3 The Congestion Problem

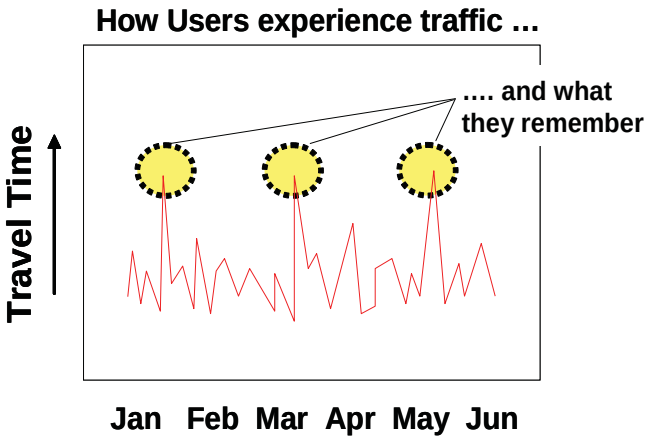
Defining Congestion

3.1 There are no universally accepted definitions of what constitutes a congestion problem and road users varied reactions to congestion make the problem hard to monitor. What is a stressful journey for one motorist may be a chance to relax and listen to music for another.

3.2 Congestion generates a variety of reactions amongst road users. In some instances commuters will find routes through side streets just to keep moving even if the journey is longer. Morning and evening peak hours have been seen to spread as people change their work habits. Eventually people will choose to work or shop elsewhere to avoid the congestion. Car commuters will of course also switch to public transport, where it provides reliable, safe and frequent services which are convenient to use.

3.3 Road users indicate that the main problem with congestion is the lack of journey time reliability. Variable journey time reliability is also true for bus services which carry 90% of all public transport journeys. Both business and consumer users are clearly interested in maintaining average journey times and average speeds, however a poor reliability record will cause them to plan for a much longer journey, wasting time or other opportunities as a result.[i] Individual incidents of severe congestion have a disproportionate impact on the perception of congestion. Reducing the regularity of these incidents, or minimising their impact, would have a significantly positive effect both on measured congestion delay and on the perception of congestion in the region.

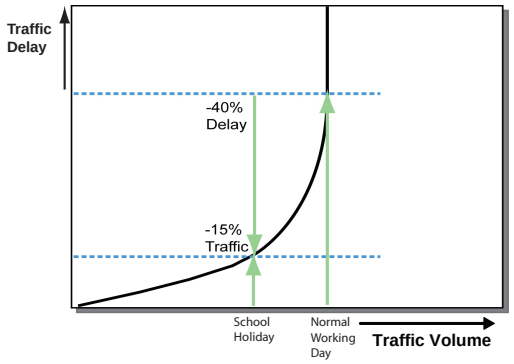
Figure 3.1 How Users Experience Traffic



i See Appendix C & D for Business and Consumer Impacts Studies Executive Summaries

3.4 As the network operates close to capacity, small increases in traffic volumes and individual incidents can result in substantially increased delays. This is most notable on the motorways however the phenomenon also occurs in the general urban network.

Figure 3.2 Traffic Volume Delay Relationship



3.5 The capacity of the network to handle variation is reduced as it operates closer to its theoretical saturation point. Minor incidents in one part of the network can then cause tailbacks from one overcrowded link to another. Emergency services and recovery vehicles have difficulty getting to incidents to restore order with the resulting impact that the network takes a long time to recover. Journey time reliability suffers as a consequence.

3.6 Overall the impact of congestion is to cause delay and wasted time for individuals and businesses, reducing opportunities both commercially and personally. The Confederation of British Industry (CBI) has stated that congestion costs the region £2.2bn per annum and the study of the impact of Delay and Journey Time reliability for Freight operators based in the West Midlands indicated a loss of £216m per annum[ii].

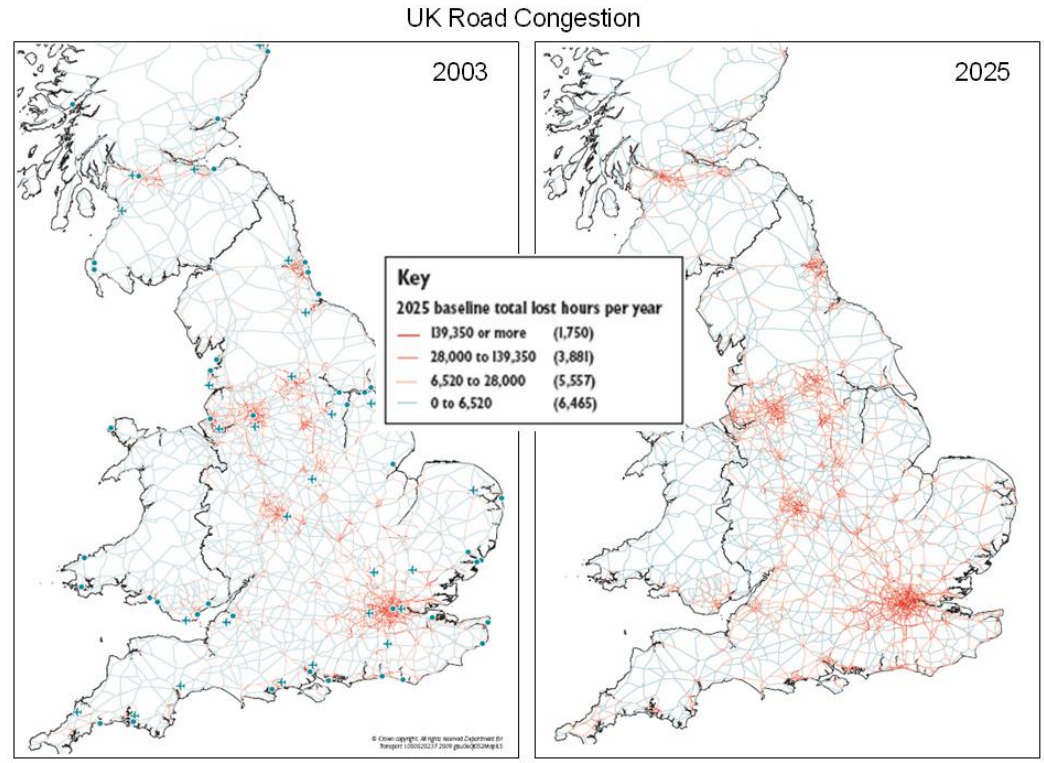
3.7 The main indicator of congestion used in this report is vehicle delay as calculated by the West Midlands strategic transport model (Policy Responsive Integrated Strategic Model, PRISM). Delay is the aggregate of time spent travelling on the network over and above a reasonable flow scenario. Reasonable flow does not mean free flow with zero hold ups for traffic lights, etc. In most cases it approximates to the time taken to make a journey at night travelling within the speed limits.

ii See Appendix B for Freight Journey Time Study Executive Summary

Congestion in National Context - Eddington

3.8 The West Midlands Metropolitan Districts are located in an advantageous position in the centre of the UK and at the heart of the national road and rail networks. This has many benefits, however it also means that large numbers of people and large volumes of goods from outside the West Midlands travel on the region's networks, putting additional pressures on transport infrastructure and services. This situation is predicted to get worse given current levels of funding.

Figure 3.3 Eddington Transport Study UK Road Congestion



Source: Eddington Transport Study

3.9 The Eddington Report "Transport's role in sustaining the UK's productivity and competitiveness" of December 2006 recommended that over the next 20 years, the three strategic economic priorities for transport policy should be:

- congested and growing city catchments;
- the key interurban corridors; and
- the key international gateways.

3.10 These priorities naturally should make the West Midlands conurbation a key focus for Government.

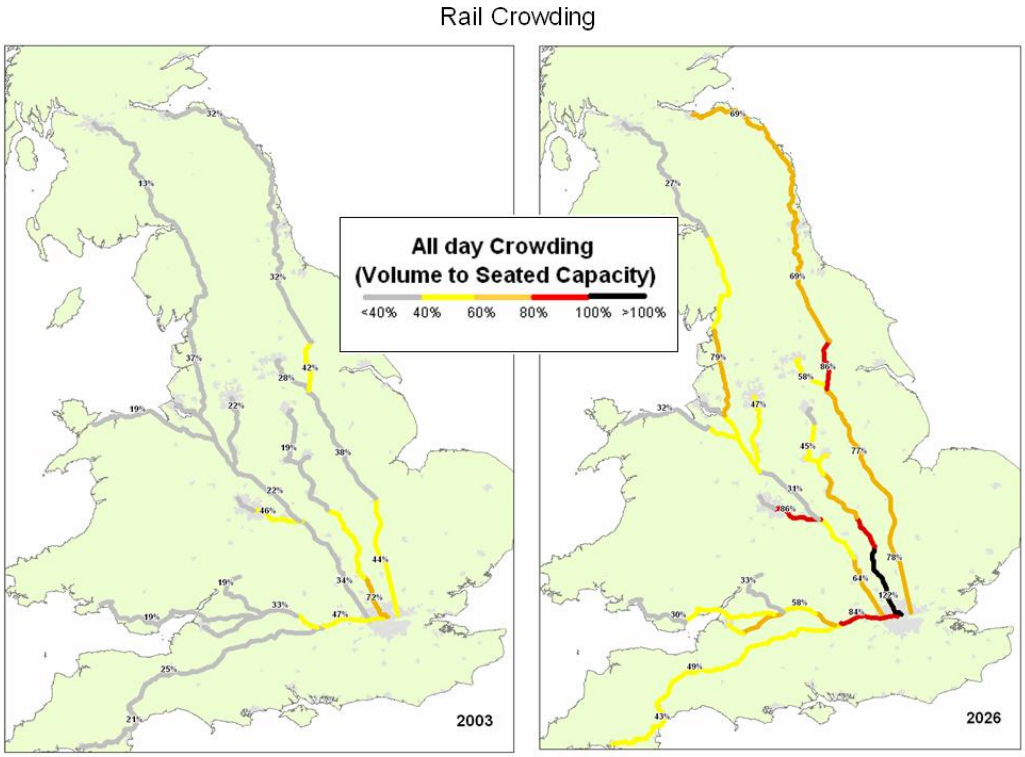
3.11 However, the Eddington Report states that the country is not able to build its way out of congestion problems. Demand management and planning policy will have to play an increasing role in both reducing congestion and avoiding it in the first place.

Rail Crowding

3.12 Passenger numbers on the rail network are growing and overcrowding is a major concern on key routes between the West Midlands and the North and South. Good accessibility to London, which has been cited as one of the region's critical competitiveness issues, needs therefore to be maintained.

3.13 The diagram below shows all day crowding increasing across the country and specifically on links to Birmingham Airport. More serious levels of overcrowding are already felt on some services in peak periods.

Figure 3.4 Rail Crowding



Source: Atkins Inter Urban Rail Study

3.14 As the rail network becomes more crowded its capacity to entice drivers away from cars will become limited. The Atkins Inter Urban-Rail Forecasts Study, commissioned by the DfT, has shown that the tolerance to overcrowding amongst potential customers, who are currently using cars, is much lower than for existing rail customers.

Motorways

3.15 Congestion on the motorways is a significant problem affecting both local and national through-traffic. The West Midlands Motorway Box is perceived as being a principle congestion problem of the area, impacting on both the real and perceived levels of congestion.

Figure 3.5 West Midlands Motorway Network

3.16 A key feature of the Motorway Box is that whilst it is part of the 'national strategic network' it caters for both local and national through-traffic. Short car trips (junction hopping) contribute significantly to the flow levels, with the Highways Agency estimating that 40% of trips on the box are for two junctions or less.

3.17 Traffic on the Motorway Box is predicted to continue to increase. Unlike most of the region's roads, the Motorway Box sees high flows throughout the day. Tailbacks and standing queues are a common occurrence and lead to traffic flooding onto local roads which also quickly become overloaded. Walsall and Wolverhampton in particular suffer from this problem on a regular basis.

3.18 Some measures have been implemented recently, including the introduction of Active Traffic Management on the M42, and it is important that these measures be extended to later phases.

Congestion in the West Midlands Metropolitan Districts

3.19 This section of the report sets out the predicted impacts of congestion in the West Midlands, assuming there are no interventions, other than continued Local Transport Plan minor works spend and that the current schemes in the Regional Funding Allocations are delivered.

General

3.20 It is predicted that the region's Growth Agenda alongside other factors such as an increase in car ownership of approximately 32% between 2001 and 2021 (TEMPRO[iii]), will drive up traffic on the region's road and rail networks. Trip numbers are expected to rise by 23% by 2021 compared to 2001 figures. Modelling suggests this will in turn push up the total distance travelled in the region by around 33% over the same time period.

3.21 As traffic levels increase, capacity constraints on the roads mean that congestion and delays will increase disproportionately. Under current transport plans, vehicle hours in the Metropolitan Area during the daily AM peak period are set to rise by around 40% in 2021 to 385,326 hours. This will trigger an increase in vehicle delay of 103%.

3.22 Congestion has a significant impact on the reliability and attractiveness of public transport services. Road congestion affects bus services as much as HGV's and private cars. Bus journey reliability and journey times are a key factor, especially when trying to attract car users to public transport.

iii TEMPRO, the Trip End Model Presentation Programme, allows access to the national Trip End Models projections of growth in travel demand, and the underlying car ownership and planning data projections that support this.

Key Corridors

3.23 Congestion across the region is manifesting itself through increases in journey times, especially for commuters using congested corridors. This means that employees have to travel for longer periods and access to markets from key centres is lengthened. In addition, without intervention or improvements, rail services will become increasingly crowded and bus services will become slower and less reliable, which in turn will deter any shift from cars to public transport.

3.24 As part of the High Volumes Corridors study, 20 corridors with the highest transport usage in the Metropolitan Area have been indentified. The table below highlights average journey times along seven of those corridors comparing current times with predictions for 2017. Timings have been interpreted from PRISM and CJAMS[iv] data for car journeys between 8.00AM and 9.00AM.

3.25 Estimated AM Peak Car Journey Times - Key Corridors

Table 3.1

Estimated AM Peak Car Journey Times - Key Corridors			
	2006	**2017**	**Increase**
Coventry to Birmingham	45 mins	56 mins	24%
Airport to Birmingham	31 mins	42 mins	35%
Solihull to Birmingham	30 mins	41 mins	37%
Longbridge to Birmingham	34 mins	40 mins	18%
Sutton Coldfield to Birmingham	31 mins	43 mins	39%
West Bromwich to Birmingham	30 mins	38 mins	27%
Walsall to Birmingham	30 mins	39 mins	30%

iv CJAMS (Congestion and Journey-time Acquisition and Monitoring System) produces congestion information on a national basis on behalf of the Department for Transport (DfT) from data produced by satellite tracking and navigation systems.

Access to Labour Markets

3.26 The table below shows the size of population that can be accessed from key West Midlands centres within 30 minutes by car. The figures for public transport will be lower. However, the trend is the same given the proportion of passengers travelling by bus which are impacted by the same congestion as car traffic.

3.27 As congestion increases and journey times increase so the number of people within a 30 minute range of a centre will decrease. The same pattern exists for both 45 and 60 minute journey times respectively. This same table can be used as a proxy for retail catchments or accessible markets for customers.

Table 3.2

Access to Working Population within 30 minute Car Journey			
	2006	**2017**	**Change**
	('000)	**('000)**	
Birmingham	781	708	-9%
Coventry	394	325	-18%
Dudley	864	826	-4%
Sandwell	984	921	-6%
Solihull	569	383	-33%
Walsall	979	865	-12%
Wolverhampton	692	555	-20%

3.28 The most notable areas affected are Solihull, Wolverhampton and Coventry, where the impact of increased motorway congestion reduces access.

Impact of Congestion

Birmingham Congestion

3.29 Modelling forecasts for the Birmingham District, shows that for 2001 - 2017:

- Increased car trips: 19% increase in car trips
- Increased delay: 88% increase in daily vehicle delay hours

3.30 Incidents likely to create gridlock on Birmingham's main arterial roads and in the tunnels of the ring roads occur twice a week on average. The consequent traffic jams and the difficulty experienced in getting them cleared are an indication of the degree to which the network is approaching capacity during the peak periods.

3.31 However, the Birmingham cordon count shows numbers of vehicles crossing the Middle Ring Road into the City Centre have declined over the last 5 years

3.32 This apparent contradiction is answered by the fact that congestion in Birmingham is concentrated on the radial roads into the City Centre and on the middle ring road itself. At peak times the wider Birmingham network is effectively full and therefore growth in vehicle trips into the City Centre is effectively stifled. In addition, recent investment in Snow Hill, East Side and elsewhere will shortly add to traffic growth as these investments are completed.

3.33 Recent decreases in car trips into the City Centre are being taken up by public transport, especially train, which is now becoming correspondingly crowded. The model shows that the potential for increased modal shift from cars, is reducing, without increased investment in public transport.

3.34 Modelling forecasts for Birmingham predict the following mode share for trips in 2006 and 2017.

Table 3.3

Forecast Birmingham Mode Split 2006 - 2017				
Mode	**2006 (All day, '000)**		**2017 (All day, '000)**	
Car	1,418	75.9%	1,581	76.9%
Bus	391	20.9%	409	19.9%
Metro	6	0.3%	7	0.3%
Train	53	2.8%	58	2.8%
Total Motorised Trips	1,867		2,055	
Increase, 2006 - 2017			188	

3.35 If existing traffic levels were to be maintained as they are and all growth was to be accommodated by public transport, this would mean that 188,000 additional trips would need to be absorbed by public transport. In this scenario public transport trips would increase by 42%, however, with the current public transport provision only 13% of these additional trips would be accommodated.

Black Country Congestion

3.36 With the exception of Wolverhampton, congestion in the Black Country is different in nature to that found in the Birmingham District. Although there are congested corridors, notably the A4123 running NW – SE and the A461 running NE – SW, the traffic on them is mainly local, making short not end to end trips.

3.37 There is also considerable congestion on roads linking the smaller urban centres in the Black Country which has a tendency towards being an all day problem. Promoting a polycentric development approach to the Black Country by improving the linkages between the smaller centres is a key plank of the Regional Spatial Strategy (2004) and the Black Country Study (2006).

3.38 Wolverhampton has a strong radial pattern of congested traffic routes terminating in the city centre. In particular the Walsall and Wolverhampton areas experience complete gridlock when there are major incidents on the Motorways leading to traffic coming off onto local roads.

Coventry and Solihull Congestion

3.39 Coventry has strong radial traffic movement in the peak periods, however, at this point congestion is not considered to be particularly serious. The modelling shows that there is growth in congestion due to growth in jobs.

3.40 Solihull suffers from congestion largely as traffic is passing through to reach Birmingham or in the north of the District to access the airport and the NEC. Solihull town centre suffers tolerable congestion now, however, it is likely to increase markedly as a result of redevelopment of the town centre due for completion in 2014.

3.41 This section sets out the findings of the three impact studies into congestion. Views on road pricing follow later in Section 6.

Impact Studies, Business

3.42 A survey was undertaken comprising 52 in depth interviews generally of 90 -120 minutes duration. The sectors covered were Financial and Business Services/Retail/ Manufacturing.

3.43 The Executive Summary of the work is attached in Appendix B – headline findings are shown below:

- 88% agree congestion is a problem – 69% claim it is impacting their business;
- Tendency to perceive congestion as a point problem (both time and place);
- Peak hours and school term time are particular concerns;
- City centres, M5 – M6, Radial road links into Birmingham, are singled out;

- Congested routes can be avoided, though 94% believe it will get worse;
- Congestion directly impacts Manufacturing / Distribution much more than Retail / Finance and Business Sector;
- Few businesses can isolate the real cost of congestion; generally costs are passed on to customers;
- Companies with large numbers of low paid / part time staff are more concerned about the provision of good quality public transport than congestion.

Impact Studies, Freight Journey Time Reliability

3.44 Telephone interviews with 355 freight operators within the West Midlands were carried out, followed up by 40 in-depth interviews; (20 with freight operators, 20 with freight receivers) and interviews with the Freight Transport Association and Road Haulage Association were held. In addition a desk based literature review has been carried out into previous research on journey time reliability affecting the freight Industry.

3.45 The Executive Summary of the work is attached in Appendix B – headline findings are shown below:

- 81% of respondents agreed that congestion is a problem in the West Midlands and 78% believed it affects their business;
- Almost 60% agreed that congestion was a major factor in missed deliveries or collections;
- The amount of time lost by drivers 'sitting and waiting' is of concern to all hauliers with over a third feeling their drivers lost over 45 minutes per day in lost time;
- In depth interviews show that most companies work around congestion as much as possible, mainly avoiding AM peaks along with Mondays and Fridays;
- Results of the telephone survey lead to estimates that the cost of time lost due to congestion in the West Midlands' freight industry is £216m per annum;
- 18% of respondents to the telephone survey would like to see more roads tolled around the West Midlands.

Impact Studies, Householders

3.46 Household surveys with 800 residents, were backed up by five one-day Hall tests[v] with 209 interviews (including 65 from outside the conurbation). In addition 24 detailed household case studies were developed and mini-focus groups held to explore some of the issues in depth.

3.47 The Executive Summary of the work is attached in Appendix D – headline findings are shown below:

v Hall Tests allow face-to-face interviews which enable a depth of understanding to be gained by giving respondents the opportunity for greater two way discussion and use of open ended questions.

- 77% perceive congestion to be a problem; 79% think action is needed now;
- Reliability is as big a problem as long journey times;
- Generally 'someone else' is held to be responsible for congestion i.e. other road users, councils etc;
- For car users, major change would be required to make public transport more acceptable than cars; this is especially true for buses;
- Generally there is a high demand for a better quality public transport offering.

Conclusion

3.48 The assessment of congestion, building on the earlier work in 'Gridlock or Growth – Choices and Challenges for the Future', continues to show a worsening problem that is very complex and not uniform across the West Midlands Metropolitan Districts. Public and business concerns about congestion are increasing and the environmental impacts are both more widely understood and felt to be important.