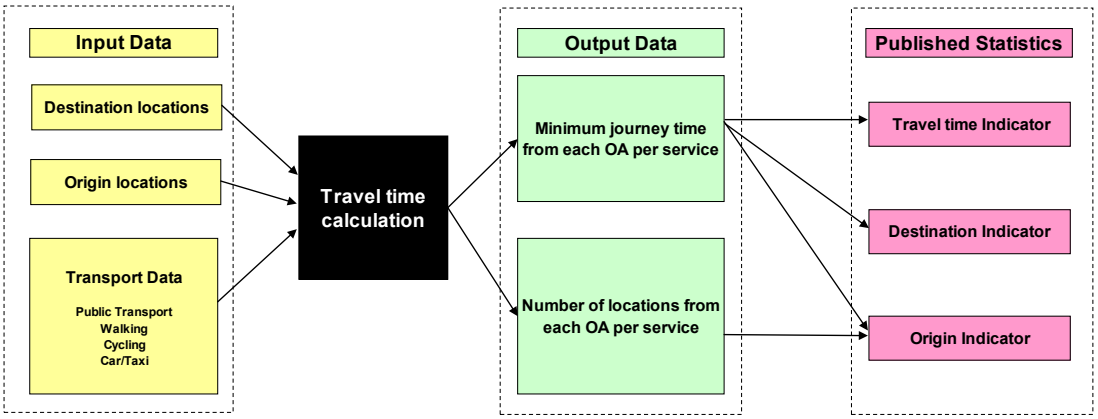
Accessibility Statistics: Travel time calculation methodology

1. This document gives an overview of how the travel time calculations are carried out and used in the Department's accessibility statistics.

2. Travel times are calculated for journeys between origin points and destinations for each of the key services covered by the accessibility statistics (Employment, Town centres, Food stores, GPs, Hospitals, Primary Schools, Secondary Schools, and Further Education Institutions). The journey times are calculated for the following modes: by public transport/walking, by cycling, by car.

3. The following flowchart summarises the process, with more detail provided in the following sections.

Accessibility Statistics calculation process



A. Input Data

4. This section sets out the processing that is done on the input data: the origin points, the destination points, and the modes of travel. Further information on the data sources for the input data can be found in Annexes A and B of this note.

Origins

5. The origin points used for all travel time calculations are the population centroid of each Output Area in England as specified in the 2001 Census Boundaries[1]. These origin points connect to the transport network through the road and footpath network.

Destinations

6. The Department has identified nationally consistent data sources for the locations of each destination in England. Further information on each of the sources used can be found in Annexes A and B of this note.

[1] Available at http://www.statistics.gov.uk/census2001/product_boun_oa_mid_mif.asp.

7. For all destinations apart from Employment, the locations are given by easting and northing coordinates. The Output Area[2] that each set of coordinates sit within is identified.

8. For Employment destinations the data used are the number of jobs in a Lower Super Output Area (which is made up of several output areas). To assign a location to this, the employment data are associated with the population weighted centroids of the Output Areas that lie within the LSOA as a whole. The employment destination is assumed to be able to connect to the transport networks at the population centroid of these Output Areas.

9. The Employment location data are also split into three categories to group them by the number of jobs available within each location, identifying those locations with between 100 and 499 jobs, between 500 and 4,999 jobs, and at least 5000 jobs.

Transport Data

10. The transport input data are needed to determine the network within which journeys between origin and destinations can be made (See Annexes A and B for further information on the sources mentioned below).

Public transport

11. The public transport network is captured by using the National Public Transport Data Repository (NPTDR) – a snapshot for a single week of public transport access points (e.g. bus stops) and timetables for England.

12. These data are then processed to create a public transport access point location for each Output Area. Where there is only one bus stop or rail station in an Output Area the coordinates of that stop or station are used to define the location of the public transport access point. Where there are multiple access points (e.g. several bus stops and a rail station) in the Output Area, the stop with the highest frequency of buses is used as the location of the access point for the Output Area. Using this method does result in a few Output Areas without any public transport access points. Information on how these are dealt with is set out in section B.

Walking

13. The walking network is captured by identifying the road and footpath walking network in the Integrated Transport Network.

Cycle

14. The cycling network is captured identifying the road network including cycle paths and bridleways from the Integrated Transport Network.

Car

15. The car network is captured by using the Integrated Transport Network.

[2] Output areas are small geographies, at approximately neighbourhood level, to enable analysis to be completed at a low level. For further information, see http://www.statistics.gov.uk/geography/census_geog.asp#oa.

B. Travel time calculation

16. The travel times between origins and destinations are captured in a journey time matrix. This is a structured hierarchical matrix – a "sparse matrix" with structure defined as follows.

    - To create the public transport matrix involves building travel time paths out from each public transport access node starting with the nodes with the highest frequencies of public transport services and working down to the nodes with the lowest frequencies. The calculations start from the highest frequency public transport access node in each MSOA (Middle Layer Super Output Area). Paths are then added incrementally until no better paths can be found between the OA level public transport access nodes. Public transport travel times from OAs with no public transport access points are calculated by adding the walk time from the relevant OA population centroid to the nearest public transport access node. It is assumed that all residents of each OA start at the population weighted centroid and walk to the bus stop. For public transport trips the destination is assumed to be accessed through the public transport access node (see paragraph 12) for that Output Area.
    - Car and cycle users are assumed to be able to start at the population centroid. For car and cycle travellers the connection is made directly from the road and footpath network to the destination point as specified by the co-ordinates.
    - For the walk and cycle networks, all roads in the network are used other than motorways.
    - To create the car matrices, all roads other than alleys and local streets[3] are used in the analysis. A similar approach to that used for public transport is adopted by building out fully a MSOA level matrix across England and infilling this to each OA using the local road network.

17. Routes are calculated using the parameters in the tables below.

Public transport assumptions

	Assumption
Minimum journey time for a journey that involves boarding public transport	5 mins
Door to public transport stop/access point (maximum time/distance)	Maximum distance: 1.25mile
Waiting time at bus stop/station/etc	Maximum time: 20 mins
Maximum number of interchanges	3
Interchange time	Minimum 10 mins

NB: Speed of Public Transport is derived from the timetabled service (in NPTDR)

[3] A check across England shows that the omission of the local street network makes no impact on car travel times to the nearest minute except for 90 OAs. Where there is an impact on journey times of greater than 1 minute, the OAs are large and the level of error is small compared to other approximations such as using OA level geography for the analysis. The benefits of excluding the local street network therefore exceed the dis-benefits.

Walking assumptions

	Assumption
Maximum distance walk to public transport stops/access point	1.25 mile
Maximum distance walk from public transport stops/access point	1.25 mile
Walking speed	3 mph

Cycling assumptions

	Assumption
Door to cycle at start of journey (minimum time)	5 minutes
Cycling speed (breakdown below)	
Motorway	0 mph
Urban Motorway	0 mph
A road	10 mph
B road	10 mph
Minor road	10 mph
Local street	10 mph
Private road – restricted access	3 mph
Private road – public access	10 mph
Pedestrian street	3 mph
Alley	3 mph
Time at junctions	None
Cycle parking time	None

Car assumptions

	Assumption
Minimum journey time for a journey that uses a car	5 minutes
Car speed[4]	Derived from Trafficmaster data
Time at junctions	None
Car parking time	None

C. Output Data

18. The ten shortest travel times from each Origin (i.e. Output Area) are calculated for each key service using the journey time matrices calculated as set out in Section B.

19. For cycle modes it is assumed that these travel times can be achieved at all times of day. The times are sorted in ascending order, and then checks are made to ensure that there is a minimum travel time of 5 minutes to reflect the time needed to get on a bike, and find a suitable place to park a cycle near the destination.

[4] These speeds are well within the relevant national speed limits and reflect typical overall speeds of a real journey. For example, in a local street with a 30mph speed limit, the default link car speed is approximately 22mph. However, these speeds do not explicitly take account of congestion delays. The exception is for the car mode, which in the 2010 and subsequent indicators is based on Trafficmaster data (data generated from the movements of GPS-equipped 'probe' vehicles which are mapped to a representation of the road network in order to estimate average vehicle journey times across England), taking into account actual delay on each road link. Standard default speeds were used in previous years' indicators.

20. For car and public transport/walking mode the journey times vary throughout the day due to road congestion and variation in public transport timetables, so there is an intermediate step, as follows:

Representative Time Analysis

21. As timetable data is available for public transport, the travel times can be calculated for any period of the day. Car speeds by road link are available for four time periods 7am-10am, 10am-4pm, 4pm-7pm and 7pm-7am and it is assumed that these speeds apply uniformly across these time periods..

22. For each of the ten shortest routes from each Origin to each key service, the times are calculated for 23 half hour slots for incoming and outgoing trips (i.e. 46 travel times per destination).

23. Each of the 46 travel times is then weighted by likelihood of travel (See Annex E for details of the weightings by service and half hour slot for incoming and outgoing trips) and aggregated up to calculate a final representative travel time (i.e. one travel time per destination). Each representative time has an associated frequency score which describes the likelihood of the travel time being achieved (i.e. a trip to a GP at 9am might take 30minutes but the same trip at 3pm might take 15 minutes so by weighting all 46 potential journey times the frequency score might show that a representative time of 20minutes would have a 75% probability of being achieved)..

24. The following formulae set out how the final representative travel time and the frequency are calculated:

$$\text{Final Representative Time} = \frac{\sum(TPF * T)}{\sum(TPF)}$$

where:

$TPF = PU \times \exp(a * T)$

T = Trip time
PU = Probability of using this route in time period
a = Time constant

$$\text{Frequency (\%)} = \frac{\sum(TPF)}{S(max)}$$

where:

$S(max) = \exp(a * \text{Final Representative Time})$

25. Once these representative travel times (for each key service) have been calculated using this intermediate step, the times are sorted in ascending order and checks are made to ensure that there is a minimum travel time of 10 minutes for trips that use public transport and 5 minutes by car to represent the reality of waiting, boarding and alighting public transport and parking a car.
26. Finally a check is made for all public transport journeys of up to 1.25 miles that the calculated representative travel time is not more than the walk time between the centroid of each OA and the co-ordinates of the destination, and for journeys of less than 10 minutes that the travel time is not less than could be achieved at the maximum walking speed. Due to the use of population weighted centroids as network connectors and averaging across multiple times of day there can be instances where output times fall outside these permissible limits. If this happens then the calculated representative times are replaced with the walk time. This final

check was introduced for the 2013 indicators, and was also retrospectively applied to 2011, producing a second revised set of 2011 statistics to provide a consistent basis for comparison with 2013.

Composite

27. Combined Public Transport and Cycling travel times are calculated by weighting each Public Transport travel time by 31/34 and each Cycling time by 3/34 and summing the result.

D. Producing the statistics

28. A series of statistics are produced from the travel time calculation (as outlined in this document), called the travel time, destination and origin indicators. These are discussed further in the guidance note section 1 (available on the Accessibility Statistics web page).

Travel time indicators

29. The minimum travel time indicator is the travel time to access the nearest service by each mode, as calculated in Section C.

30. The Lower Super Output Area and Local Authority level travel time indicators are calculated by producing population-weighted averages, (based on the 2001 census population), of the Output Area level indicators.

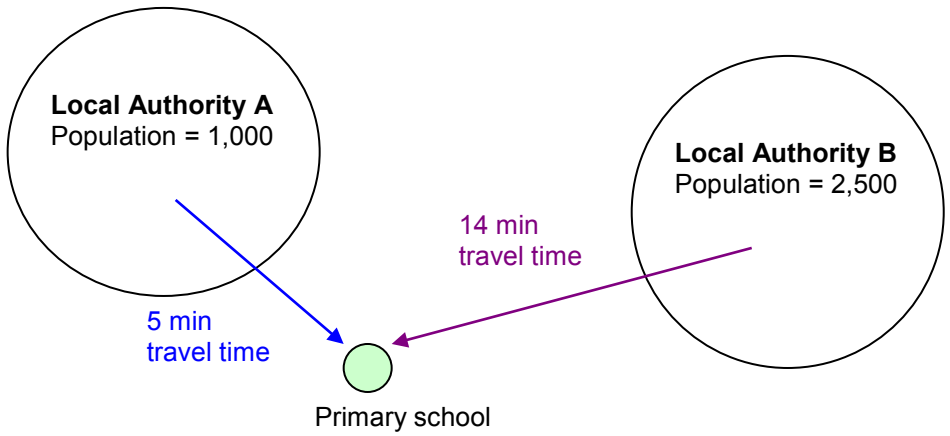
Destination indicators

31. The destination threshold indicators are calculated by identifying the travel time to the nearest service and establishing whether it is less than the threshold (see the separate technical note *Accessibility Statistics: Guidance* for the threshold times for each service).

32. For the continuous destination indicators, the population for each output area is weighted by a factor dependent on the time to the nearest service and a deterrence parameter (see Annex F of this note for information on the deterrence parameters used) according to the service and mode.

33. The example overleaf illustrates how the threshold and continuous destination indicators are calculated for two fictitious local authorities. (In reality, there would most likely be multiple primary schools within each local authority and the indicator calculations would be done at output area (OA) level, and then aggregated up to lower layer super output area (LSOA) and LA level for reporting.)

Example I
Children aged 5-10 within local authority A can access a primary school in 5 minutes by public transport or walking, and children in local authority B can access a primary school in 14 minutes by public transport or walking:



Threshold Indicator - Percentage of 5-10 year olds less than 15 minutes away from a primary school
Local Authority A = **100%**
Local Authority B = **100%**

Continuous Indicator – Percentage of 5-10 year olds weighted by the access to primary schools (Using the function $\sum P\exp(-\lambda t)$ where P is the area population, t is the travel time from that population to the destination, and λ is the deterrence parameter as set out in the guidance note)

Local Authority A = 1000 x exp(-0.107 x 5) = 585.67
= As a percentage of total target population = 585.67 / 1000 = **58.6%**

Local Authority B = 2500 x exp(-0.107 x 14) = 558.94
= As a percentage of total target population = 558.94 / 2500 = **22.4%**

To show how a change in either the location of services or the transport network can affect the indicators, see the example below.

Example II
Expanding on the Example I, children aged 5-10 within local authority B can now access an additional primary school in 5 minutes, by public transport or walking:

Threshold Indicator - Percentage of 5-10 year olds less than 15 minutes away from a primary school
Local Authority B = **100%**

Continuous Indicator – Percentage of 5-10 year olds weighted by the access to primary schools (Using the function $\sum P\exp(-\lambda t)$ where P is the area population, t is the travel time from that population to the destination, and λ is the deterrence parameter as set out in Annex F)

Local Authority B = 2500 x exp(-0.107 x 5) = 1464.17
= As a percentage of total target population = 1464.17 / 2500 = **58.6%**

34. By locating an extra school five minutes from children in local authority B, the proportion of the target population less than 15 minutes away from a primary school, i.e. the threshold indicator, has not changed. However, the proportion of the target population able to access a primary school within a reasonable time, i.e. the continuous indicator, has increased from 22.4% to 58.6% due to the nearest primary school changing from 14 minutes to five minutes, illustrating how the continuous indicator is more sensitive to changes.

35. The Lower Super Output Area and Local Authority level destination indicators are calculated by producing population-weighted averages, based on the target population, of the Output Area level indicators.

Origin indicators

- Employment centres

36. The employment origin indicators look at the number of employment sites accessible with at least 100 jobs, at least 500 jobs and at least 5000 jobs. For each category, up to ten employment centres are identified as accessible.

- Other services

37. The origin threshold indicators use the nearest five or ten destinations, depending on which service, and identify how many of these services can be accessed within the threshold times.

38. For the origin continuous indicators, the population for each output area is weighted by a factor dependent on the time to the nearest five or ten services and a deterrence parameter according to the service and mode.

Example III
Expanding on the Example I, children aged 5-10 within local authority A can also access 2 other primary schools in 10 and 15 minutes respectively, by public transport or walking

Threshold Origin Indicator – The number of primary schools less than 15 minutes away
Local Authority A = **2 primary schools**

Continuous Origin Indicator – The number of primary schools accessible, weighted by the likelihood of travel (Using the function $\sum O\exp(-\lambda t)$ where O is the opportunity, t is the travel time from that population to the destination, and λ is the deterrence parameter as set out in Annex F)

Local Authority A = 1 x exp(-0.107 x 5) + 1 x exp(-0.107 x 10) + 1 x exp(-0.107 x 15)]
= **1.13 primary schools**

39. The Lower Super Output Area and Local Authority level origin indicators are calculated by producing population-weighted averages, based on the 2001 census population, of the Output Area level indicators.

Business Plan indicator

40. The Business Plan accessibility impact indicator is an index combining the data on average travel time for households to access key services by public transport/walking with private car ownership, to represent those areas with the greatest accessibility needs.

41. The indicator therefore uses two data components: accessibility and car ownership.

- Accessibility data

42. The Accessibility data are taken from travel times to the nearest key services by public transport/walking, as outlined in section B of this document. The methodology for this calculation was adjusted in 2013, and this adjustment affects travel times from 2011 onwards. See paragraph 26 above.

43. An average of the seven key services is used (Travel times to town centres are not included since these data are not available prior to 2009). The travel time is calculated at OA level for each of the seven key services, and then each travel time is weighted by the population for that output area to produce average travel times for each local authority/region/country. An average of the seven travel times at LA, region or national level is then calculated and used. The average time is calculated by comparison with the England average to ensure that all seven services are given equal weight.

- Car ownership

44. The following data sources are used:

Variable name	Data source
Number of private cars licensed	DfT Vehicle Licensing Statistics (OA level)
Number of households	2007-2011: Residential postcode delivery points from the ONS Postcode Directory (OA level). 2011 revised – 2013: GLG household estimates

45. The number of private cars per household is calculated by dividing the number of private cars by the number of households. This figure can then be used to compare local authorities on a consistent basis.

- Impact Indicator

46. The accessibility indicator is calculated by dividing the car ownership (number of private cars per household) by the square of the average travel

time by public transport/walking. This is completed at each geographical level.

47. The natural result of this calculation would be to bias the public transport time to the hospital travel time as it is, in most cases, larger than for the other six services. This bias is removed by comparing the result of the calculation outlined in paragraph 46 with the same calculation for England in a base year. The base year used in the 2013 statistics is 2011; 2010 was used previously.

48. The calculation of the indicator score in each area (local authority, region, urban / rural classification or England) for each service is given in the equation below:

$$S_{i,j}^{x} = \frac{\left(\frac{C_i^x}{PT_{i,j}^x / PT_{n,j}^x} \right)^2}{\left(\sum_{i,j}^{2010} \left(\frac{C}{PT/PT} \right)^2 \times P \right) \Big/ \sum_{i}^{2010} P} \times 100$$

Where *S* = the indicator score for area *i*, service *j* and year *x*; *PT* = public transport time in area *i*, service *j* and year *x (or 2011)*; *C* = cars per household in area *i* and year *x (or 2011)*; and *P* = population in area *i* in 2011.

49. The total indicator score for each area across all services is the average of all services. This is as given below:

$$I_i^x = \frac{\sum_{i}^{x} S_i^x}{7}$$

Where *I* is the indicator score (with 100 as the national average in 2011) for area *i* and year *x*.

50. The indicator is expressed as an index with the base value being the England 2011 figure representing 100. All other values, at each geographical level, are indexed in relation to this value.

51. This produces an index where values greater than 100 represent areas with lower travel time or greater car ownership levels than the national average in 2011. An index with a value less than 100 represents an area with greater travel time or lower car ownership levels than the national average in 2011.

52. This is completed at each geographical level for each year, keeping the 2011 national average as the base (regardless to whether local authority or regional data is being calculated).

53. Due to the change in the underlying public transport/walking travel time calculation (see paragraph 26 above), and the change to the source data for household numbers at the same time (see paragraph 44 above), two versions of the index have been calculated for 2011. The first is for comparison with the data series running from 2007 to 2011, and the other using the revised 2011 public transport/walking statistics and household

data, for comparison with subsequent years. The value of the England index for 2011 is 100 in both cases, but at lower geographical levels there will be differences, due to the index calculation method.

Annex A Data source information for 2013

Data sources for Destination Locations

The table below shows the data sources used for each service, population and 'at risk' population in the 2013 statistics. For information on the data sources used in previous year's statistics, please see Annex B.

Service	Data source for the locations of the service	Data source for users of the service	Data source for 'at risk' users of the service
Employment	**Data**: No. of jobs available in a LSOA in 2013. **Source**:ONS Business Register Employment Survey[5] **Further information**: https://www.nomisweb.co.uk/default.asp	**Data**: Number of 16-74 year olds in each output area **Source**: 2001 Census + LSOA updates from ONS 2012 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp ONS Mid year population estimates: http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Population+Estimates	**Data**: Number of people in receipt of jobseekers allowance in each lower super output area in December 2013. **Source**: ONS Jobseekers allowance claimant data **Further information**: https://www.nomisweb.co.uk
Food stores	**Data**: Location of grocery/supermarkets or convenience stores in January 2013. **Source**: Retail locations. **Further information**: http://www.retaillocations.co.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from DCLG 2013 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from DCLG 2013 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Primary school	**Data**: Location of all open primary schools on Sept 2013. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 5-10 year olds in schools in each output area. **Source**: DfE School census data (Jan 2013) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 5-10 year olds known to be eligible for free school meals in each output area. **Source**: DfE School census data (Jan 2013) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Secondary school	**Data**: Location of all open secondary schools on Sept 2013. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 11-15 year olds in schools in each output area. **Source**: DfE School census data (Jan 2013) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 11-15 year olds known to be eligible for free school meals in each output area. **Source**: DfE School census data (Jan 2013) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Further education	**Data**: Location of all open further education and sixth form colleges/school sixth form on Sept 2013. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 16-19 year olds in each output area. **Source**: 2001 Census + LA updates from ONS 2012 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp	

[5] The Business Register Employment Survey data is available from the Office for National Statistics (ONS) but does have a charge associated to it (currently £150 per license). To request more information or to purchase these data, contact annual.employment.figures@ons.gov.uk. Please note that prior to 2009, data was sourced from the ONS Annual Business Inquiry, which has now been superseded by the Business Register Employment Survey.

Service	Data source for the locations of the service	Data source for users of the service	Data source for 'at risk' users of the service
		ONS Mid year population estimates: http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14357	
GP	**Data**: Locations of GP surgeries. **Source**: Point X GP Surgeries dataset. **Further information**: http://www.pointx.co.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from DCLG 2013 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from DCLG 2013 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Hospital	**Data**: Location of hospitals (with an A&E department, or with an outpatient department and 300 or more beds). **Source**: Point X Hospital dataset **Further information**: http://www.pointx.co.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from DCLG 2013 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from DCLG 2013 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Town Centre	**Data**: Location of town centres in 2004 **Source**:DCLG Town Centre and Retail planning statistics for England and Wales. **Further information**: http://www.planningstatistics.org.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from DCLG 2013 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from DCLG 2013 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections

Data sources for Origin Locations

The OAs used to calculate the 2013 statistics are still those based on the 2001 census.

Service	Data source for the origin points
All	**Data**: Population centroid of each Output Area in 2001 **Source**: ONS 2001 Census Boundaries **Further information**: http://www.statistics.gov.uk/census2001/product_boun_oa_mid_mif.asp

Data sources for Transport modes

Mode	Data source	Further information
Public Transport	Traveline National Data Set database of transport services.	http://traveline.info/tnds.html
Walk	Roads and footpaths walking network from Integrated Transport Network (ITN)[6]	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/
Cycle	Road network from Integrated Transport Network (ITN)[15] – this includes cycle paths and bridleways.	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/
Car	Road network from Integrated Transport Network (ITN)[15]	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/

[6] The Integrated Transport Network (ITN) is an Ordnance Survey dataset containing details of the transport network for Great Britain. This covers details about each link of the network such as the road class, nature of road (e.g. single carriageway, dual carriageway) and the road routing information (e.g. one way streets).

Annex B Archived data source information for previous years

Data sources for Destination Locations 2010

Service	Data source for the locations of the service	Data source for users of the service	Data source for 'at risk' users of the service
Employment	**Data**: No. of jobs available in a LSOA in 2012. **Source**:ONS Business Register Employment Survey[7] **Further information**: https://www.nomisweb.co.uk/default.asp	**Data**: Number of 16-74 year olds in each output area **Source**: 2001 Census + LSOA updates from ONS 2011 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp ONS Mid year population estimates: http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Population+Estimates	**Data**: Number of people in receipt of jobseekers allowance in each lower super output area in December 2012. **Source**: ONS Jobseekers allowance claimant data **Further information**: https://www.nomisweb.co.uk
Food stores	**Data**: Location of grocery/supermarkets or convenience stores in January 2012. **Source**: Retail locations. **Further information**: http://www.retaillocations.co.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from DCLG 2012 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from DCLG 2012 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Primary school	**Data**: Location of all open primary schools on Sept 2012. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 5-10 year olds in schools in each output area. **Source**: DfE School census data (Jan 2013) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 5-10 year olds known to be eligible for free school meals in each output area. **Source**: DfE School census data (Jan 2013) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Secondary school	**Data**: Location of all open secondary schools on Sept 2012. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 11-15 year olds in schools in each output area. **Source**: DfE School census data (Jan 2013) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 11-15 year olds known to be eligible for free school meals in each output area. **Source**: DfE School census data (Jan 2013) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Further education	**Data**: Location of all open further education and sixth form colleges/school sixth form on Sept 2012. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 16-19 year olds in each output area. **Source**: 2001 Census + LA updates from ONS 2011 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp ONS Mid year population estimates: http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14357	

[7] The Business Register Employment Survey data is available from the Office for National Statistics (ONS) but does have a charge associated to it (currently £150 per license). To request more information or to purchase these data, contact annual.employment.figures@ons.gov.uk. Please note that prior to 2009, data was sourced from the ONS Annual Business Inquiry, which has now been superseded by the Business Register Employment Survey.

Service	Data source for the locations of the service	Data source for users of the service	Data source for 'at risk' users of the service
GP	**Data**: Locations of GP surgeries. **Source**: Point X GP Surgeries dataset. **Further information**: http://www.pointx.co.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from DCLG 2012 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from DCLG 2012 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Hospital	**Data**: Location of hospitals (with an A&E department, or with an outpatient department and 300 or more beds). **Source**: Point X Hospital dataset **Further information**: http://www.pointx.co.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from DCLG 2012 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from DCLG 2012 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Town Centre	**Data**: Location of town centres in 2004 **Source**:DCLG Town Centre and Retail planning statistics for England and Wales. **Further information**: http://www.planningstatistics.org.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from DCLG 2012 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from DCLG 2012 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections

Data sources for Origin Locations 2012

The OAs used to calculate the 2012 statistics are still those based on the 2001 census.

Service	Data source for the origin points
All	**Data**: Population centroid of each Output Area in 2001 **Source**: ONS 2001 Census Boundaries **Further information**: http://www.statistics.gov.uk/census2001/product_boun_oa_mid_mif.asp

Data sources for Transport modes 2012

Mode	Data source	Further information
Public Transport	National Public Transport Data Repository (NPTDR)[8] database of transport services. This source was no longer available in 2012.	http://www.nptdr.org.uk/
Walk	Roads and footpaths walking network from Integrated Transport Network (ITN)[9]	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/
Cycle	Road network from Integrated Transport Network (ITN)[15] – this includes cycle paths and bridleways.	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/
Car	Road network from Integrated Transport Network (ITN)[15]	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/

[8] The National Public Transport Data Repository holds annual snapshots of public transport route and timetable data, including static data such as bus stop locations. For more information, see www.data.gov.uk/dataset/nptdr or www.nptdr.org.uk. .

[9] The Integrated Transport Network (ITN) is an Ordnance Survey dataset containing details of the transport network for Great Britain. This covers details about each link of the network such as the road class, nature of road (e.g. single carriageway, dual carriageway) and the road routing information (e.g. one way streets).

Data sources for Destination Locations 2011

Service	Data source for the locations of the service	Data source for users of the service	Data source for 'at risk' users of the service
Employment	**Data**: No. of jobs available in a LSOA in 2011. **Source**:ONS Business Register Employment Survey[10] **Further information**: https://www.nomisweb.co.uk/default.asp	**Data**: Number of 16-74 year olds in each output area **Source**: 2001 Census + LSOA updates from ONS 2010 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp ONS Mid year population estimates: http://www.ons.gov.uk/ons/taxonomy/index.html?nscl=Population+Estimates	**Data**: Number of people in receipt of jobseekers allowance in each lower super output area in December 2011. **Source**: ONS Jobseekers allowance claimant data **Further information**: https://www.nomisweb.co.uk
Food stores	**Data**: Location of grocery/supermarkets or convenience stores in January 2012. **Source**: Retail locations. **Further information**: http://www.retaillocations.co.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from DCLG 2011 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from DCLG 2011 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Primary school	**Data**: Location of all open primary schools on Sept 2011. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 5-10 year olds in schools in each output area. **Source**: DfE School census data (Jan 2010) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 5-10 year olds known to be eligible for free school meals in each output area. **Source**: DfE School census data (Jan 20010) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Secondary school	**Data**: Location of all open secondary schools on Sept 2011. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 11-15 year olds in schools in each output area. **Source**: DfE School census data (Oct 20010) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 11-15 year olds known to be eligible for free school meals in each output area. **Source**: DfE School census data (Oct 2010) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Further education	**Data**: Location of all open further education and sixth form colleges/school sixth form on Sept 2011. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 16-19 year olds in each output area. **Source**: 2001 Census + LA updates from ONS 2010 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp ONS Mid year population estimates: http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14357	

[10] The Business Register Employment Survey data is available from the Office for National Statistics (ONS) but does have a charge associated to it (currently £150 per license). To request more information or to purchase these data, contact annual.employment.figures@ons.gov.uk. Please note that prior to 2009, data was sourced from the ONS Annual Business Inquiry, which has now been superseded by the Business Register Employment Survey.

Service	Data source for the locations of the service	Data source for users of the service	Data source for 'at risk' users of the service
GP	**Data**: Locations of GP surgeries. **Source**: Point X GP Surgeries dataset. **Further information**: http://www.pointx.co.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from DCLG 2011 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from DCLG 2011 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Hospital	**Data**: Location of hospitals (with an A&E department, or with an outpatient department and 300 or more beds). **Source**: Point X Hospital dataset **Further information**: http://www.pointx.co.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from DCLG 2011 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from DCLG 2011 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Town Centre	**Data**: Location of town centres in 2004 **Source**:DCLG Town Centre and Retail planning statistics for England and Wales. **Further information**: http://www.planningstatistics.org.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from DCLG 2011 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from DCLG 2011 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections

Data sources for Origin Locations 2011

Service	Data source for the origin points
All	**Data**: Population centroid of each Output Area in 2001 **Source**: ONS 2001 Census Boundaries **Further information**: http://www.statistics.gov.uk/census2001/product_boun_oa_mid_mif.asp

Data sources for Transport modes 2011

Mode	Data source	Further information
Public Transport	National Public Transport Data Repository (NPTDR)[11] database of transport services.	http://www.nptdr.org.uk/
Walk	Roads and footpaths walking network from Integrated Transport Network (ITN)[12]	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/
Cycle	Road network from Integrated Transport Network (ITN)[15] – this includes cycle paths and bridleways.	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/
Car	Road network from Integrated Transport Network (ITN)[15]	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/

[11] The NPTDR holds annual snapshots of public transport route and timetable data, including static data such as bus stop locations. For more information, see www.data.gov.uk/dataset/nptdr.

[12] The Integrated Transport Network (ITN) is an Ordnance Survey dataset containing details of the transport network for Great Britain. This covers details about each link of the network such as the road class, nature of road (e.g. single carriageway) and the road routing information (e.g. one way streets).

Data sources for Destination Locations 2010

Service	Data source for the locations of the service	Data source for users of the service	Data source for 'at risk' users of the service
Employment	**Data**: No. of jobs available in a LSOA in 2009. **Source**:ONS Business Register Employment Survey[13] **Further information**: http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=15390	**Data**: Number of 16-74 year olds in each output area **Source**: 2001 Census + LSOA updates from ONS 2009 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp ONS Mid year population estimates: http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14357	**Data**: Number of people in receipt of jobseekers allowance in each lower super output area in December 2010. **Source**: ONS Jobseekers allowance claimant data **Further information**: https://www.nomisweb.co.uk
Food stores	**Data**: Location of grocery/supermarkets or convenience stores in September 2010. **Source**: Retail locations. **Further information**: http://www.retaillocations.co.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from CLG 2010 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from CLG 2010 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Primary school	**Data**: Location of all open primary schools on 01/08/2011. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 5-10 year olds in schools in each output area. **Source**: DfE School census data (Jan 2010) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 5-10 year olds known to be eligible for free school meals in each output area. **Source**: DfE School census data (Jan 20010) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Secondary school	**Data**: Location of all open secondary schools on 01/08/2011. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 11-15 year olds in schools in each output area. **Source**: DfE School census data (Oct 20010) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 11-15 year olds known to be eligible for free school meals in each output area. **Source**: DfE School census data (Oct 2010) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Further education	**Data**: Location of all open further education and sixth form colleges/school sixth form on 01/08/2011. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 16-19 year olds in each output area. **Source**: 2001 Census + LA updates from ONS 2009 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp ONS Mid year population estimates: http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14357	

[13] The Business Register Employment Survey data is available from the Office for National Statistics (ONS) but does have a charge associated to it (currently £150 per license). To request more information or to purchase these data, contact annual.employment.figures@ons.gov.uk. Please note that prior to 2009, data was sourced from the ONS Annual Business Inquiry, which has now been superseded by the Business Register Employment Survey.

Service	Data source for the locations of the service	Data source for users of the service	Data source for 'at risk' users of the service
GP	**Data**: Locations of GP surgeries. **Source**: Point X GP Surgeries dataset. **Further information**: http://www.pointx.co.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from CLG 2010 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from CLG 2010 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Hospital	**Data**: Location of hospitals (with an A&E department, or with an outpatient department and 300 or more beds). **Source**: Point X Hospital dataset **Further information**: http://www.pointx.co.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from CLG 2010 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from CLG 2010 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Town Centre	**Data**: Location of town centres in 2004 **Source**: CLG Town Centre and Retail planning statistics for England and Wales. **Further information**: http://www.planningstatistics.org.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from CLG 2010 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from CLG 2010 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections

Data sources for Origin Locations 2010

Service	Data source for the origin points
All	**Data**: Population centroid of each Output Area in 2001 **Source**: ONS 2001 Census Boundaries **Further information**: http://www.statistics.gov.uk/census2001/product_boun_oa_mid_mif.asp

Data sources for Transport modes 2010

Mode	Data source	Further information
Public Transport	2010 National Public Transport Data Repository (NPTDR)[14] database of transport services.	http://www.nptdr.org.uk/
Walk	Roads and footpaths walking network from Integrated Transport Network (ITN)[15]	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/
Cycle	Road network from Integrated Transport Network (ITN)[15] – this includes cycle paths and bridleways.	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/
Car	Road network from Integrated Transport Network (ITN)[15]	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/

[14] The NPTDR holds annual snapshots of public transport route and timetable data, including static data such as bus stop locations. See www.data.gov.uk/dataset/nptdr.

[15] The Integrated Transport Network (ITN) is an Ordnance Survey dataset containing details of the transport network for Great Britain. This covers details about each link of the network such as the road class, nature of road (e.g. single carriageway) and the road routing information (e.g. one way streets).

Data sources for Destination Locations 2009

Service	Data source for the locations of the service	Data source for users of the service	Data source for 'at risk' users of the service
Employment	**Data**: No. of jobs available in a LSOA in 2008. **Source**:ONS Annual Business Inquiry **Further information**: http://www.statistics.gov.uk/abi/	**Data**: Number of 16-74 year olds in each output area **Source**: 2001 Census + LSOA updates from ONS 2008 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp ONS Mid year population estimates: http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14357	**Data**: Number of people in receipt of jobseekers allowance in each lower super output area in December 2009. **Source**: ONS Jobseekers allowance claimant data **Further information**: https://www.nomisweb.co.uk
Food stores	**Data**: Location of grocery/supermarkets or convenience stores in September 2009. **Source**: Pitney Bowes MapInfo Retail locations. **Further information**: http://www.mapinfo.co.uk/products/data/geographic-offering/location-data/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from CLG 2009 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from CLG 2009 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Primary school	**Data**: Location of all open primary schools on 01/08/2010. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 5-10 year olds in schools in each output area. **Source**: DfE School census data (Jan 2009) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 5-10 year olds known to be eligible for free school meals in each output area. **Source**: DfE School census data (Jan 2009) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Secondary school	**Data**: Location of all open secondary schools on 01/08/2010. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 11-15 year olds in schools in each output area. **Source**: DfE School census data (Oct 2009) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 11-15 year olds known to be eligible for free school meals in each output area. **Source**: DfE School census data (Oct 2009) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Further education	**Data**: Location of all open further education and sixth form colleges/school sixth form on 01/08/2010. **Source**: DfE Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 16-19 year olds in each output area. **Source**: 2001 Census + LA updates from ONS 2008 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp ONS Mid year population estimates: http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14357	
GP	**Data**: Locations of GP surgeries (excluding satellite surgeries). **Source**: NHS Choices. **Further information**: http://www.nhs.uk/Pages/HomePage.aspx	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from CLG 2009 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from CLG 2009 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections

Service	Data source for the locations of the service	Data source for users of the service	Data source for 'at risk' users of the service
Hospital	**Data**: Location of hospitals (with an A&E department, or with an outpatient department and 300 or more beds). **Source**: NHS Choices **Further information**: http://www.nhs.uk/Pages/HomePage.aspx	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from CLG 2009 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from CLG 2009 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Town Centre	**Data**: Location of town centres in 2004 **Source**: CLG Town Centre and Retail planning statistics for England and Wales. **Further information**: http://www.planningstatistics.org.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from CLG 2009 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from CLG 2009 mid year household projections. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household projections - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections

Data sources for Origin Locations 2009

Service	Data source for the origin points
All	**Data**: Population centroid of each Output Area in 2001 **Source**: ONS 2001 Census Boundaries **Further information**: http://www.statistics.gov.uk/census2001/product_boun_oa_mid_mif.asp

Data sources for Transport modes 2009

Mode	Data source	Further information
Public Transport	2009 National Public Transport Data Repository (NPTDR)[16] database of transport services.	http://www.nptdr.org.uk/
Walk	Roads and footpaths walking network from Integrated Transport Network (ITN)[17]	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/
Cycle	Road network from Integrated Transport Network (ITN)[15] – this includes cycle paths and bridleways.	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/
Car	Road network from Integrated Transport Network (ITN)[15]	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/

[16] The NPTDR holds annual snapshots of public transport route and timetable data, including static data such as bus stop locations. For more information, see www.data.gov.uk/dataset/nptdr.

[17] The Integrated Transport Network (ITN) is an Ordnance Survey dataset containing details of the transport network for Great Britain. This covers details about each link of the network such as the road class, nature of road (e.g. single carriageway, dual carriageway) and the road routing information (e.g. one way streets).

Data sources for Destination Locations 2008

Service	Data source for the locations of the service	Data source for the target population of the service	Data source for the 'at risk' population of the service
Employment	**Data**: No. of jobs available in a LSOA in 2007. **Source**:ONS Annual Business Inquiry **Further information**: http://www.statistics.gov.uk/abi/	**Data**: Number of 16-74 year olds in each output area **Source**: 2001 Census + LSOA updates from ONS 2007 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp ONS Mid year population estimates: http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14357	**Data**: Number of people in receipt of jobseekers allowance in each lower super output area in December 2008. **Source**: ONS Jobseekers allowance claimant data **Further information**: http://83.244.183.180/NESS/WACG/wacg.htm
Food stores	**Data**: Location of grocery/supermarkets or convenience stores. **Source**: Pitney Bowes MapInfo Retail locations. **Further information**: http://www.mapinfo.co.uk/products/data/geographic-offering/location-data/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from CLG 2006 mid year household estimates. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household estimates: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from CLG 2006 mid year household estimates. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household estimates: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Primary school	**Data**: Location of all open primary schools on 01/08/2009. **Source**: DCSF Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 5-10 year olds in schools in each output area. **Source**: DCSF School census data (Jan 2008) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 5-10 year olds known to be eligible for free school meals in each output area. **Source**: DCSF School census data (Jan 2008) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Secondary school	**Data**: Location of all open secondary schools on 01/08/2009. **Source**: DCSF Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 11-15 year olds in schools in each output area. **Source**: DCSF School census data (Oct 2008) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 11-15 year olds known to be eligible for free school meals in each output area. **Source**: DCSF School census data (Oct 2008) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Further education	**Data**: Location of all open further education and sixth form colleges/school sixth form on 01/08/2009. **Source**: DCSF Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 16-19 year olds in each output area. **Source**: 2001 Census + LA updates from ONS 2007 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp ONS Mid year population estimates: http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14357	
GP	**Data**: Locations of GP surgeries (excluding satellite surgeries). **Source**: NHS Connecting for Health. **Further information**: http://www.connectingforhealth.nhs.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from CLG 2006 mid year household estimates. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household estimates: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from CLG 2006 mid year household estimates. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household estimates - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Hospital	**Data**: Location of hospitals (with an A&E department, or with an	**Data**: Number of households in each output area.	**Data**: Number of households without a car in each census output area.

Service	Data source for the locations of the service	Data source for the target population of the service	Data source for the 'at risk' population of the service
	outpatient department and 300 or more beds). **Source**: NHS Choices **Further information**: http://www.nhs.uk/Pages/HomePage.aspx	**Source**: 2001 Census + LA updates from CLG 2006 mid year household estimates. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household estimates: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Source**: 2001 Census + LA updates from CLG 2006 mid year household estimates. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household estimates: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections

Data sources for Origin Locations 2008

Service	Data source for the origin points
All	**Data**: Population centroid of each Output Area in 2001 **Source**: ONS 2001 Census Boundaries **Further information**: http://www.statistics.gov.uk/census2001/product_boun_oa_mid_mif.asp

Data sources for Transport modes 2008

Mode	Data source	Further information
Public Transport	2008 National Public Transport Data Repository (NPTDR) database of transport services.	http://www.nptdr.org.uk/
Walk	Roads and footpaths walking network from Integrated Transport Network (ITN)	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/
Cycle	Road network from Integrated Transport Network (ITN) – this includes cycle paths and bridleways.	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/
Car	Road network from Integrated Transport Network (ITN)	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/

Data sources for Destination Locations 2007

Service	Data source for the locations of the service	Data source for the target population of the service	Data source for the 'at risk' population of the service
Employment	**Data**: No. of jobs available in a LSOA in 2007. **Source**:ONS Annual Business Inquiry **Further information**: http://www.statistics.gov.uk/abi/	**Data**: Number of 16-74 year olds in each output area **Source**: 2001 Census + LSOA updates from ONS 2006 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp ONS Mid year population estimates: http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14357	**Data**: Number of people in receipt of jobseekers allowance in each lower super output area in December 2007. **Source**: ONS Jobseekers allowance claimant data **Further information**: http://83.244.183.180/NESS/WACG/wacg.htm
Food stores	**Data**: Location of grocery/supermarkets or convenience stores. **Source**: Pitney Bowes MapInfo Retail locations. **Further information**: http://www.mapinfo.co.uk/products/data/geographic-offering/location-data/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from CLG 2006 mid year household estimates. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household estimates: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from CLG 2006 mid year household estimates. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household estimates: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Primary school	**Data**: Location of all open primary schools on 01/082008. **Source**: DCSF Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 5-10 year olds in schools in each output area. **Source**: DCSF School census data (Jan 2007) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 5-10 year olds known to be eligible for free school meals in each output area. **Source**: DCSF School census data (Jan 2007) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Secondary school	**Data**: Location of all open secondary schools on 01/08/2008. **Source**: DCSF Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 11-15 year olds in schools in each output area. **Source**: DCSF School census data (Oct 2007) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims	**Data**: Number of 11-15 year olds known to be eligible for free school meals in each output area. **Source**: DCSF School census data (Oct 2007) **Further information**: http://www.education.gov.uk/schools/adminandfinance/schooladmin/ims
Further education	**Data**: Location of all open further education and sixth form colleges/school sixth form on 01/08/2008. **Source**: DCSF Edubase **Further information**: http://www.education.gov.uk/edubase/	**Data**: Number of 16-19 year olds in each output area. **Source**: 2001 Census + LA updates from ONS 2006 mid year population estimates **Further information**: Census Key Statistic Table 02: https://www.nomisweb.co.uk/home/census2001.asp ONS Mid year population estimates: http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=14357	

Service	Data source for the locations of the service	Data source for the target population of the service	Data source for the 'at risk' population of the service
GP	**Data**: Locations of GP surgeries (excluding satellite surgeries). **Source**: NHS Connecting for Health. **Further information**: http://www.connectingforhealth.nhs.uk/	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from CLG 2006 mid year household estimates. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household estimates: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from CLG 2006 mid year household estimates. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household estimates - https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections
Hospital	**Data**: Location of hospitals (with an A&E department, or with an outpatient department and 300 or more beds). **Source**: NHS Choices **Further information**: http://www.nhs.uk/Pages/HomePage.aspx	**Data**: Number of households in each output area. **Source**: 2001 Census + LA updates from CLG 2006 mid year household estimates. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household estimates: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections	**Data**: Number of households without a car in each census output area. **Source**: 2001 Census + LA updates from CLG 2006 mid year household estimates. **Further information**: Census Key Statistic Table 17: https://www.nomisweb.co.uk/home/census2001.asp CLG Mid year household estimates: https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections

Data sources for Origin Locations 2007

Service	Data source for the origin points
All	**Data**: Population centroid of each Output Area in 2001 **Source**: ONS 2001 Census Boundaries **Further information**: http://www.statistics.gov.uk/census2001/product_boun_oa_mid_mif.asp

Data sources for Transport modes 2007

Mode	Data source	Further information
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Cycle	Road network from Integrated Transport Network (ITN) – this includes cycle paths and bridleways.	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/
Car	Road network from Integrated Transport Network (ITN)	http://www.ordnancesurvey.co.uk/oswebsite/products/osmastermap/layers/itn/

Annex C (intentionally unallocated)

Annex D (intentionally unallocated)

Annex E Weighting Factors for Public Transport Time Periods

The table below shows the weighting factors applied to public transport travel times by time period for each service.

The weightings identify the peak times of the day and, therefore, the times when users are more likely to travel. A weighting of 1 represents the peak times for trips to that particular service. For example, users of primary schools (5-10 year old children) are most likely to be travelling to their destination between 7.30am and 10am and from their destination between 2.30pm and 5pm, and therefore these times have a weighting of 1.

Earliest	Latest	Employ-ment	Primary School	Secondary School	Further Education	GP	Hospital	Food store	Town Centre
		Outbound to destination							
07:30	08:00	1	1	1	0.75	0.5	0.5	0.25	0.25
08:00	08:30	1	1	1	0.75	0.5	0.5	0.25	0.25
08:30	09:00	1	1	1	1	0.75	0.75	0.5	0.5
09:00	09:30	1	1	1	1	0.75	0.75	0.75	0.75
09:30	10:00	1	1	1	1	1	1	1	1
10:00	10:30	0.75	0	0	1	1	1	1	1
10:30	11:00	0.5	0	0	1	1	1	1	1
11:00	11:30	0.25	0	0	0.75	0.75	0.75	0.75	0.75
11:30	12:00	0.25	0	0	0.5	0.75	0.75	0.75	0.75
12:00	12:30	0.25	0	0	0.5	0.75	0.75	0.75	0.75
12:30	13:00	0.25	0	0	0.5	0.75	0.75	0.75	0.75
13:00	13:30	0.25	0	0	0.5	0.75	0.75	0.75	0.75
13:30	14:00	0.25	0	0	0.5	0.75	0.75	0.75	0.75
14:00	14:30	0.25	0	0	0.5	1	1	0.75	0.75
14:30	15:00	0.25	0	0	0.5	1	1	0.75	0.75
15:00	15:30	0.25	0	0	0.5	0.75	0.75	0.75	0.75
15:30	16:00	0.25	0	0	0.5	0.75	0.75	1	1
16:00	16:30	0.25	0	0	0.5	0.75	0.75	1	1
16:30	17:00	0.25	0	0	0.5	0.5	0.5	0.75	0.75
17:00	17:30	0.25	0	0	0.5	0.5	0.5	0.75	0.75
17:30	18:00	0.25	0	0	0.5	0.5	0.5	0.5	0.5
18:00	18:30	0.25	0	0	0.75	0.5	0.5	0.5	0.5
18:30	19:00	0.25	0	0	0.75	0.5	0.5	0.5	0.5
		Inbound from destination							
07:30	08:00	0.25	0	0	0.5	0.5	0.5	0.25	0.25
08:00	08:30	0.25	0	0	0.5	0.5	0.5	0.25	0.25
08:30	09:00	0.25	0	0	0.5	0.5	0.5	0.5	0.5
09:00	09:30	0.25	0	0	0.5	0.5	0.5	0.75	0.75
09:30	10:00	0.25	0	0	0.5	0.75	0.75	0.75	0.75
10:00	10:30	0.25	0	0	0.5	0.75	0.75	0.75	0.75
10:30	11:00	0.25	0	0	0.5	1	1	1	1
11:00	11:30	0.25	0	0	0.5	1	1	1	1
11:30	12:00	0.25	0	0	0.5	1	1	1	1
12:00	12:30	0.25	0	0	0.5	0.75	0.75	0.75	0.75
12:30	13:00	0.25	0	0	0.5	0.75	0.75	0.75	0.75

Earliest	Latest	Employ-ment	Primary School	Secondary School	Further Education	GP	Hospital	Food store	Town Centre
		Outbound to destination							
13:00	13:30	0.25	0	0	0.5	0.75	0.75	0.75	0.75
13:30	14:00	0.25	0	0	0.5	0.75	0.75	0.75	0.75
14:00	14:30	0.25	0	0	0.75	0.75	0.75	0.75	0.75
14:30	15:00	0.25	1	1	0.75	0.75	0.75	0.75	0.75
15:00	15:30	0.25	1	1	1	1	1	0.75	0.75
15:30	16:00	0.5	1	1	1	1	1	0.75	0.75
16:00	16:30	0.75	1	1	1	1	1	0.75	0.75
16:30	17:00	1	1	1	1	0.75	0.75	1	1
17:00	17:30	1	0.5	0.5	1	0.75	0.75	0.75	0.75
17:30	18:00	1	0.25	0.25	1	0.75	0.75	0.75	0.75
18:00	18:30	1	0	0	0.75	0.75	0.75	0.75	0.75
18:30	19:00	1	0	0	0.75	0.5	0.5	0.5	0.5

Annex F Deterrence Parameters

The deterrence parameters used in the continuous indicators are shown in the table below.

	Deterrence factor		
Destination Type	**PT**	**Cycle**	**Car**
Employment	0.022	0.091	0.022
Primary School	0.107	0.101	0.107
Secondary School	0.056	0.101	0.056
Further Education	0.032	0.095	0.032
GP	0.055	0.095	0.055
Hospital	0.055	0.095	0.055
Food store	0.080	0.094	0.080
Town centre	0.080	0.094	0.080

The deterrence parameters conceptually reflect the user's willingness to travel. The higher the deterrence factor value, the less willing a user is to travel further for the service. For example, the higher deterrence value for primary schools indicates that users are less willing to travel to reach primary schools, whilst the lower value for employment centres suggests users are more willing to travel further to reach an employment centre.

These factors are derived from analysis of the National Travel Survey, identifying the sensitivity of trip making to travel time.