

Jobcentre journey time model

Summary

This paper sets out how we created a jobcentre journey time model. It provides an overview of planned changes to the jobcentre estate and the estimated impact these changes have on the time it takes for people to travel to their nearest jobcentre site.

Background

In 2016, the Works and Pensions Select Committee undertook an inquiry into [the future of Jobcentre Plus](#). To support this inquiry, we produced a [memorandum](#) to provide information on the total number of jobcentres in Great Britain, the average journey time to get to the nearest jobcentre by public transport and how this compared for people who live in urban and rural areas.

In January 2017, [DWP announced proposals to reform its jobcentre estate](#). In July 2017, DWP responded to this consultation by publishing its [final plans](#). **Figure 1** provides a summary of these plans.

Method

The jobcentre journey time model uses travel time estimates from 171,372 English output areas (comprising on average around 125 households) to the nearest ten jobcentre sites. This data was produced by the Department for Transport (DfT) in April 2016 using a commercial software package called TRACC, owned by Basemap.¹

DfT's model works by first defining origin and destination points. Origins for our jobcentre journey time model are based on English output areas, where the start point is set using a population weighted centroid which is shifted to the nearest node (i.e. junction) on a road network. The destination point is defined as the location of current and new jobcentres.

Journey time calculations are based on the use of public transport. This estimate incorporates the time to walk from the origin to the road, from the road to the public transport stop (including bus and rail transit), any interchange of public transport using the road, from the final stop to the destination via the road, and finally from the nearest point on the road network to the destination. The journey assumes arrival at the first stop 1 minute before the initial departure, with any subsequent interchange waiting times included as part of the final journey time.

DWP's estate announcements in 2017 has introduced plans for new sites into the estate. We have identified 80 sites which do not match DfT's 2016 data set which includes both current and new sites. We are currently unable to get a new set of journey time estimates using DfT's model. To get around this problem, we used alternative DfT journey time estimates covering existing jobcentre sites, a network of 26,000 centres of employment, 16,000 primary schools and 9,000 GP surgeries. We used a mix of site review and nearest neighbour analysis in QGIS to find proxies for the unmatched sites. This analysis found proxies with an average walking distance of 428m or 5 minutes walking time, with no proxy more than 1,600m away from a jobcentre site or 21 minutes walking time ([Figures 3 and 4](#)).²

Figure 1
DWP plans for the English jobcentre estate

	Baseline (pre-January 2017)	First announcement (January 2017)	Revised position (September 2017)
Retained sites	–	456	467
New sites ¹	–	43	41
Closed sites	–	106	97
Total planned sites in estate design	564	499	508

Notes

- 1 Data in the table is accurate as at September 2017 and may be subject to change in the future.
- 2 New sites include acquisitions and jobcentres co-located with other services.
- 3 Information in this table relates to jobcentres in England only. Sites in Scotland and Wales are not included.

Source: National Audit Office analysis of DWP plans for the future of its jobcentre estate

1 Journey time statistics: Access to Services: Notes and Definitions – www.gov.uk/government/uploads/system/uploads/attachment_data/file/488365/journey-time-statistics-access-to-services-notes-and-guidance.pdf
 2 Walking distance and journey time estimates are collected from www.google.co.uk/maps

Information from these proxy sites is re-integrated into the jobcentre journey time model with an algorithm developed in 'R' used to produce three main outputs:

- 1 The baseline jobcentre estate as at January 2015.
- 2 The future estate design as proposed by DWP in its consultation published in January 2017.
- 3 The updated future (April 2018) jobcentre estate design as at September 2017, as outlined by DWP in its consultation response in July 2017.

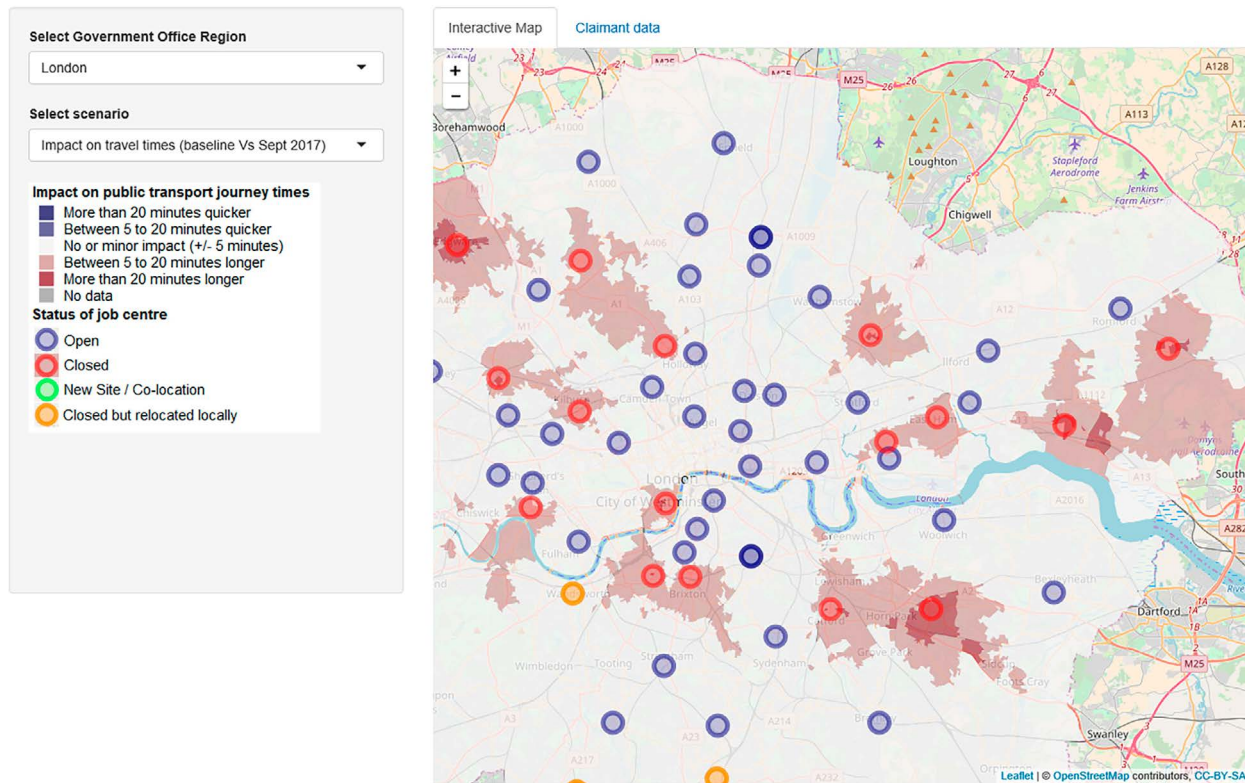
Our model presents absolute journey times from output areas to the nearest jobcentre site across all three outputs, as well as two 'impact' views where the change from the baseline jobcentre estate design can be viewed.

Results

The results of the jobcentre journey time model are available on our [website](#) (Figure 5).

Figure 2

Screenshot output from the jobcentre journey time model



Notes

- 1 The content of this page is correct as at October 2017.

Source: National Audit Office's jobcentre journey time model

Limitations

- The jobcentre journey time model only maps journey times to English jobcentre sites due to journey time data constraints in Wales and Scotland.
- It uses 171,372 output areas comprising around 125 households to act as a proxy for where people live.
- It uses the list of destinations published by DWP as at January and July 2017 which do not perfectly match the jobcentre journey time estimates we received from DfT in 2016.
- It assumes people will use public transport to travel from their home to their nearest jobcentre, including people who live in rural areas who may be able to access jobcentre services using a car, a mobile service or remotely via online or postal services.
- It does not take into account the capacity of existing or new jobcentres.
- It does not take into account the costs of existing or new jobcentres.
- It does not take into account the staff who run existing or new jobcentres.

Potential extensions of the analysis

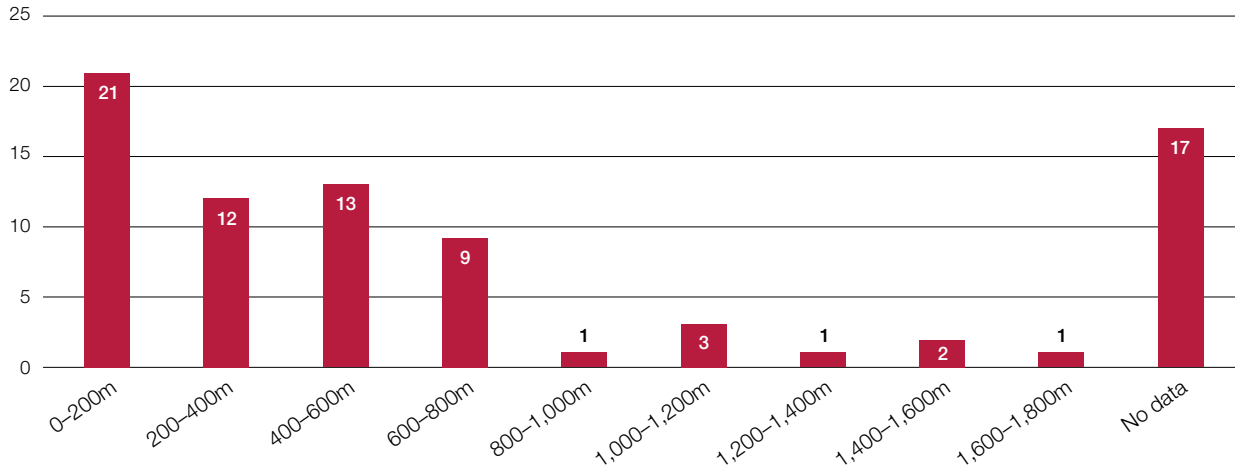
The jobcentre journey time model provides a powerful platform to undertake different types of analysis. Location allocation models can be used to develop algorithms which are capable of identifying jobcentre sites which could be removed from a network which have the least impact on overall network journey times. Scenario analysis can also be used to stress test the resilience of the overall estate design to future economic shocks which may create higher rates of unemployment and increases in people who need to use jobcentres to claim benefits and look for work.

In addition, our extended network of jobcentres, primary schools, GP surgeries and centres of employment provide tens of thousands of hypothetical locations, which can be used to identify new sites which could have the biggest benefit to people, as and when new jobcentres are to be opened. And this platform could be extended to other government services, providing a national, regional and local picture of service provision across the country.

Figure 3

Estimated walking distance between jobcentre sites and proxy sites

Frequency count of sites



Note

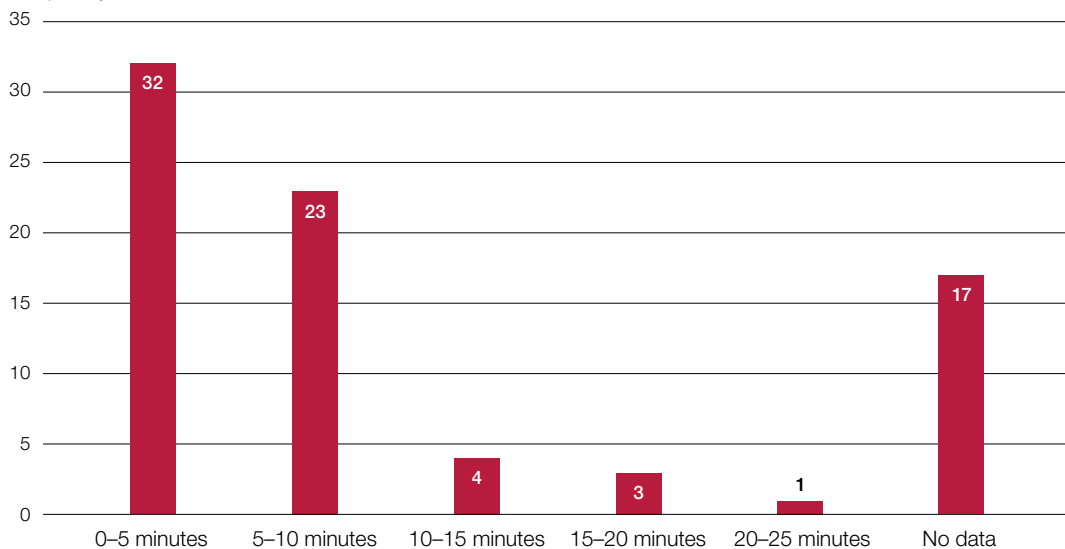
1 A total of 63 walking distance measurements were taken between jobcentre sites and proxy sites. Of the remaining 17 sites, 8 sites are new locations, 7 sites had data quality issues and 2 sites had address information not recognised by google maps.

Source: National Audit Office analysis of the walking distance between jobcentre sites and proxy sites using www.google.co.uk/maps

Figure 4

Estimated walking time between jobcentre sites and proxy sites

Frequency count of sites



Note

1 A total of 63 walking distance measurements were taken between jobcentre sites and proxy sites. Of the remaining 17 sites, 8 sites are new locations, 7 sites had data quality issues and 2 sites had address information not recognised by google maps.

Source: National Audit Office analysis of the walking distance between jobcentre sites and proxy sites using www.google.co.uk/maps

Figure 5

Estimated change in average journey time to nearest jobcentre site across English Government Office regions

Region	Baseline (pre-January 2017)	First announcement (January 2017)	Revised position (September 2017)
North East	19.5	20.4	20.2
North West	18.5	20.0	19.5
Yorkshire and the Humber	22.7	23.7	23.7
East Midlands	22.7	23.7	23.7
West Midlands	20.4	20.6	20.6
East of England	24.0	24.0	24.0
London	18.3	19.9	19.8
South East	24.2	24.7	24.7
South West	24.5	25.4	25.0
England	20.9	21.9	21.8

Source: National Audit Office's jobcentre journey time model
