Understanding changing travel demand in Greater Manchester

Which aspects of travel demand have changed in ways which have not been anticipated by traditional forecasting approaches in the past twenty years?

1. Greater Manchester is a polycentric conurbation in north-west England with a population of 2.7 million. It has the most extensive urban motorway network in the UK and car travel is the dominant form of transport, especially if measured by person-kilometres moved rather than by number of trips made. Rail-based transport is important for travel to Manchester City Centre but much less so for other trip attractors.

2. During the second half of the twentieth century until the 1990s, travel demand in Greater Manchester changed rapidly, with car travel growing, and other modes of transport declining. As seen in previous revolutions of transport technology, there was a very large growth in total person-kilometres travelled during that period, as long car trips displaced short bus and walk trips. A redistribution of population and economic activity took place from the inner urban area to peripheral locations close to the new motorway network.

There has been little growth in car travel with a decline in the inner urban area

3. But from the 1990s, car travel – which accounts for most motor vehicle kilometres – has not increased in Greater Manchester as anticipated by previous forecasts.

4. Figure 1 shows indexed values for motor-vehicle kilometres in Greater Manchester from 1996 to 2013. The blue, yellow, and grey lines respectively show motor-vehicle kilometres on the all-purpose road network outside the M60; within the M60 but outside the Manchester and Salford Inner Relief Route that surrounds the city centre; and within the city centre. All show declines in the period 1996 to 2013 with sharper declines in the inner urban area.

5. Note that economic and population growth has been higher within the M60 than outside the M60 – GVA within the M60 is approximated by the orange dotted line showing GVA for the Cities of Manchester and Salford. There has been a decoupling of road traffic growth from economic growth in the inner urban area.

6. The picture on the motorway network (presently accounting for about 45% of vehicle-kilometrage in GM) has been different, as seen in the green line in Figure 1. There was a strong increase following the completion of the last section of the orbital M60 from Denton to Middleton in 2000. The fall in motorway traffic after 2007 was affected by the economic slump from 2008, but traffic did not return to its

2007 peak until several years after the GM economy had surpassed its 2007 level of activity.



Figure 1: Changes in motor vehicle kilometres¹ by area of Greater Manchester – 1996 values set to 100

7. So, against expectations, overall volumes of car travel in Greater Manchester have been broadly stable over the past fifteen years, with some fluctuations. Particularly at odds with traditional forecasting approaches has been the decline in motor vehicle kilometres within the M60, coinciding with a growth in population and economic activity in those areas.

While experiencing strong economic growth, the inner urban area has become more self-contained

8. At the same time as it has experienced strong economic growth (for example, the number of jobs in Manchester City Centre increased by 17,500 to c.140,000 from 2001 to 2011) there is evidence that the inner urban area has become more self-contained. These phenomena would not traditionally have been expected to be found together.

9. Figure 2 shows that increases in numbers of city centre workers between 2001 and 2011 were concentrated in locations within 6km of the city centre. During the

¹ Values for the all-purpose road network are totals for links on which traffic counts were carried out throughout the period. Values for motorway are estimated vehicle kilometrage for all motors: a check has confirmed that comparing link-flow over time for motorways yields similar results (but creates complications due to the opening of new sections of motorway, specifically M60 Denton – Middleton, which <u>is</u> included in the 136% in Table 1). Note that "within M60" within M60 but outside MSIRR.

same period, there was a decline in the number of city centre workers with homes located between 6km and 20km of the city centre



Figure 2: Change in home locations of city centre workers, 2001 to 2011

10. Traditional suburbs such as Whitefield and Bramhall have become less important as homes for city centre commuters. However, more than 20km from the city centre, and extending beyond the Greater Manchester boundary, the picture changes again, with an increase in the number of city centre commuters being recorded from that distance band.

How do these changes relate to the way in which the activities that we participate in have changed? What other factors may explain change?

11. A contributor to some of the changes may be what can be loosely termed, "the digital economy". For example, internet shopping has replaced some shopping trips, perhaps especially longer shopping trips. But it is unclear to what extent the resulting fall in car kilometrage has been offset by an increase in "white van" kilometrage to deliver that shopping.

12. The digital economy does not seem to have led to much increase in the number of people working permanently from home: but by permitting home-working on perhaps two days per week, it may have led to a reduction in car kilometrage. However, it may also have facilitated more long-distance commuting, which workers find acceptable on a less frequent basis. That could help explain the changes in triplength distribution of Manchester City Centre workers.

13. There is much more scope for using digital devices on public transport than when driving a car, and that is likely to have contributed to the plateauing of car travel. Rail-based public transport has increased strongly in Greater Manchester in the past twenty years, although much of that increase can be explained by improvements in service quality and extensions to the Metrolink network.

14. Cultural shifts may also help explain unexpected changes in travel demand. Throughout the developed world there has been a shift towards urban living, and that has affected travel demand. Indeed, changes in preferences on travel demand – e.g. the desire to be able to walk to a range of destinations – are an important driver of the shift towards urban living.

15. The shift towards urban living in Greater Manchester is clearly shown in Figure3.



Figure 3: Change in population density in Greater Manchester, 2001 to 2011

 Ansus 2001 and 2011: Osual Resident Population Density

 Population Density Absolute Change

 Increase of over 2,000 per sq km

 1,000 to 2,000

 500 to 1,000

16. Cultural preferences moving towards low-car lifestyles may explain the reduction in car travel within the M60, despite quite rapid population growth in that

area (which increased by 18% from 2001 to 2011 to reach a total of 800,000) and hence the overall plateauing of car travel in Greater Manchester. Digital communication probably also explains what would once have been regarded as paradoxical – how the inner urban area could become more self-contained transport-wise while enjoying particularly strong economic growth. An increased tendency for people to live near others with similar lifestyle preferences may be another factor.

17. But transport and land-use policy have also been important in explaining the changes. No new urban motorways have been opened in Greater Manchester since the completion of the M60 ring in 2000, although there has been a process of incremental increases to motorway junction capacity. On the all-purpose road network, there has been a shift towards improving the pedestrian environment, with deliberate reductions in either traffic speed or capacity, or both. Land-use policy has shifted towards the regeneration of the inner urban area. These factors have all been important in the plateauing of car traffic volumes and the revival of public transport, and also the growth of walking, for which data is more limited.

What methods can be used to incorporate greater uncertainty in demand? Have they been deployed and to what effect?

18. In view of the poor record of traditional transport demand forecasting models, scenario planning is a useful approach to considering the robustness of transport strategies to alternative futures. TfGM carried out some scenario planning with local authority partners to inform the transport strategy for Manchester City Centre within the GM Transport Strategy 2040. More scenario planning is planned as detail in the GM Transport Strategy 24040 is filled out.

19. More positive transport and land-use planning - "decide and provide" instead of "predict and provide" - is also an appropriate response to future uncertainty. One of the outcomes of the scenario planning for the GM Transport Strategy 2040 was that it highlighted that many of the key variables were to a substantial extent within the control of TfGM and the Greater Manchester local authorities. Many of the "certainties" of traditional demand forecasting are in fact assumptions that past policies on transport and land-use will remain unchanged. Under a "decide and provide" or "vision and validate" approach, transport and land-use policy becomes a tool to support the vision for the urban area rather than a source of error in forecasting models, so that scenario planning can focus on genuinely external factors that lie outside the influence of local decision-makers.