of travel patterns across different income groups showed that while overall trip rates increase with income, there is little variation in walk rates by income group.

Looking at household size, individual walk trip rates were found to decrease slightly as the number of people in the

household increases. By looking at household structure however (Figure 6), it was evident that the differences are more nuanced than merely the number of people.

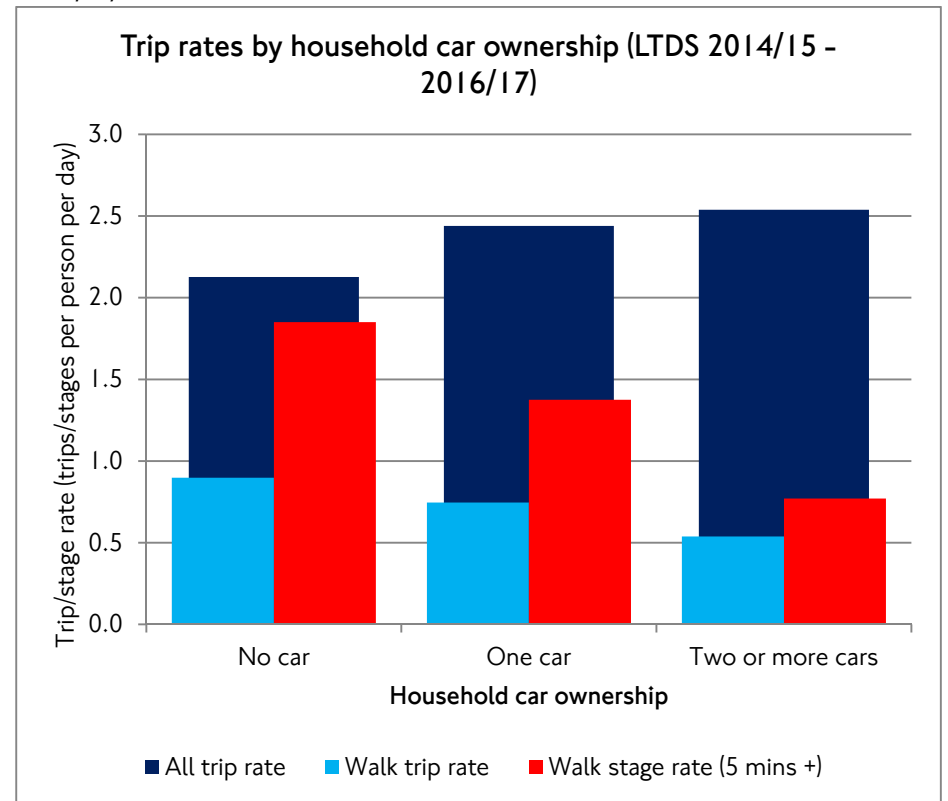
Figure 6 - Trip rates by household structure (LTDS 2016/17)



Those in single adult households walk more than any other group. In households with more than one adult, trip rates per

person are much lower, although people in a couple with children make more trips (and *walk trips*) than those in a couple without children. Amongst those who live alone, age has a bearing on travel, with lower walking levels and total trip rates seen when comparing single pensioners to single adults of other age groups.

Figure 7 - Trip rates by household car ownership (LTDS 2014/15 - 2016/17)

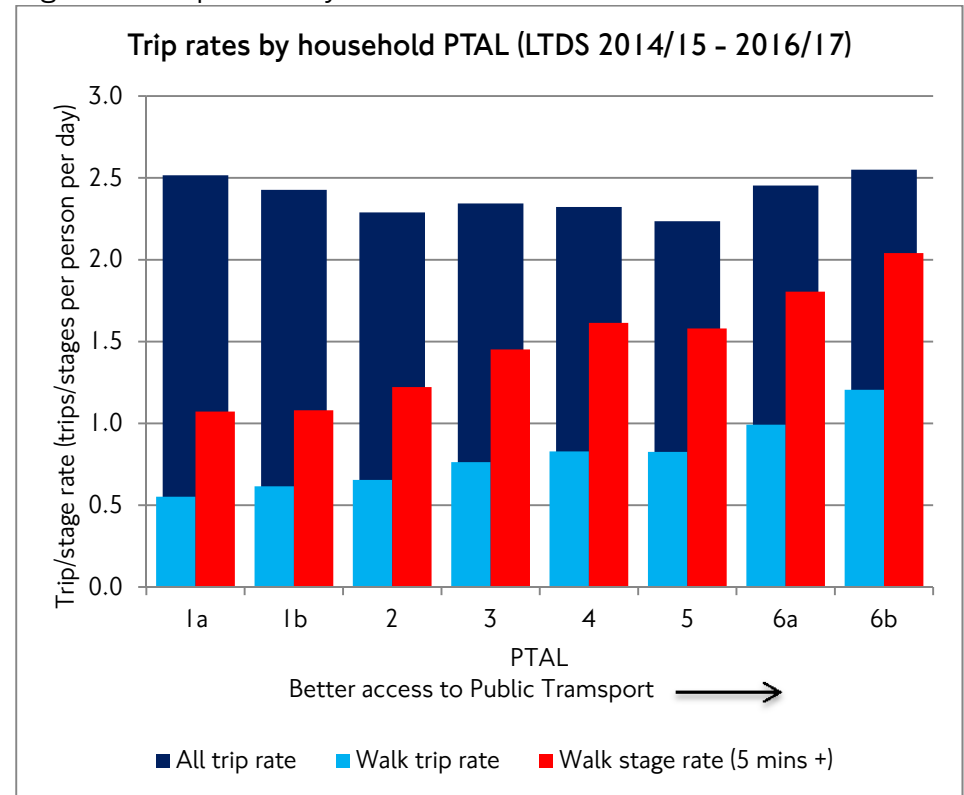


Car ownership also appears to be an important factor in walking travel patterns. People in households without a car are walking more than those in car owning households. This is particularly true when considering *walk stages*, where those without a car are walking more than twice as much as households with multiple cars, as shown in Figure 7. The inverse was true for all travel, with people in car-owning households travelling more on average.

2.5.4. Household location

The Public Transport Accessibility Level⁶ (PTAL) of a household appears to be a strong indicator of walking levels. Figure 8 shows that people living in areas with better access to public transport (represented by a higher PTAL score) walk more. Further analysis however reveals that the presence of a car dampens the effect of access to public transport. For example a “no cars, low PTAL” household has walking levels similar to those for people who live in medium PTAL areas but own one car.

Figure 8 - Trip rates by household PTAL (LTDS 2012/13 – 2014/15)⁷



⁶ The Public Transport Access Level (PTAL) measures how many stations and bus stops are within walking distance and how frequent the services are from those stations and stops. PTAL values range from zero to six, where the highest value represents the best connectivity. More information can be found at <http://content.tfl.gov.uk/connectivity-assessment-guide.pdf>

⁷ A location will have a higher PTAL if it is at a short walking distance to the nearest public transport stop / stations, waiting times at stations or stops are short, more services pass at the nearest stations or stop or if there are major rail stations nearby (or any combination of all the above).

2.6. Summary

The amount of walking done by Londoners has decreased in recent years, mirroring the decrease in overall trips made. The decrease is mostly in trips associated with shopping, personal business and leisure activities. Both economic and social factors are likely to play a part and the reasons for this decline are still being investigated.

The data used in the SWA also includes walking done for leisure purposes and as such the dataset can be used to support planning and decision making for a range of policies and projects related to different types of walking trips. Our analysis shows:

- Average daily walk distances have remained broadly stable over the last 13 years although the latest year shows a decrease. More data is needed to determine if this is a longer-term trend.
- *Pedestrian density* is a measure that shows how walking levels vary. The land use diversity, connectivity of the walk network, and access to public transport are the key factors determining the levels of pedestrian density in an area (the dataset is now available in the TfL's City Planner Tool which is available to London Boroughs. More detail on this is provided in Chapter 5).
- The highest *pedestrian densities* are found in Central London and in town centres where there are factors contributing to high levels of walking.
- Walking levels also vary across different demographic groups across the population. Car ownership and access to public transport are particularly important in understanding walking levels of households. For example those in non car owning households walk twice as much as those households who own a car.

3. Walking potential

3.1. Overview of walking potential

This chapter explores the potential for greater levels of walking in London.

Total walking potential is an estimate of the amount of existing trips that could reasonably be walked all the way, but currently are made by other modes.

The primary source of this work is the Analysis of Walking Potential, which uses LTDS to identify trips currently made by London residents using motorised modes that could in fact be walked, based on the known characteristics of the trip⁸.

A trip is defined as *potentially walkable* if:

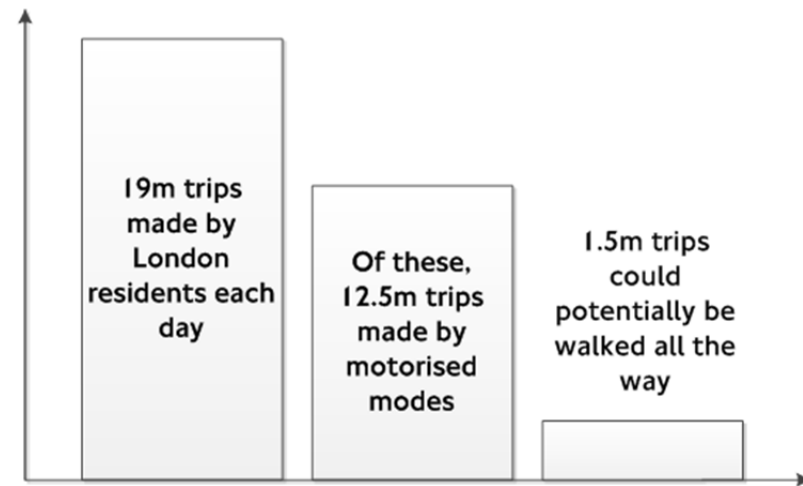
- The person making the trip isn't carrying 'tools or heavy work equipment'
- The trip is less than 2km for those aged between 12 - 69; the trip is less than 1.5km for those outside that range
- The trip isn't made by van, dial-a-ride, plane or boat
- The trip isn't part of a wider chain of trips

⁸ Analysis of Walking Potential: <http://content.tfl.gov.uk/analysis-of-walking-potential-2016.pdf>

The Analysis of Walking Potential work found that on an average weekday, there are approximately 1.5 million trips made by London residents using motorised modes that are *potentially walkable*.

As shown in Figure 9, this is a relatively small but significant proportion of all trips currently made by motorised modes⁹. This reflects the fact that most London residents are already walking those trips that are feasible (based on current land use patterns).

Figure 9 - Walking potential in London (LTDS 2014/15 – 2016/17)



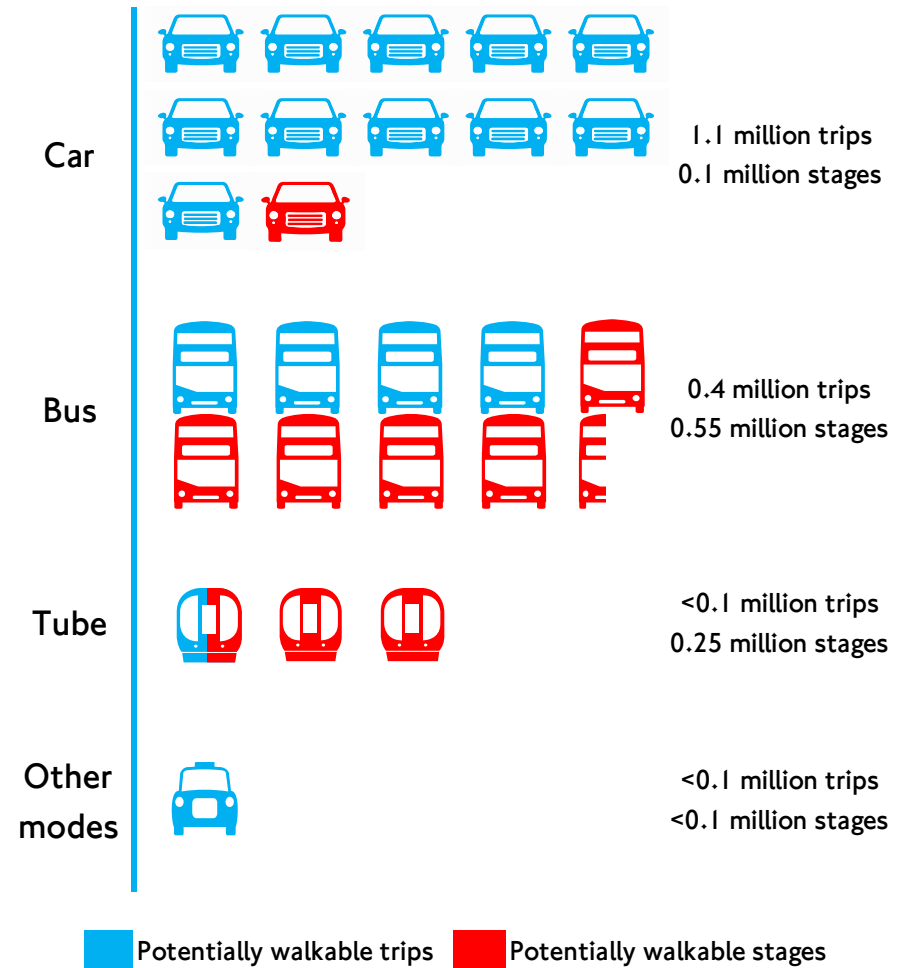
Most of these *potentially walkable trips* – around one million of the 1.5 million total potential – are currently made by car, either as the driver or the passenger, as shown in Figure 10.

⁹ Motorised includes all public and private modes except walking and cycling

Bus travel accounts for much of the remainder of the *walking potential*, with very few walkable trips currently made either by Underground or National Rail services. This reflects the fact that the distances of these trips are typically too far to consider walking as a travel option.

In addition, encouraging people to switch from car to public transport will also help to increase walking. Half of all walking in London takes place as part of a longer public transport journey with people walking on average just over three and a half minutes to access bus services¹⁰.

Figure 10 – Total walking potential (per day), by current mode of travel (LTDS 2014/15 – 2016/17)

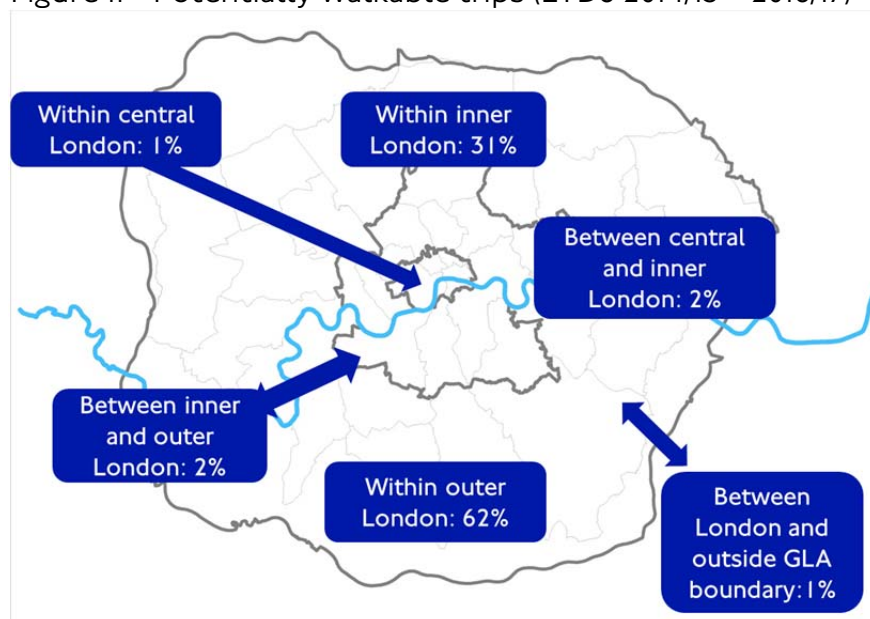


¹⁰ Walking Action Plan, Chapter 8: <http://content.tfl.gov.uk/mts-walking-action-plan.pdf>

3.2. Distribution of walking potential

The locations of *potentially walkable trips* are widely dispersed across London as seen in Figure II. There is a lot of potential within outer London, in places such as Barnet and Croydon. 62% of potentially walkable trips are made in outer London.

Figure II - Potentially walkable trips (LTDS 2014/15 – 2016/17)



Central and inner London have a lower share of *potentially walkable trips*. In outer London, the potential is higher in total but spread over a larger area.

Other key *walking potential* findings include:

- There are nearly half a million journeys a day that would take less than 10 minutes for most people to walk – most of which are currently made by car
- Half of all *potentially walkable trips* are for shopping (particularly food shopping) and leisure purposes.
- The *potential for walking* is greater among women. Around 850,000 potentially walkable trips (56%) are currently made by women, compared to just over 650,000 walkable trips by men.

3.3. Density of walking potential

The Analysis of Walking Potential identifies the start and end point of the walking trip or stage. By applying the method used to calculate *pedestrian density* (as outlined in section 2.4) to this dataset the **total walking potential density** across London can be identified.

Figure I2 shows the distribution of *total walking potential density* across London. The highest *total walking potential densities* are in Central London. However, only 3% of the *potentially walkable trips* in London are in this area (as shown in figure II).

In Outer London whilst the overall *total walking potential density* is lower, areas of high density are found concentrated in certain areas such as metropolitan town centres and around stations.

Car only walking potential is a measure that estimates the number of trips that could reasonably be walked all the way, but are currently made by car. Figure I3 shows the **car only walking potential density**.

There is very little *car only walking potential* in Central London compared to walking potential from all modes. This highlights the lack of car use in particular for short-distances in Central London.

Table 3 shows how the *total walking potential density* and *car only walking potential density* varies across London. On average, the *total walking potential density* that could be added to London's streets is around a quarter of the existing activity, while the potential that could come from existing car travel (*car only walking potential density*) is 15%.

Table 3 – Existing pedestrian densities and walking potential densities in different sectors of London (m walked per m²)

Area	Existing pedestrian density	Walking potential density (all modes)	Walking potential density (car only)
Central	62.7	12.3	0.7
Inner	14.8	3.9	1.3
Outer	4.2	1.3	0.9

Figure 12 - Total walking potential density from LTDS (2014/15 - 2016/17)

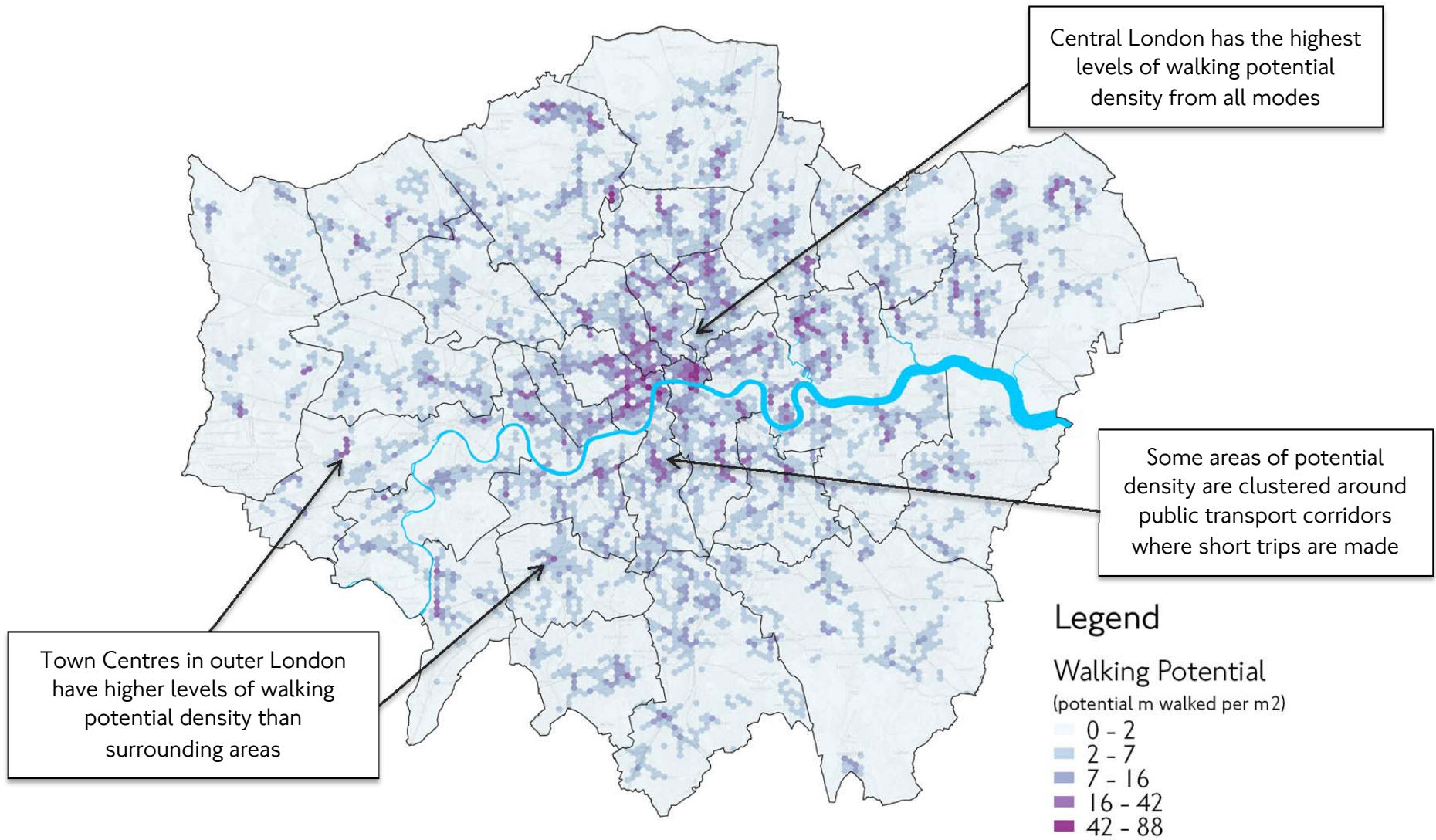
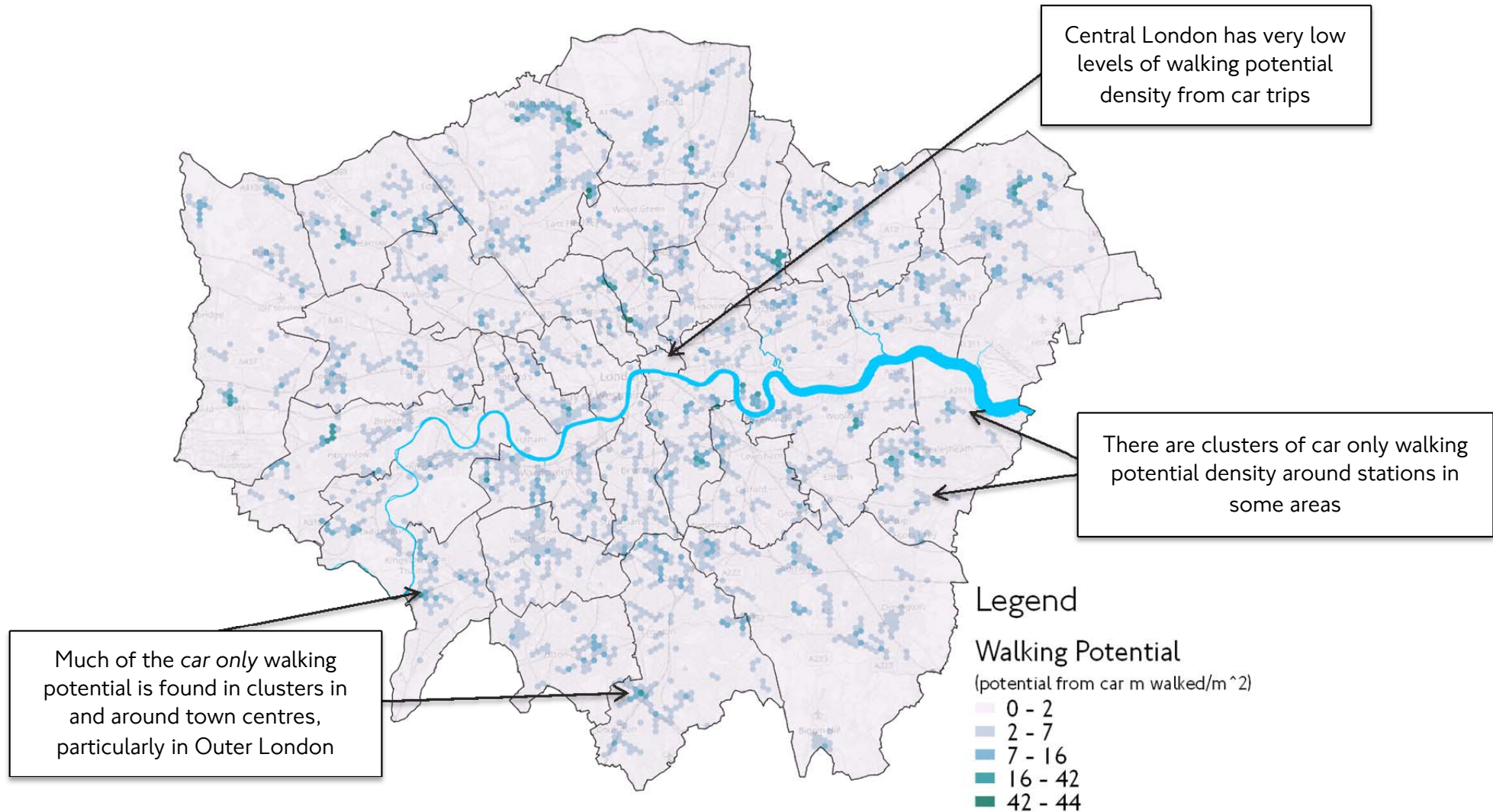


Figure 13 – Car only walking potential density from LTDS (2014/15 - 2016/17)



3.4. Walking potential in town centres

Table 4 shows the distribution of *walking potential* across different town centre types. *Car only walking potential density* follows a notably different distribution to existing *pedestrian density* and *total walking potential density*. District town centres and Major centres have the highest average levels of *car only walking potential density*, followed closely by Metropolitan centres.

Table 4 - Pedestrian densities and walking potential densities in different town centre types in London (m walked per m²)

Area	Existing pedestrian density	Walking potential density (from all modes)	Walking potential density (from car only)
International Centre	151.5	24.8	0.6
CAZ Frontage	105.1	20.9	1.0
Major Town Centre	47.7	11.5	2.6
Metropolitan Town Centre	47.4	7.9	1.9
District Town Centre	25.9	6.3	2.6
All town centre average	42.1	9.0	2.4
Not within a town centre	6.4	1.8	0.9
London average	7.3	2.0	0.9

In District town centres a large proportion of the *total walking potential density* comes from car trips as compared to other town centre types. In the context of encouraging mode shift, measures focused on District town centres could be

prioritised, as there are a significant number of short car trips being made to access these town centres.

3.5. Summary

- Around 12% of trips currently made by car and public transport are deemed to be walkable. Nearly half of the *total walking potential* is from existing car trips and stages.
- The highest existing *pedestrian density* and highest *total walking potential density* is in Central London. Central London must therefore be a key focus area for providing a more pedestrian friendly environment in order to improve the experience of walking for existing pedestrians as well as to attract more walking trips to the area. The SWA can help identify locations for improving the pedestrian environment and identify a network of strategic walking routes which connect key points of interest and public transport interchanges.
- The highest *car only walking potential density* is found outside of Central London in areas of Inner and Outer London especially around interchanges and Town Centres. These are key areas where short car trips could be switched to active and sustainable modes.

4. Framework to identify key areas for walking

4.1. Framework overview

When considering areas where interventions could be targeted, it is important to take account of both existing walking levels and levels of walking potential.

- Areas with the highest *walking potential* are those where an intervention could encourage the greatest shift to walking in that area.
- Areas with the highest existing *pedestrian density* are those where there is already a high volume of people walking and improvements in the area could benefit the greatest number of people.

A simple framework which combines pedestrian density and walking potential is presented in Figure I4.

The way in which the framework is used will depend on the objectives and priorities being considered. The SWA data can be combined with data about other modes and people trends to gain a better understanding of how existing walking levels and potential can relate to wider objectives.

One approach is to focus on areas where both *pedestrian density* and *walking potential* are high (the red box in the top right of the figure). This will help to identify areas where there

is already a lot of walking activity, but also a significant number of short trips by other modes which could be switched to walking.

Targeting interventions which improve the street environment in these areas ensures that the interventions will benefit existing users even if the potential is not realised. Given the current lack of evidence demonstrating that isolated interventions have a direct impact on walking levels this would be a prudent approach.

Figure I4 - Framework combining Pedestrian Density and Walking Potential



Another approach is to look at areas which have high levels of potential and low (or medium) levels of current *pedestrian density* (the purple boxes in the top left of Figure I4). This can help to identify areas that may have low levels of walking due to a specific barrier, such as severance, or structural issue, such as low population density or low density of services. The high potential in these areas suggests that if the barrier or underlying structural issue was addressed, a significant amount of walking trips could be unlocked.

For a given area or Borough, both approaches are worth pursuing to help identify which areas should be prioritised.

4.2. Application of the framework in London

The framework outlined above can be used to identify priority areas across Greater London. To do so, the ranges of *pedestrian density* and either *total walking potential density* or *car only walking potential density* should be calculated in the Borough or area of interest. Then hexagons which fall into the top *X*% for both pedestrian density and walking potential can be identified.

The following analysis considers hexagons which are in the top 2.5% and the top 10%. The results of using *total walking potential density* are shown in Figure I5. The same approach using *car only walking potential density* is shown in Figure I6.

Using the *car only walking potential density* data reduces the number of areas highlighted. This demonstrates that there are fewer areas where high levels of *pedestrian density* overlap with high levels of walkable car trips.

Table 5 – Comparison of the percentage of priority hexagons inside and outside of town centres

Area	Priority areas using walking potential from all modes		Priority areas using walking potential from car only trips	
	Top 2.5%	Top 10%	Top 2.5%	Top 10%
Within a town centre	49%	24%	37%	18%
Not within a town centre	51%	76%	63%	82%

Table 5 shows that half of the highest priority hexagons (top 2.5%) identified using *total walking potential density* are directly within a town centre and over a third of the areas identified by using *car only walking potential density* are within a town centre. When looking further down the list of priority hexagons (top 10%) we see that they become more dispersed across the boroughs. Over 80% of priority hexagons for *car only walking potential density* are located outside town centres.

The results from this type of analysis should support and be used in conjunction with local knowledge. Once the priority hexagons are identified using the framework, a useful next step would be to carry out site visits to get more detailed local information and scope potential interventions.

Figure 15 – Hexagons in the top 10 percent for pedestrian density and walking potential density from all modes at a Borough Level

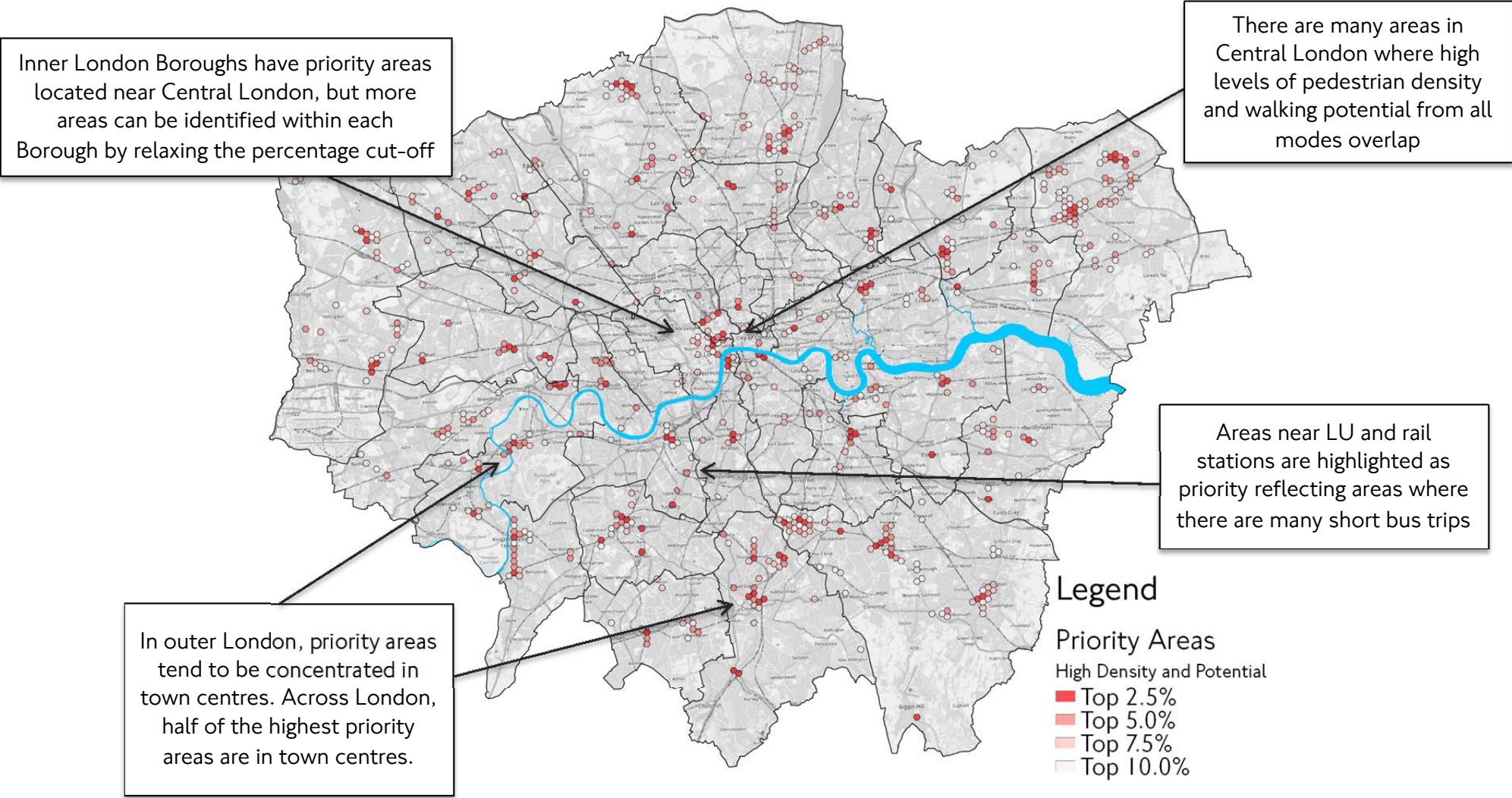
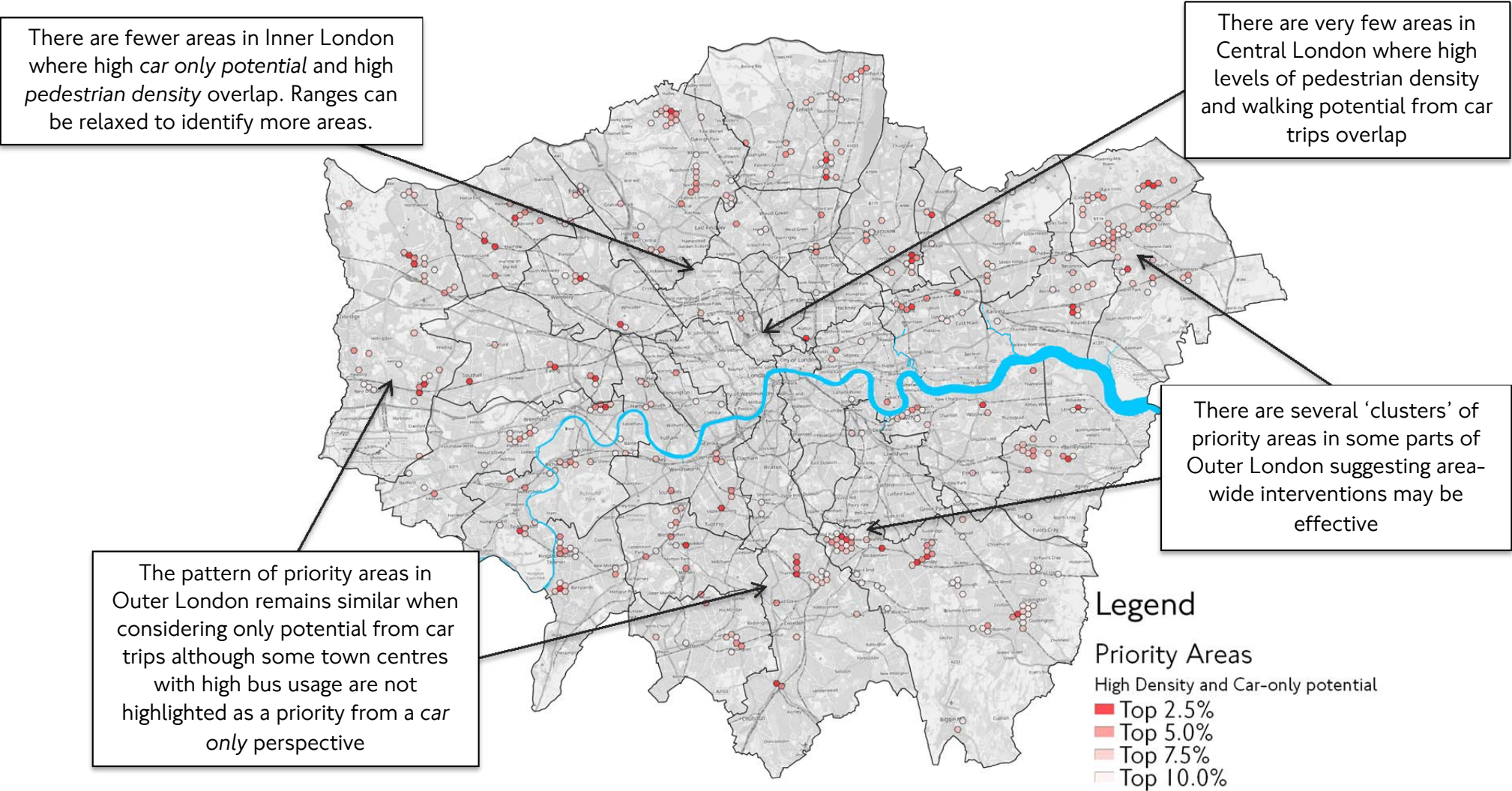


Figure I6 – Hexagons in the top 10 percent for pedestrian density and walking potential density from *car only* trips at a Borough level



4.3. Supporting Data

Data and insights from a variety of sources can be considered alongside the outputs of the SWA to provide a broader idea of what is happening in an area.

The Walking Action Plan¹¹ outlines the key barriers which deter people from walking. These barriers include:

- Not having enough time
- Weather
- Distance of journeys
- Having other ways of travelling that work better
- Having a disability
- Personal safety concerns
- Not being fit enough
- Too much traffic travelling too fast

The main barriers to walking journeys, aside from weather, are linked to the length of walking journeys and the availability of other modes.

¹¹ Walking Action Plan, Chapter 3: <http://content.tfl.gov.uk/mts-walking-action-plan.pdf>

TfL research shows there is very little variation in the ranking of the barriers from year to year suggesting that the identified barriers are the key ones to target.

Reasons such as not having enough time and the length of journeys can be interpreted as a more fundamental point about the journeys that people want to make necessitating long distances or travel times. This suggests local walking connectivity and land-uses are key enablers to walking.

Many of the factors identified may be very localised or personal in nature and this is not possible to explore at the strategic level. However, there are certain strategic datasets available in the City Planner Tool which can provide insight into the distribution of these barriers as shown in Table 6.

Table 6 - List of key walking barriers and related datasets available in City Planner tool

Barrier	Strategic Datasets
Not having enough time	Severance, Connectivity to services and opportunities, car dependency
Distance of journeys	
Having other ways of travelling that work better	
Personal safety concerns	Crime levels
Too much traffic travelling too fast	Traffic speeds
Streets are not pedestrian friendly	Pedestrian crowding
Road danger concerns	Road casualties

4.4. Summary

The framework combining existing *pedestrian density* and *walking potential* provides an effective method for highlighting areas where investment in walking could be targeted.

- The method outlined in this chapter allows priority areas within each Borough or local area to be identified and investigated further.
- Combining high *pedestrian density* with *car only walking potential density* provides a focus on areas where mode shift from car is theoretically possible. Many of these areas are in Outer London, and many are in and around Town Centres which could facilitate the expansion of existing regeneration and Healthy Streets schemes to fully capture benefits for pedestrians.
- This framework can be used to prioritise and support investment decisions once further investigation and planning has been carried out.
- The framework can be used alongside other data to help achieve the wider objectives required to deliver the MTS.

5. Next steps

5.1. Limits of current analysis

This first version of the SWA provides a good starting point for understanding existing walking patterns and the locations of potential for more walking by utilising data that is readily available.

Most of the analysis is at an aggregate London-wide level or at a neighbourhood (350m hexagon) level. This is useful for differentiating between areas and helping decide where to focus. However, it doesn't provide information on the amount of walking or where exactly the issues are within the neighbourhoods identified. It is likely that local planners are best placed to obtain detailed local information and develop schemes to overcome the challenges.

The SWA will be reviewed and updated as new data is collected, new analytical approaches are developed and more evidence emerges on the efficacy of schemes.

5.2. Data collection, analysis and the City Planner tool

Several data collection exercises are currently being undertaken by TfL which will improve the evidence base for walking. Analysis of the emerging data combined with other research in this field will be crucial to understanding which methods should be used to realise the greatest amount of walking potential and how this is having an impact on levels of walking in London.

The Healthy Streets Mystery Shopper surveys will quantify how London's streets are performing against the 10 Healthy Streets Indicators. These indicators summarise the essential elements that make a street an inclusive and healthy environment¹². The surveys will provide an objective measure of how different street types are performing across London as well as providing a framework to assess the impacts of interventions when surveys are carried out before and after a scheme is put in.

A programme of pedestrian counts across Central London will provide an accurate way of monitoring annual changes in pedestrian levels in this area. This will be a significant improvement on using LTDS to monitor walking trends in this area since LTDS does not capture non-London residents.

As new datasets are collected and developed, they will be also be added to the City Planner Tool. The existing datasets will also be updated periodically as new data from LTDS becomes available.

¹² Mayor's Transport Strategy 2018, Chapter 3: <https://tfl.gov.uk/corporate/about-tfl/the-mayors-transport-strategy>

5.3. Applications of the Strategic Walking Analysis

Information from the SWA can be combined with other data sources to help practitioners understand areas of focus for active travel or walking. By utilising other sources of data the benefits of existing programmes can be optimised and multiple objectives can be achieved.

5.3.1. Liveable Neighbourhoods

Liveable Neighbourhoods is a programme looking to deliver a better environment for walking, cycling and public transport through behaviour change initiatives as well as infrastructural changes. The Programme is delivered by Boroughs who are able to bid for TfL funding between £1m-£10m.

The objectives of the Liveable Neighbourhoods programme should complement and encourage walking and active travel. The programme presents a great opportunity to roll out measures in Boroughs which support the overall aims of the Mayor's Transport Strategy.

The SWA can be used alongside other data to ensure walking schemes are targeted in areas where they could have the greatest impact. It can also be used to provide evidence to support submissions.

Figure 17 shows the areas in each borough with the highest pedestrian density and walking potential and the current Liveable Neighbourhood programme areas.

5.3.2. The Planning for Walking Toolkit

The Planning for Walking Toolkit is a handbook for planners and designers involved in the redesign or creation of public realm, including streets.

The SWA is one of several tools set out in the toolkit to help assess where and how to prioritise resources and investment focused on walking. As well as ensuring that any proposed improvements for walking are considered as part of a strategic approach.

5.3.3. Active People MTS Target

The SWA can be used to help support TfL and the boroughs' work to deliver the MTS physical activity target.

Figure 18 overlays the areas which have the highest pedestrian density and walking potential in each borough with data that shows the locations of residents who report not achieving two ten-minutes of active travel per day. This map provides a snapshot of locations where investment could be prioritised to address both the physical activity and mode shift targets in the MTS.

This combined 'inactive people and walking analysis' will be supplemented in the near future by data that identifies the 'near market' of inactive people, as well as new qualitative research with Londoners. This research will focus on the support that the 'inactive near market' might require, to help them to achieve the benefits of 20 minutes of active travel each day.

Figure 17 – Hexagons in the top 10 percent for pedestrian density and walking potential at a Borough Level overlaid with current Liveable Neighbourhood Schemes

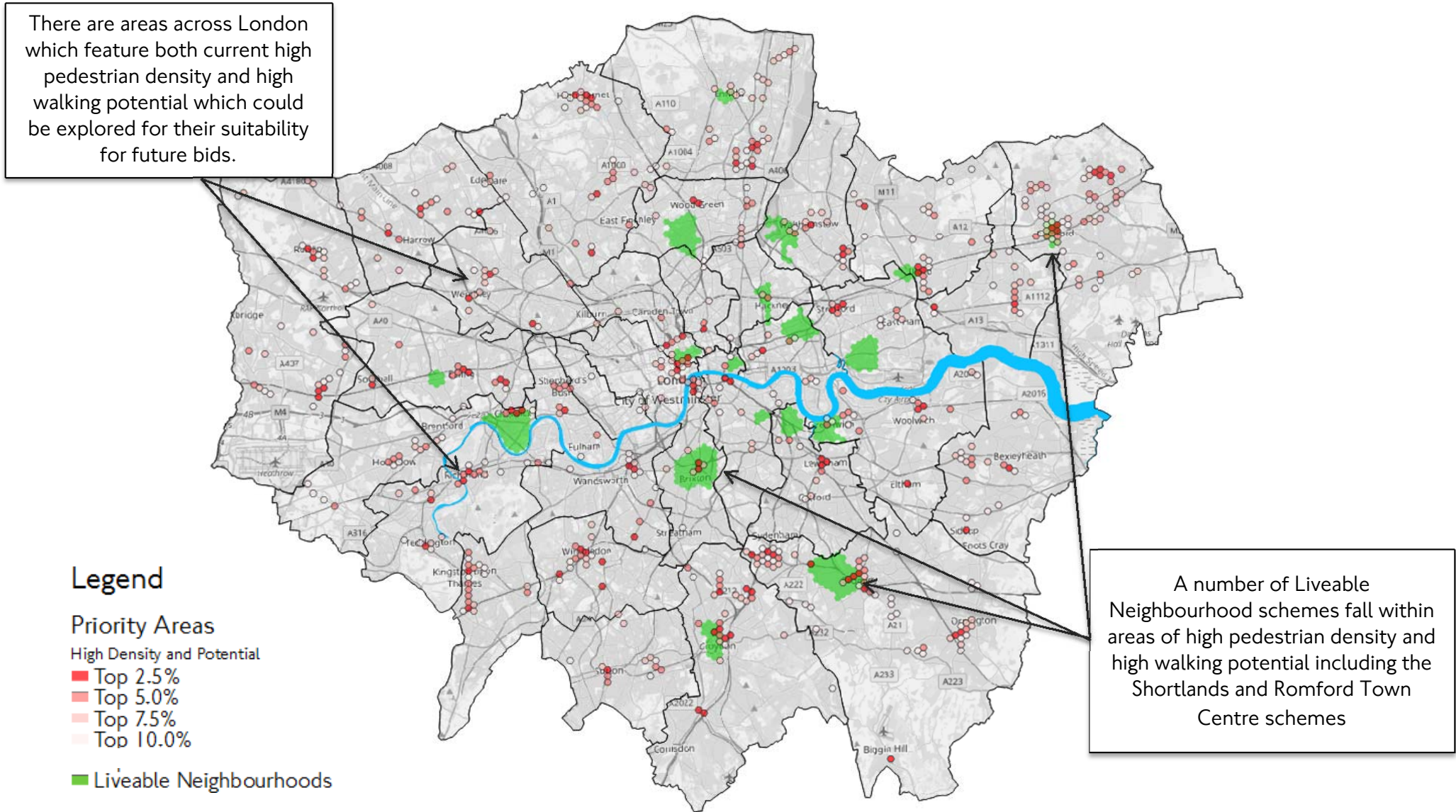
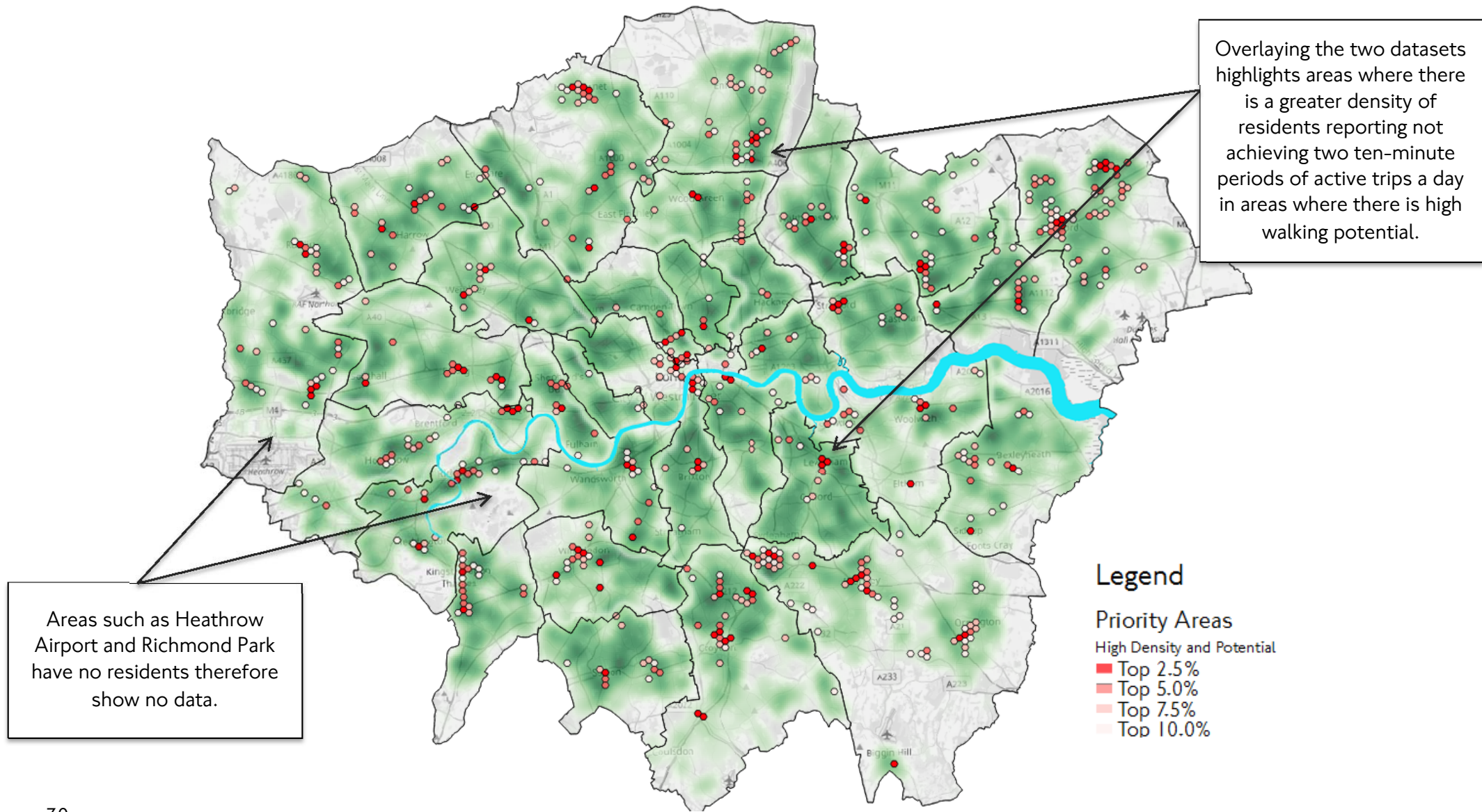


Figure I8 - Hexagons in the top 10 percent for pedestrian density and walking potential at a Borough level overlaid with a heat map showing London residents who report not achieving two ten-minute periods of active travel trips (average day - 2005/6 to 2015/16)



Overlaying the two datasets highlights areas where there is a greater density of residents reporting not achieving two ten-minute periods of active trips a day in areas where there is high walking potential.

Areas such as Heathrow Airport and Richmond Park have no residents therefore show no data.

- Legend**
- Priority Areas**
- High Density and Potential
 - Top 2.5%
 - Top 5.0%
 - Top 7.5%
 - Top 10.0%

Glossary

Car only walking potential is an estimate of the amount of existing trips that could reasonably be walked all the way, but currently are made by car

Car only walking potential density is an estimate of the amount of *car only* walking potential that could take place in a neighbourhood in terms of the total daily distance per unit area

Pedestrian density is a measure that estimates the amount of walking that takes place in a neighbourhood in terms of the total daily distance walked per unit of area (London Residents only).

Public Transport Access Level (PTAL) measures how many stations and bus stops are within walking distance and how frequent the services are from those stations and stops. PTAL values range from zero to six, where the highest value represents the best connectivity. More information can be found at <http://content.tfl.gov.uk/connectivity-assessment-guide.pdf>

Total walking potential is an estimate of the amount of existing trips that could reasonably be walked all the way, but currently are made by other modes (London residents only).

Total walking potential density is an estimate of the amount of walking potential that could take place in a neighbourhood in terms of the total daily distance per unit area.

Town Centre Definitions

Central Activities Zone (CAZ) Frontages – refers to mixed use areas usually with a predominant retail function. The most significant CAZ Frontages include Kings Cross / St Pancras and Covent Garden.

District centres – distributed more widely than the Metropolitan and Major centres, providing convenience goods and services for more local communities and accessible by public transport, walking and cycling. Typically they contain 10,000–50,000 sq.m of retail, leisure and service floorspace. Some District centres have developed specialist shopping functions, eg Cricklewood, Penge and Hayes.

International centres – London's globally renowned retail destinations with a wide range of high-order comparison and specialist shopping with excellent levels of public transport accessibility, eg West End and Knightsbridge.

Metropolitan centres – serve wide catchments which can extend over several boroughs and into parts of the wider South East region. Typically they contain at least 100,000 sq.m of retail, leisure and service floorspace with a significant proportion of high-order comparison goods relative to convenience goods.

These centres generally have very good accessibility and significant employment, service and leisure functions, eg Croydon, Shepherds Bush and Wood Green.

Major centres – typically found in inner and some parts of outer London with a borough-wide catchment. They generally contain over 50,000 sq.m of retail, leisure and service floorspace with a relatively high proportion of comparison goods relative to convenience goods. They may also have significant employment, leisure, service and civic functions, eg Woolwich, Kilburn and Richmond.

Neighbourhood and more local centres – typically serve a localised catchment often most accessible by walking and cycling and include local parades and small clusters of shops, mostly for convenience goods and other services. They may include a small supermarket (typically up to around 500 sq.m), sub-post office, pharmacy, laundrette and other useful local services. Together with District centres they can play a key role in addressing areas deficient in local retail and other services.

Walk trips capture end to end trips which are walked all the way. For example, a trip from home to work which is walked the whole way without using another mode of transport.

Walk stages are walks which are made as part of a longer trip, involving other modes. For example, a walk stage from home to a London Underground station, followed by another journey stage on the Underground, and then a further walk stage to the final destination.

Appendix: Using the framework in the City Planner Tool

The City Planner Tool (CPT) is a web-based GIS tool developed by TfL. It contains a range of planning datasets including the datasets described in the Strategic Walking Analysis and has been made available to the London Boroughs. It allows users to access the data as well as use the framework described in this chapter.

A guide on how to use the City Planner Tool is available on request from TfL¹³. This section provides a simple guide of how to view data and use the tool to set up the framework.

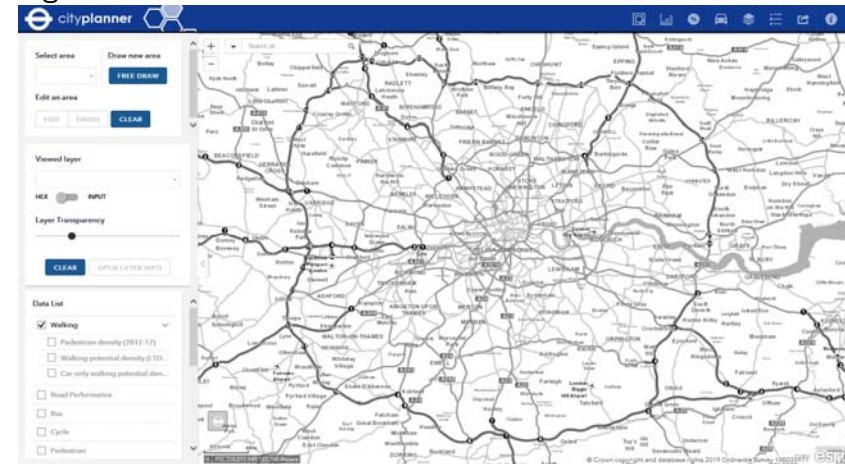
The datasets are also available in various GIS formats to other stakeholders on request from TfL.

Selecting and viewing the relevant datasets

The Strategic Walking datasets are accessed from the “Walking” tab in the “Data List” in the bottom left corner of the CPT as shown in Figure 19.

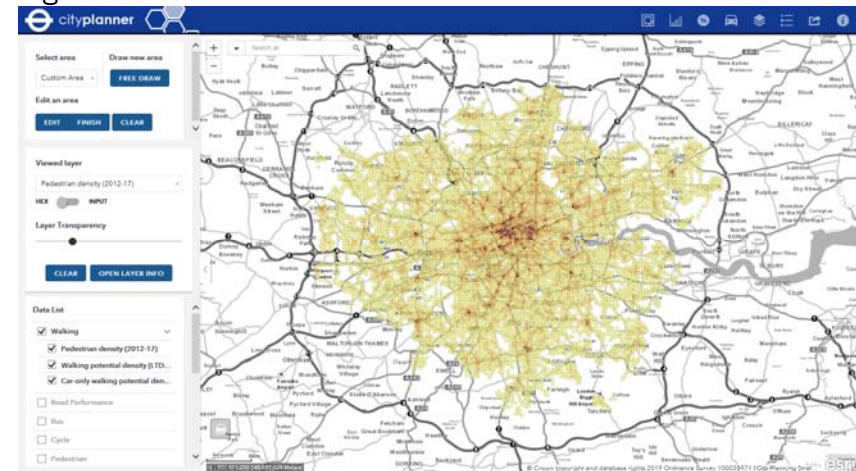
¹³ For queries regarding the City Planner Tool, contact CPT@tfl.gov.uk

Figure 19



The area of interest is selected in the “Select area” drop-down box in the top left. The layers can then be viewed individually by using the “Viewed layer” drop-down box as in Figure 20.

Figure 20



The data can be removed from the map by pressing the “Clear” button in the “Viewed layer” section.

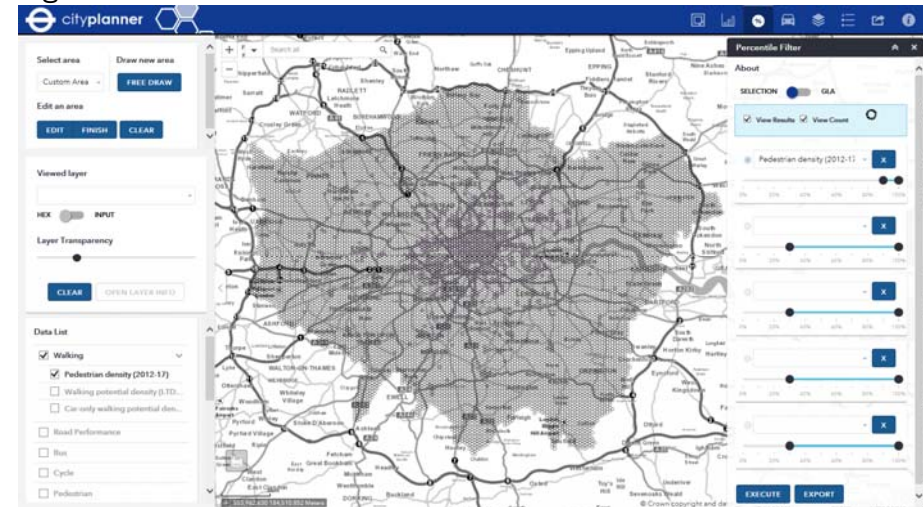
Constructing the framework and viewing key areas

The “Percentile filter” tool in the CPT makes it possible to highlight areas where a particular quantity, such as pedestrian density, is particularly high or low. This section describes how to apply a filter to a single dataset, and then how the framework is constructed by applying a filter to two datasets together.

To highlight only areas where, for example, pedestrian density is high, this dataset is selected from the “Data List”. The percentile filter tool is opened by clicking on the “%” symbol on the top right of the CPT which automatically loads the pedestrian density dataset into the first box.

Adjusting the slider underneath the dataset name determines what percentile of the data is shown. For example, to highlight the areas which are in the top 10% for pedestrian density, this slider would be moved to the right as shown in the image below. The “EXECUTE” button needs to be clicked to view the results. The result at a Greater London level is shown in Figure 21.

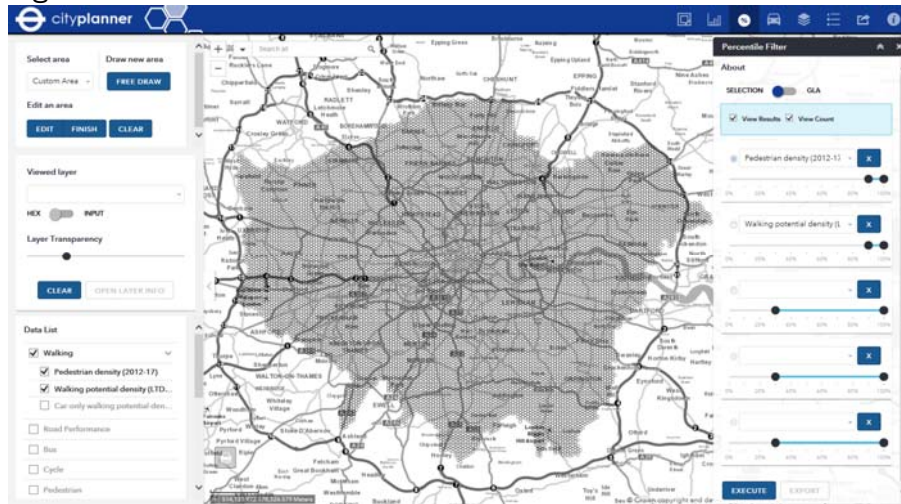
Figure 21



To view the results of the framework outlined in this chapter which combines pedestrian density and walking potential density, the percentile filter tool is used on these two datasets together.

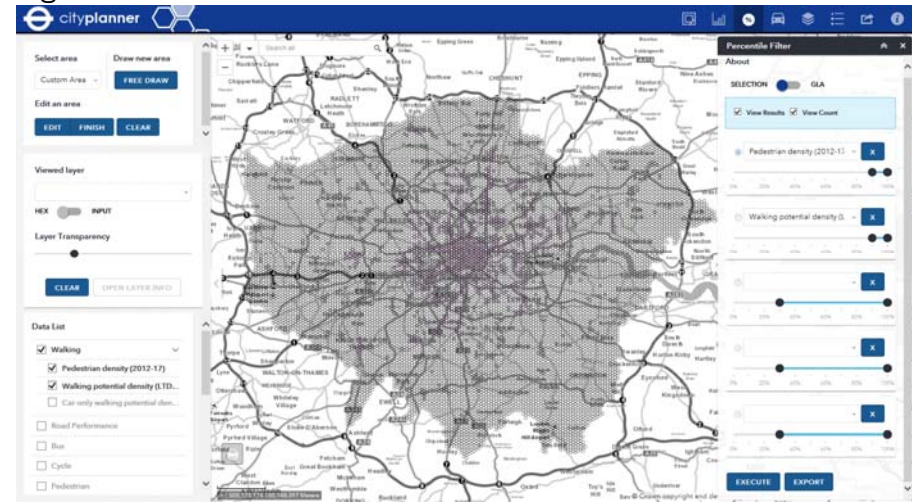
First the pedestrian density and the walking potential density need to be selected from under the “Walking” tab on the left-hand side. When this is done, opening the Percentile filter tool will load these datasets in by default as shown in Figure 22.

Figure 22



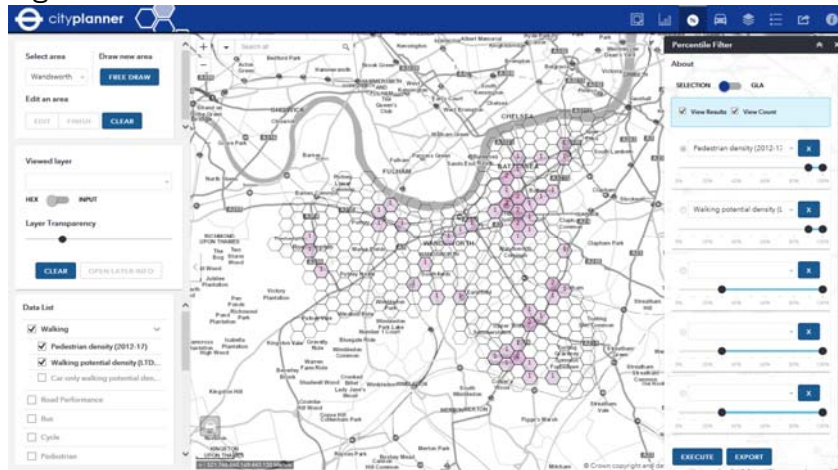
The percentile filters can then be adjusted for both the datasets. In the example presented here, this is set to 10%. The slider at the top of the percentile filter tool should be set to “SELECTION”. This ensures that the percentage is calculated based on the area, rather than the entire Greater London area. Pressing “EXECUTE” at the bottom displays the results as shown in Figure 23.

Figure 23



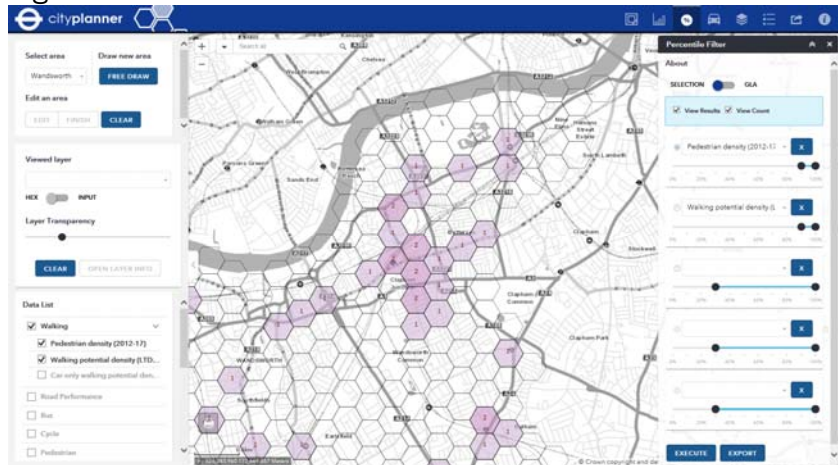
The results in the map window highlight areas which meet both criteria as well as only one of the criteria. Zooming into an area such as a particular Borough allows areas which have both high existing density and high walking potential (i.e. where both criteria are met) to be identified. An example for the London Borough of Wandsworth is shown below in Figure 24.

Figure 24



Areas of where both pedestrian density and walking potential are high are highlighted darker in the map window.

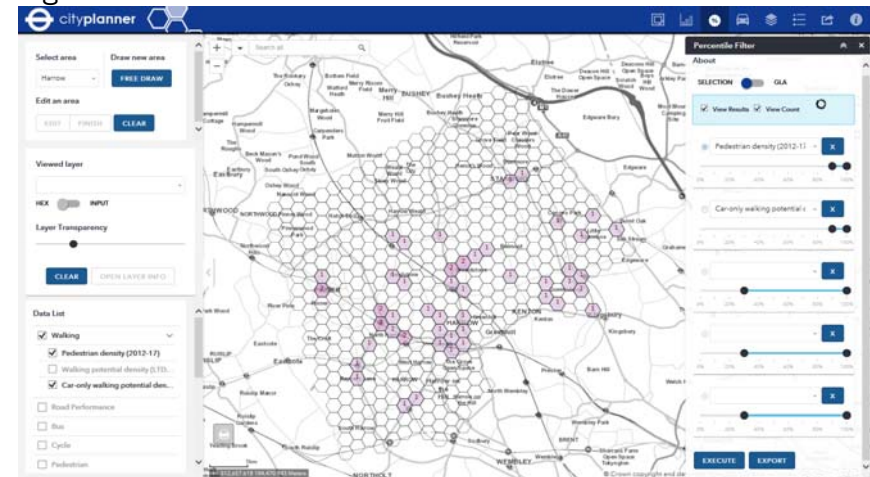
Figure 25



These priority areas are also denoted with a “2” in the hex when the “View Count” box is ticked as shown in Figure 25. Areas where only one of the datasets is high are highlighted with a “1”.

It is recommended that this analysis is carried out using both walking potential densities for all modes and walking potential from *car only* trips separately. In outer London Boroughs where the majority of potential is from car trips, the latter will be particularly useful. An example looking at this combination for the London Borough of Harrow is shown in Figure 26 below.

Figure 26

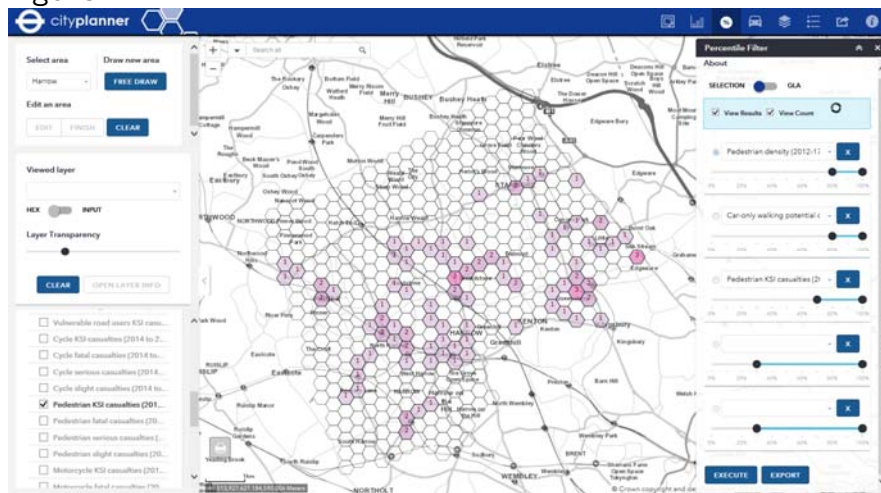


In some Boroughs, particularly in Inner London there are very few such overlaps and so it may be appropriate to use a wider percentage cut off when selecting priority areas. This can be done by adjusting the percentile filters as previously discussed.

Once the key areas meeting both criteria are identified, they warrant further investigation. Further analysis in the City

Planner Tool can be carried out by using additional datasets, such as those listed in the chapter on barriers. For example, data on pedestrian road casualties can be added as an additional filter in the percentile filter tool on top of the framework. An example highlighting areas which in the top 20% for pedestrian density and *car only* walking potential density, as well as in the top 30% for pedestrian KSIs¹⁴ is shown in Figure 27 below.

Figure 27



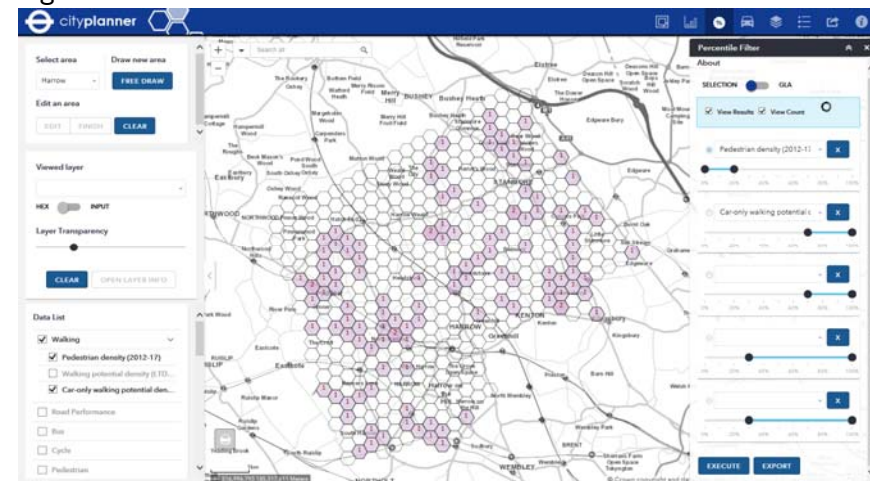
It is strongly recommended that the results from the CPT support and are used in conjunction with local knowledge. Many barriers to walking are very localised and cannot be fully understood or even identified from the strategic data currently available and presented here.

¹⁴ Killed or Seriously Injured

Therefore, due to the limited spatial detail of the available data, once the priority areas are identified in the CPT, a useful next step is to carry out site visits to get more detailed local information and scope potential interventions.

Alternative approaches to identifying priority areas can also be used depending on the particular priorities of a region. Highlighting areas with high potential but low current walking levels may identify areas where barriers are preventing the local population from walking. An example highlighting areas which are in the top 30% for *car only* walking potential density and bottom 20% for pedestrian density is shown in Figure 28 below.

Figure 28



Contact

For more information about the Strategic Walking Analysis or the City Planner Tool contact

CPT@tfl.gov.uk

